# POWERING CONNECTIONS: ELECTRIC INFRASTRUCTURE IN SOCIALIST YUGOSLAVIA 1945-1991

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**Abstract:**

The research presented in this dissertation provides detailed analysis of the political and ideological uses of electric infrastructure in Yugoslavia from 1945 to the early 1990s. The study aimed to understand how Yugoslavia used critical infrastructure projects as a powerful political tool to pursue political ambitions. This thesis also highlights the role of Yugoslav technocrats in decision-making and their autonomy in large-scale infrastructure decisions. This analysis of the technocratic model in Yugoslavia serves as a tool to understand interrelatedness between political and managerial actors.

The research on development and political use of electric infrastructure has proven to be an important source in understanding the Yugoslav experience. Three major ways Yugoslavia tried to assert political dominance using electric infrastructure were: establishing itself as a dominant force in the Balkans, being a bridge between the East and West after 1948, and using the critical infrastructure as a showcase for newfound partners from Asia, Africa, and South America in the framework of the Non-Aligned Movement.

The decisions on where critical infrastructure projects would be constructed deeply affected Yugoslav domestic politics and tensions between federal republics. The problem of disproportion in economic and infrastructural development between Yugoslav republics existed before 1945, and the decisions on where the critical infrastructure projects would be located deepened the divisive line between them.

The dissertation highlights the uniqueness of the Yugoslav case, as it showed that a relatively small and developing country like Yugoslavia could use infrastructure for political ambitions.

**Acknowledgments:**

Embarking on the doctoral journey was exciting with many challenges and turbulences, as it started in the year 2020, during a deadly virus and lockdowns. Many say that writing a thesis is a lonely journey, but for me it was everything but lonely.

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# Contents

**Abbreviations** ..... 1
**Table of figures** ..... 3
**Prologue** ..... 4
**Introduction** ..... 8
Pages and Perspectives: State of the Literature in Energy Infrastructure Studies ..... 10
What of Yugoslavia? ..... 14
Navigating the Archives ..... 19
Research Objectives: Why? ..... 22
Theoretical Framework: How? ..... 24
Thesis Outline ..... 29
**Chapter 1: Yugoslav Communism: A Patchwork of Policies and Peculiarities** ..... 33
From Kingdom to Federation: The Evolution of Yugoslavia ..... 33
Yugoslav Socialism in Transition: The Interplay of Political and Economic Reforms ..... 35
Sovietization and Dictatorship of the Proletariat (1945-1950) ..... 36
Yugoslav Self-Management Socialism (1951-1965) ..... 37
Market Socialism (1966-1975) ..... 39
The Delegation System (1975-1980) ..... 41
Anti-Bureaucratic Revolution (1980-1991) ..... 42
The Technomanagerial Paradigm in Yugoslavia: Examining the Interplay of Concept and Practice in Socialist Development ..... 42
Conclusion ..... 50
**Chapter 2: Electric Dreams: Yugoslav Infrastructure Development and Balkan Ambitions** ..... 51
Yugoslavia's Electrification: Foundations Before 1945 ..... 53
Building the New Yugoslavia: Pathways to Reconstruction and Renewal ..... 59
Blueprint for Recovery: First Five Year Plan ..... 61
Navigating the Chaos: Administrative Bodies of the Yugoslav Electric Power Industry 1945-1948 ..... 64
First Electrification Plan ..... 70
The Balkan Titan: Tito's Influence over the Post-War Balkans ..... 73
Eyeing Albania: Yugoslavia's Postwar Strategies and Regional Ambitions ..... 80
Switching On: The Electrification of Post-War Albania ..... 83
Joint Albanian-Yugoslav Electronification Company ..... 87
The Lesser of Two Evils ..... 91

The Balkan Federation: Political Ambitions and Practical Realities ..... 94
The Rocky Road to Moscow ..... 96
From Allies to Adversaries: The Political and Economic Ramifications of the Tito-Stalin Split ..... 102
Conclusion ..... 106
**Chapter 3: Between East and West: Yugoslavia's Diplomatic Strategy and the Yougelexport Project in Opening to the West, 1950-1963** ..... 112
The Vision of Gunnar Myrdal ..... 115
European Energy Needs ..... 118
The Rise of Hydropolitics ..... 123
Water as a Strategic Asset: Water Resources of Yugoslavia ..... 128
Yougelexport Project ..... 135
The Economic Dimensions of the Yougelexport Project ..... 139
The Rise of Yugoslav Technomanagers ..... 144
Engineering Diplomacy ..... 147
Legal Challenges of Inter-Governmental Cooperation ..... 152
Navigating Economic Diplomacy ..... 155
Putting Things Into Motion ..... 158
Reception of the Yougelexport Project in Yugoslavia ..... 162
A Failed Project? ..... 167
Yougelexport Legacy ..... 171
Conclusion ..... 174
**Chapter 4: The SUDEL Ring: Forging Yugoslavia's Path to Electric Interconnection** 179
Europe's Energy Systems ..... 182
Beyond the Third Way ..... 189
Possible Solutions: Addressing Challenges in Yugoslavia's Energy System Interconnections ..... 192
Interconnecting Regions: The SUDEL Ring Project ..... 196
Strategic Growth and the SUDEL Ring: Expanding Energy Networks ..... 201
Conclusion ..... 207
**Chapter 5: Electric Currents and Political Storms: The Iron Gates Hydroelectric and Navigational System** ..... 212
Historical Currents: The Iron Gates Prior to 1948 ..... 216
Strategic Interests and Regional Stability: Setting the Stage for Iron Gates Negotiations 218
Laying the Foundation for Cross-Border Collaboration: The Role of the Iron Gates Joint Commission ..... 223
Stalled Progress: Friction and Frustration in Talks ..... 228
From Concept to Reality ..... 232

Unexpected Triumvirate? ..... 236
Towards the Finish Line: Closing Chapters of Iron Gates Negotiations ..... 240
The Hum of Progress: Initial Phase of Iron Gates Construction ..... 244
Diplomacy by Design: The Iron Gates Project in the Context of Yugoslav-Soviet Relations ..... 250
Danube Under Pressure: Overcoming Obstacles in Iron Gates Development ..... 255
Taming the Mighty Danube ..... 260
Approaching the Finish Line: The Final Phase of Iron Gates Construction ..... 265
Integration of the Iron Gates into the Yugoslav Energy Infrastructure ..... 267
Iron Gates II ..... 269
Conclusion ..... 272
**Chapter 6: Regional Energy Integration: The Role of BALKEL in the Balkan Peninsula** ..... 278
Collaboration in the Balkans: Integration Efforts During the Cold War Era ..... 281
Balkan Interconnection Committee ..... 283
The BALKEL Project: The Unfulfilled Dream of Balkan Energy Integration ..... 287
War-Torn Wires: The Collapse of Yugoslavia's Electrical Network ..... 290
Conclusion ..... 293
**Conclusion** ..... 297
Between Moscow and Belgrade ..... 298
Turbulent 1950s ..... 300
Between Two Worlds ..... 303
The Calm Before the Storm ..... 306
Epilogue ..... 307
**Bibliography** ..... 310

# Abbreviations

MW - megawatt

kWh - kilowatt-hour

CMEA - Council of Mutual Economic Assistance

DC - direct current

AC - alternating current

FRG - Federal Republic of Germany

GDR - German Democratic Republic

GWh - gigawatt per hour

HV - high voltage

HVDC - high voltage direct current

Hz - Hertz

kV - kilovolt

LTS - Large Technical Systems

NATO - North Atlantic Treaty Organization

UCPTE - Union pour la Coordination de la Production et du Transport de l'Électricité

UN - United Nations

UNECE - United Nations Economic Commission for Europe

UNIPEDE - Union Internationale des Producteurs et Distributeurs d'Énergie Électrique

UNRRA - United Nations Reconstruction and Rehabilitation Administration

ELIN - Gesellschaft für Elektrische Industrie

JUGEL - Yugoslav Union of Electric Utilities

AVNOJ - Anti-Fascist Council for the National Liberation of Yugoslavia

CPY - Communist Party of Yugoslavia

kVA - kilovolt amperes

UPEL - Head Administration of Electric Power Utilities of Yugoslavia

MINEL - Ministry of Electric Utilities of FPRY

GDSE - General Directorate of Federal Electric Utilities

CPA - Communist Party of Albania

USSR - Union of Soviet Socialist Republics

FPRY - Federal People's Republic of Yugoslavia

SENEL - Societá Energia Elettrica

DVG - Deutsche Verbundgesellschaft

ÖEVD - Österreichische Elektrizitätswirtschaft A.G.

UDBA - Yugoslav Secret Service

OEEC - Organization for European Economic Cooperation

CDO - Central Dispatch Organization

IPS - Interconnected Power Systems

# Table of figures

Figure 1. Basic Structure of the Electric System (Source: Roger N. Anderson, "Final Report on the Blackout in the United States and Canada," U.S.-Canada Power System Outage Task Force, 2004. ..... 4
Figure 2. State electrification project by engineer Živojin Perić 1937 (Source: Archive of Yugoslavia) ..... 56
Figure 3. Map of Free Territory of Trieste (Source: Archivio di Stato di Trieste) ..... 76
Figure 4. Energy system on Drava River (Source: Zdravko Milanović ed., Elektroprivreda Jugoslavije (Beograd, 1962)) ..... 79
Figure 5. Hydrological map of Albania (Source: Archives of Yugoslavia) ..... 86
Figure 6. Photographs of Stalin, Enver Hoxha and Tito at a parade in Tirana in 1947 (Source: Fondacija Otvoreno opšestvo, North Macedonia) ..... 92
Figure 7. The main river basins of Yugoslavia (Source: Zdravko Milanović ed., Elektroprivreda Jugoslavije (Beograd, 1962.)) ..... 130
Figure 8. Yougelexport Plan (Source: UNOG, GX/19/6/1/12) ..... 140
Figure 9. Meeting of Yougelexport in Zagreb 1953 (Source: Museum of Science and Technology Belgrade, Serbia) ..... 148
Figure 10. Yougelexport expert group attending the Conference on Rural Electrification in Geneva, 27.11.1953 (From left to right: Han (YU), Neville (USA), Denzel (FRG), Sazonov (USSR), Martinov (USSR), Cameron-Brown (UK)) (Source: Archives of Yugoslavia) ..... 159
Figure 11. XI session of the World Energy Conference in Belgrade 1957 (Source: Elektroprivreda 10/7 (1953)) ..... 165
Figure 12. Map of European Transmission System Operators Organizations (Regional Groups) Continental Europe, Nordic, Baltic, Great Britain and Ireland/Northern Ireland (former UCTE, UKTSOA, NORDEL, ATSOI, IPS/APS) (Source: ENTSO-E) ..... 186
Figure 13. SUDEL Ring 1969 (Source: Elektroprivreda 22/7-8 (1969)) ..... 202
Figure 14. Sudel Ring 1975 (Source: Archives of Yugoslavia, 850, 403) ..... 206
Figure 15. Locomotive at Sip (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972)) ..... 219
Figure 16. Map of the Iron Gates 1962 (Source: Zdravko Milanović ed., Elektroprivreda Jugoslavije (Beograd, 1962)) ..... 225
Figure 17. Signing of the Technical and Economic Memorandum, Bucharest 1963 (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972)) ..... 233
Figure 18. Yugoslav workers at the Iron Gates 1968 (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972)) ..... 246
Figure 19. Rade Kočar promotional material for the Iron Gates transformers (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972)) ..... 254
Figure 20. Postcard from Ada Kaleh (Source: Alexander Christie-Miller, "Ada Kaleh: The Story of an Island," The White Revirew (2016)) ..... 259

# Prologue

While writing this thesis and sharing my thoughts with colleagues and friends, I often received feedback that some parts of my thesis were very technical. Although those are valid pieces of feedback, I decided to keep the mentioned sections. I consider the technical side of the narrative equally relevant for my analysis. During my research, I myself often encountered challenges in understanding the technical implications of my topic and had to reach out to electric engineers for clarification. I did not feel discouraged but was only encouraged to broaden my point of view and strengthen my claims. However, I want my thesis to be read by those who have prior technical knowledge of electrical systems and by those who are complete laics. That is why I decided to write a short prologue reflecting on the technical parts of this thesis that the reader might come across reading my case studies.

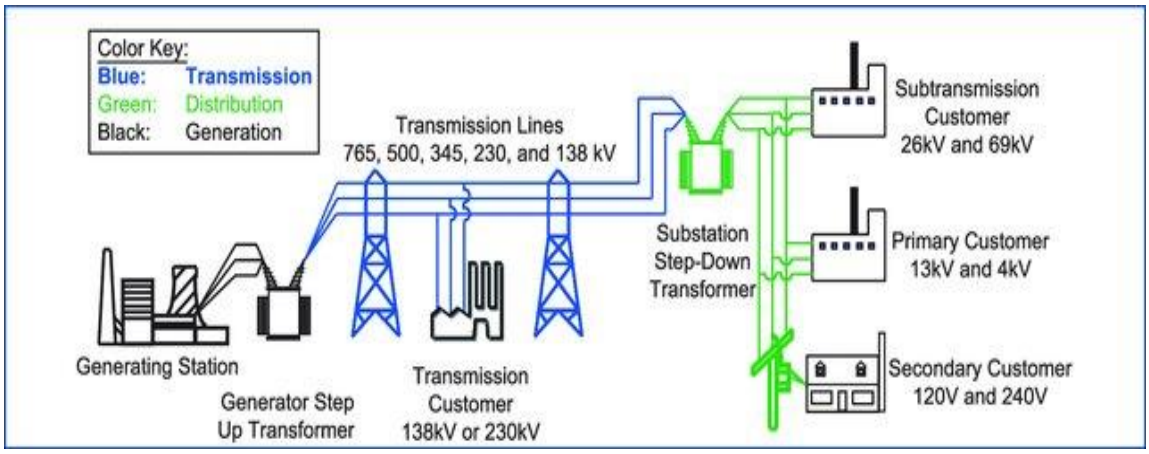


*Figure 1. Basic Structure of the Electric System (Source: Roger N. Anderson, "Final Report on the Blackout in the United States and Canada," U.S.-Canada Power System Outage Task Force, 2004.)*

Electrical infrastructure is all around us, some visible, some not. Who had not noticed transmission lines along the roads and highways? I myself, as a child, would imagine a very fast runner that would follow our family car and jump over these lines. Some parts of it are under ground, but all together, they make our modern day-to-day lives easier.

On the most basic level, this thesis is on the history of the development of electric networks, which means that it deals with electricity. While electricity makes our daily lives easier and everyone knows what electricity is, not everyone is familiar with the nuances of it. According to *The Electrical Engineering Handbook*, an electrical network is defined as "an interconnection of electrical elements like resistances, capacitances, and voltage sources, where each element is associated with voltage and current variables. The network is represented by a directed graph, and its behavior is governed by Kirchhoff's laws."[1] While reading this thesis, the reader will most likely have already, at the beginning, come across the mention of transmission lines. In the simplest sense, a transmission line is "a long conductor with a special design to carry a bulk amount of generated power at very high voltage from one station to another as per variation of the voltage level."[2] Transmission lines consist of metal structures that act as support for electrical conductors through which electricity is transmitted over long distances.

While most readers are familiar with the famous metal band AC/DC, not all are familiar with the origin of the band name. Electricity currents can flow in two ways: as alternating current (AC) or direct current (DC). The discovery of these two currents had a long history in the famous clash between Thomas Edison and Nikola Tesla. In the beginning, the DC current was not convenient for linking major electric hubs like cities, and that is why many say AC won the "war of the currents."[3] The situation changed in the early 1950s when the Soviet Union built the first high-voltage DC (HVDC) transmission line between Moscow and Kashira[4] and



[1] Krishnaiyan Thulasiraman and M.N.s Swamy, "Circuit Analysis: A Graph-Theoretic Foundation," in *The Electrical Engineering Handbook*, ed. Wai-Kai Chen (Elsevier Academic Publishing, 2005): 31-41.
[2] Electrical4U. 2016. "Transmission Lines: Parameters, Types & Theory | Electrical4U." Electrical4U. March 30, 2016. https://www.electrical4u.com/transmission-line-in-power-system/.
[3] Stephanie McPherson, *War of the Currents: Thomas Edison vs Nikola Tesla* (Twenty-First Century Books, 2012)
[4] Dirk van Hertem and Marko Delimar, "High voltage direct current (HVDC) electric power transmission systems," in *Electricity transmission, distribution and storage systems*, ed. Ziad Melhem (Woodhead Publishing, 2013): 143-173.

in 1956, when ABB built the first high-voltage DC transmission line between Gotland and the Swedish mainland.[5]

One of the main topics of this thesis is the history of synchronous electric grids in Europe. Today, there are several major synchronous grids, the European being the largest one, and they represent the large-scale networks that are connected and operate at the same frequency and phase, ensuring the stability and reliability of power supply across great distances. Part of this story is about the existence of asynchronous grid connections. These connections are also essential in the development of the future power system because they allow smaller grids to operate autonomously.

Finally, this electricity needs to come from somewhere, and that is where electric power plants come into the narrative. There are several types of electric power plants: thermal power plants, which produce thermal energy and vary depending on the type of heat source (fossil fuel, geothermal power, solar, hydrogen, or nuclear power plants); and hydroelectric power plants, which use water flows through their turbines to generate electricity. Today, we also have options for generating energy from the sun and wind. This thesis deals with both types of power plants, but hydropower plants are more prominent and relevant for the narrative.

In the chapter dedicated to the Iron Gates Navigational and Hydroelectric System, readers will come across many technical terms. One of the major components of the hydroelectric power stations is a hydroelectric dam. There are various types and sizes of dams, but all are created as reservoirs for large bodies of water that could be used for many things, electric generation being one of them. The construction of the dams is always a challenging task. Sometimes parts of these facilities, like in the case of the Iron Gates, have a lock. A lock is a device that is used for raising and lowering boats. This way, river traffic can continue



[5] Olaf Saksvik, "HVDC technology and Smart Grid," *9th IET International Conference on Advances in Power System Control, Operation and Management (APSCOM 2012)*, Hong Kong, China: 1-6.

without disruptions, and the waterways become much safer for all types of vessels sailing across them. Finally, dams are maybe the most visible and impressive parts of the hydroelectric facilities.

I hope this short overview of major technical terms proves useful for the readers and helps them to understand better not just the historical implications this thesis is attempting to convey but also the parts of electrical networks that are integral in almost every aspect of our daily lives.

# Introduction

In January 2018, most European electric clocks were approximately six minutes late. When this problem was inspected, it turned out that this delay was caused by the bickering between the Republic of Serbia and the Republic of Kosovo. The trouble began when one of the power plants in Kosovo went down for repairs. This caused a particular shortfall in the power supply in the transnational grid. The Republic of Serbia, which still controlled the transmission system of the Republic of Kosovo (former Autonomous Province of Kosovo), declined to compensate for this power loss, even though there was an agreement to do so. This seemingly nonimportant event shows two deeper dimensions of the European synchronized grid and its evolution. Firstly, Serbia and Kosovo's row delves into a more profound history of the Yugoslavian national grid and the difficulties that arose after the country's dissolution. Secondly, the fact that Yugoslavia was the only Communist fully integrated member of the UCPTE with technological ties to some Soviet bloc countries shows the unique position of the country in terms of transnational technological relations. The newest incident from January of 2021[6] further illustrates some of the old political divides in the electrical grid's functioning.

Infrastructures are the foundation of any political or socio-economic system. Electric infrastructure is part of everyday life. Electric infrastructure serves as the backbone of modern society, enabling a wide range of services from lighting or heating to complex industrial processes. However, infrastructures, even though they are everywhere around us usually are not noticeable unless there is some drawback or failure in system. Thomas Misa and Johan Schot emphasize that these systems are not merely technical but deeply intertwined with social

[6] At approximately 14:05 CET, the frequency in the North-West Area of Continental Europe initially decreased to a value of 49.74 Hz within a period of around 15 seconds, accessed April 5, 2021, https://www.entsoe.eu/news/2021/01/15/system-separation-in-the-continental-europe-synchronous-area-on-8-january-2021-update/

practices, economic interests, and political tendencies.[7] The development and maintenance of electric infrastructure reveals patterns of integration and control.

This thesis focuses on the political and ideological uses of electric infrastructure in socialist Yugoslavia between 1945 and 1991. There are many studies and research projects focusing on Yugoslavia and its peculiar political path during this period, but the approach from the point of view of critical infrastructure remains underwhelming. Many contemporary scholars like to point out that Yugoslavia (whether they are referring to the Kingdom of Yugoslavia or socialist Yugoslavia) did not differ from any place elsewhere, but then again, it did. Yugoslavia's geographical and cultural position between East and West made it a unique state during the twentieth century. However, it could be argued that Yugoslavia is not unique in this sense, pointing out that, especially during the Cold War period, Austria or Finland were also sort of mediators between East and West, especially in the context of critical infrastructure.[8] Yugoslavia stands out as an example, due to its commitment, to forging its own path skillfully maneuvering between the dominant ideological forces of the East and West without fully aligning with either. The Yugoslav experience offers a fascinating case study; despite its breakup the Yugoslav approach remains an effort to transcend the rigid ideological divisions of its era. The unique "third way" pursued by Yugoslavia in politics was a political experiment that distinguished itself from both Western capitalism and Soviet style communism. This study seeks to explore a question: how did infrastructure contribute to shaping this political landscape?



[7] Thomas J. Misa and Johan Schot, "Introduction. Inventing Europe: Technology and the hidden integration of Europe," *History and Technology* 21(1) (2005): 1-19.

[8] Per Högselius, "Technology Transfer and Innovation in the Baltics Sea Region – a Cross-Border Perspecitive," in *The NEBI Yearbook* ed. Lars Hedegaard and Bjarne Lindstrom (Berlin and Heidelberg: Springer 2003): 205-222; Per Högselius and Dazhi Yao, "The Hidden Integration of Eurasia: East-West Relations in the History of Technology," *Acta Baltica Historiae et Philosophiae Scientiarum* Vol 5, no. 2. (2017): 71-99.

Posing these questions extends beyond mere academic curiosity; it is essential for understanding the contemporary implications of historical decisions. The answers illuminate how the interdependencies and vulnerabilities of infrastructures and natural resources—both in Europe and globally—demonstrate that enduring issues from the past continue to shape the present. The enduring impact of Cold War politics continues to shape contemporary scholarship. Despite the current existence of the former Yugoslav republics in separate realities and their affiliation with distinct political realms, the infrastructure initiatives examined in this thesis expose the fundamental causes of these splits. Additionally, this thesis accounts the aspirations and plans that never materialized, offering potential insights and reflections that might inspire future efforts towards a more sustainable future.

**Pages and Perspectives: State of the Literature in Energy Infrastructure Studies**

What is the current state of energy infrastructure studies? Answering this question is challenging due to the significant expansion and increased interdisciplinarity of this field over the past twenty years. In this section, I will review the latest trends in literature dedicated to energy infrastructure, with a particular emphasis on electric infrastructures, and discuss the concepts that have proven most useful for my study.

Like many before me, my research was in many ways steered and inspired by work of Thomas Hughes and his capital study *Networks of Power* where he introduced the technological systems approach.[9] By comparing the development of electricity networks in Berlin, London, and Chicago, Hughes brought forward two major points: the perspective on understanding the role of engineers and inventors in the creation of functioning systems and the political and

[9] Thomas P. Hughes, *Networks of Power: electrification in Western society, 1880-1930* (Baltimore: Johns Hopkins University Press, 1983).

cultural frameworks in which these systems were embedded. For Hughes, the electrical networks were socio-technical systems that were constructed by system builders. In that sense, system builders could be not only individuals (engineers or inventors), but institutions as well. Hughes expanded his concept of system builders in his other seminal work, *American Genesis*, where he argued that so-called Large Technical Systems were the cornerstone of modern and technologically advanced nations.[10] On the example of the United States, he lays out the path of system growth beginning with the invention, following the transformation into the large system, and finally the reaction to the system. For the purposes of my study, I also follow the growth of the system and focusing on a different reaction to the system formation in Yugoslavia, than the one Hughes describes in the case of the United States.

Hughes' *Networks of Power* were published in 1983 and since then inspired great number of historians, sociologists, or anthropologists to build upon or challenge Hughes's concepts. Since the field of studies on history and development of electric infrastructures is indeed vast since the 1980s, it is possible to discern several directions which researchers took on.

In the first place, there is a social history of electrical infrastructure that prioritizes the social and cultural aspects of the development of electric networks. One of the most important works in this field is David Nye's *Electrifying America*, in which Nye introduces the perspective of users and the cultural impact of electrification. Recently, Andrew Needham examined the role of marginalized communities in the development of electric infrastructure in his work *Power Lines*, focusing on the Navajo community in Arizona.[11] Another excellent example of the cultural history of electrification is Diana Montaño's *Electrifying Mexico*.[12]



[10] Thomas P. Hughes, *American Genesis: a century of invention and technological enthusiasm, 1870-1970* (University of Chicago Press, 2004).
[11] Andrew Needham, *Power lines: Phoenix and the making of the modern Southwest* (Princeton University Press, 2014).
[12] Diana Montaño, *Electrifying Mexico: Technology and the Transformation of a Modern City* (University of Texas Press, 2021).

Although my primary focus is on the political implications of electric infrastructure, I do pay attention to the impact they have on people and their lives, especially in the case of the construction of the Iron Gate Navigational and Hydropower System.

Another popular approach to the history of electrical infrastructure is the national approach, where researchers focus on the development of electric networks as a means for reaching certain political or economic goals of the studied nations.[13] In her study of the development of the national identity of France after the Second World War, Gabrielle Hecht focused on the concept of technopolitics as a practice for "using of technology to constitute, embody or enact political goals."[14]

In his history of electrification in Russia, Jonathan Coopersmith utilized the social construction of technology approach to emphasize the role of the state in the development of electric infrastructure and in what ways it had served different political leaders for different political goals.[15] Furthermore, the role of ideology, which dictated the efforts of electrification, is also addressed in Falk Flade's *Energy Infrastructures in the Eastern Bloc*, on the example of Poland.[16]

From the late 1990s and beginning of the 2000s, in the European history of technology, emerged an approach focused on the political project of unifying Europe. The proponents of this approach emphasized the role of infrastructure, including electrical networks, in the development of European identity. The group around the Tensions of Europe produced a



[13] Selected publications focusing on the national studies: Robert L. Frost, *Alternating Currents. Nationalized Power in France, 1946-1970* (Cornell University Press, 1991); Timo Myllyntaus, *Electrifying Finland: The Transfer of a New Technology into a Late Industrializing Economy* (London, 1991); Erik van der Vleuten, "Electrifying Denmark: A Symmetrical History of Central and Decentral Electricity Supply until 1970" (PhD diss., University of Aarhus, 1998); Ronen Shamir, *Current Flow: The Electrification of Palestine* (Stanford University Press, 2013); Sunila S. Kale, *Electrifying India: Regional Political Economies of Development* (Stanford University Press, 2014).
[14] Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (MIT Press, 1998).
[15] Jonathan Coopersmith, *The electrification of Russia, 1880–1926* (Cornell University Press, 2016).
[16] Falk Flade, *Energy Infrastructures in the Eastern Bloc. Poland and the Construction of Transnational Electricity, Oil, and Gas* (Harrassowitz Verlag, 2017).

number of seminal works dedicated to innovative approaches to studying the shaping of the European identity in the book series *Making Europe*. Volume by Per Högselius, Arne Kaijser, and Erik van der Vleuten, dedicated to system builders, offers new perspectives on the construction of Large Technical Systems and their role in the "hidden integration" of Europe.[17] The focus on transnational actors inspired a new area of study concerning the development of infrastructure. In his opus, Arne Kaijser combined a comparative and transnational approach in studying the networks of the Scandinavian countries, emphasizing the differences between planned and evolving systems. Kaijser's emphasis on socio-economic and, more importantly, political influences in the construction of systems and linkages helped me develop a theoretical framework and the choice to focus on international and cross-border projects in the development of Yugoslav electric infrastructure.[18]

Vincent Lagendijk, in his work *Electrifying Europe*, focused on transnational actors, describing in what ways the ideas of a unified Europe influenced and were influenced by the building of the European electrical network.[19] In many ways, Lagendijk's work inspired my own, especially his focus on the transnational approach, which helped me avoid the pitfalls when writing nation-state-focused work. Furthermore, the approach to "apolitical" actors in the processes of system building in the works of van der Vleuten and Lagendijk, especially during the tensions of the Cold War, gives a unique perspective when studying the role of Yugoslavia during that period.[20]



[17] Per Högselius, Arne Kaijser and Erik van der Vleuten, *Europe's infrastructure transition: Economy, war, nature* (Basingstoke: Palgrave Macmillan, 2016).
[18] Arne Kaijser, "Trans-Border Integration of Electricity and Gas in the Nordic Countries, 1915-1992," *Polhem* 15 (1997): 4-43; Arne Kaijser, "Controlling the Grids: The Development of High-Tension Power Lines in the Nordic Countries," in *Nordic Energy Systems: Historical Perspectives and Current Issues* ed. Arne Kaijser and Marika Hedin (Chicago, 1995).
[19] Vincent Lagendijk, *Electrifying Europe. The Power of Europe in the Construction of Electricity Netwroks*. (Aksant, 2008).
[20] Vincent Lagendijk, "'To Consolidate Peace'? The International Electro-Technical Community and the Grid for the United States of Europe," *Journal of Contemporary History* 47, no. 2 (April 1, 2012): 402-426.

Another line of research on electric infrastructure is dedicated to the financial aspects of energy production. A study by William Hausman, Peter Hertner, and Mira Wilkins gives an overview of the various ways in which financiers and inventors would invest in the development of electricity networks in various countries.[21] This approach gave me an important perspective on the financial implications tied to the international projects I am analyzing in my thesis.

With growing interest in environmental concerns brought upon by industrialization and the advent of the modern age, another field of study of energy infrastructures is the so-called envirotechnical approach. This approach combines technological and engineering approaches in political and cultural contexts to broaden understanding of issues that affect the natural environment. Sara Prichard, building on Hecht's technopolitics approach, focused on the importance of the environment in the development of large-scale systems. In her book *Confluence: The Nature of Technology and the Remaking of the Rhône*, Pritchard analyzes the development of hydroelectric and nuclear power along the Rhône.[22] Similarly, Richard White in his work *The Organic Machine*, studied Colombia river.[23]

**What of Yugoslavia?**

In the overall historiography of Yugoslavia, the focus on infrastructure in general did not receive too much attention. One of the curses of the ex-Yugoslav space is the burden of historical and ethnic divides that still rule not only everyday life but the historiographical outreach of all former republics of Yugoslavia. The literature that does exist is usually dedicated

[21] William J. Hausman, Peter Hartner, and Mira Wilkins ed., *Global Electrification: Multinational Enterprise in the History of Light and Power, 1878-2007* (Cambridge University Press, 2008).
[22] Sara B. Pritchard, *Confluence: The Nature of Technology and the Remaking of the Rhône* (Cambridge, MA: Harvard University Press 2011).
[23] Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1996).

to the national spaces of former republics and in the context of industrialization or some aspect of economic development. One of the pitfalls when it comes to writing history of former Yugoslav space is the everlasting animosity towards aspects of it or struggle of Yugoslav historiography between national and international contexts. Furthermore, attitudes towards two Yugoslavias starkly differ from former country to former country. After the 1990s and the dissolution of socialist Yugoslavia, animosity towards communism was evident across all historiographies: Serbian historians would present communism as an evil tool used by the Croats and Slovenians, and Croatian historians would perceive socialist Yugoslavia as one of the versions of Serbian nationalist tendencies to create Greater Serbia. Therefore, the various perceptions burdened by unresolved traumas and historical and ethnic conflicts still plague much of former Yugoslav historiography, and one should be careful when dealing with them. Only recently, in the last twenty years, has the focus shifted, and there are unique perspectives on Yugoslav peculiarities through the lens of critical infrastructure. However, the new studies mostly dealt with transport infrastructure, such as Keith Chester's *The Narrow-Gauge Railways of Bosnia and Herzegovina*[24] or Lyubomir Pozharliev's *The Road to Socialism.*[25]

When it comes to the historiography dedicated to the energy infrastructure, the situation is even more dire. Again, in Yugoslav literature, the focus is almost always kept on the national level, and not many take Yugoslavia as a united space to analyze, not only in the energy infrastructure context but overall, as an economic space. My inspiration did not come from Yugoslav historiography but from Vincent Lagendijk and Frank Schipper's "East, West, Home's Best: The Material Links of Cold War Yugoslavia, 1948-1980," in which they analyzed



[24] Keith Chester, *The Narrow Gauge of Bosnia-Herzegovina* (Malmö: Frank Stenvalls Förlag, 2008).
[25] Lyubomir Pozharliev, *The Road to Socialism: Transport Infrastructure in Socialist Bulgaria and Yugoslavia* (1945-1989) (Göttingen: V&R Verlag, 2023).

Yugoslav infrastructural building outside the East-West divide, pointing out Yugoslav peculiarities through the lens of road and electric network infrastructure.[26]

However, historians did write on electrification but keeping their interest on the level of republics. In Serbia, the notable works include two catalogues for the exhibition in the Museum of Science and Technology in Belgrade: *Life in Serbia Vis-á-Vis Electrification*[27] and *From Dusk Till Dawn: 120 Years of Electrification in Serbia*[28], both edited by Zorica Civrić. Furthermore, there are a number of articles dealing with local or regional electrification. A monograph dedicated to the Siemens presence in Serbia has valuable information on some aspects of large-scale electrification efforts, not just in Serbia but in both Yugoslavias.[29] Several empirical studies have been conducted on the local or regional electrification in Serbia, spanning from its inception to the present day..[30] In Croatia, there are a number of monographs dedicated to significant jubilees, as well as a number of articles dedicated to electrification

[26] Vincent Ladendijk and Frank Schipper, "East, West, Home's Best: The Material Links of Cold War Yugoslavia, 1948-1980," *Icon* 22 (2016): 28–54.
[27] Zorica Civrić, *Život u Srbiji uoči elektrifikacije* [Life in Serbia on the dawn of electrification] (Beograd, 2008) [Exhibition catalogue]
[28] Zorica Civrić, *Od sumraka do svitanja: 120 godina elektrifikacije u Srbiji* [From Dusk Till Dawn: 120 Years of Electrification in Serbia] (Beograd, 2013) [Exhibition catalogue]
[29] Predrag Marković, Danilo Šarenac and Čedomir Antić, *Korak ispred vremena. 125 godina Simensa u Srbiji* [A Step Ahead of Time: 125 years of Siemens in Serbia] (Beograd: Institut za savremenu istoriju, 2012).
[30] Selected publications: Ranka Gašić, "Strani kapital u elektrifikaciji Beograda 1918-1941: Slučaj električne centrale Snaga i Svetlost," [Foreign capital in the electrification of Belgrade 1918-1941: The case of the power station Power and Light] *Tokovi istorije* 2 (2014): 12-32; Saša Ilić, "Štednja električne energije: Neki problemi odnosa države i pojedinca u nestašici struje 1949-1950. godina," [Saving electricity: Some problems of the relationship between the state and the individual in the electricity shortage of 1949-1950.] *Godišnjak za društvenu istoriju* 3 (1996): 243-259; Mladen Milaković, "Električne centrale u Srbiji 1882-2006" [Electric Power Stations in Serbia 1882-2006] *Phlogiston* (2007): 53-71; Ivana T. Vučetić, *Uticaj hidroenergetskih postrojenja na razvoj i modernizaciju naselja u Srbiji i Jugoslaviji tokom 20. veka* [The influence of hydropower plants on the development and modernization of settlements in Serbia and Yugoslavia during the 20th century] (Univerzitet u Beogradu, 2018) [PhD Dissertation]; Dobrivoje M. Ivković, "Stodesetogodišnjica Elektrodistribucije Beograd," [110 Years of Power Utility Belgrade] *Elektrodistribucija* 2 (2003): 5-10; Lazar Jovanović ed., *Sto godina hidroenergetike u Srbiji* [One hundred years of hydropower in Serbia] (Beograd, 2001); Siniša Korica, *Sto godina elektrifikacije Novog Sada 1910-2010* [100 Years of Electrification of Novi Sad 1910-2010] (Novi Sad: Elektrovojvodina, 2010); Radivoje Papić, *Svetlost nad Užicem: hidrocentrale na Djetinji* [The Light above Užice: hydropower plants on Djetinja River] (Užice: Narodni muzej, 2010); Čedomir Šorak, Dragić Nikolić and Sveta Madžarević, *Svetlo nad Šumadijom: monografija 'Elektrošumadije' Kragujevac* [Light over Šumadija: monograph "Elektrošumadija" Kragujevac] (Kragujevac: Elektrošumadija, 2014).

efforts on a local and regional level.[31] However, the only comprehensive study for Croatia is a two-tome study covering the period from the early stages of electrification to 1989.[32] Recently, Davorin Brkić dedicated part of his research to aspects of interlinking HVDC networks in Yugoslavia with neighboring countries and interlining with UCPTE and IPS systems.[33] In 2020, the National Electric Utility of Montenegro published a comprehensive study of electrification in Montenegro from the beginning to 2020. This is one of the rare studies that covers the electrification efforts in such detail and deals with the transitions after the dissolution of Yugoslavia.[34] Similarly, there are a number of articles dedicated to local and regional electrification in Slovenia.[35] There are no recent comprehensive studies for the electrification of Slovenia except the study by Vjekoslav Korošec from the 1980s.[36] Only recently, Gregor

[31] Selected publications: Dragutin Feletar, "Razvoj elektrifikacije sjeverozapadne Hrvatske do Drugoga svjetskog rata, s posebnim osvrtom na Koprivnicu," [The development of electrification in northwestern Croatia until the Second World War, with a special focus on Koprivnica] *Ekonomska i ekohistorija* 2:1 (2006): 104-148; Josip Moser, *Pregled razvoja elektroprivredne djelatnosti u Hrvatskoj 1875-2000* [Overview of the development of electrical industry in Croatia 1875-2000] (Zagreb: Kigen, 2003); Branko Vuk and Ivan Šimurina, *Energija u Hrvatskoj od 1945. do 2007. godine* [History of Energy in Croatia 1945-2007] (Zagreb, 2007); Zdenka Jelić ed., *Tridesetpet godina Instituta za elektroprivredu* [35 years of the Institute of Electrical Industry] (Zagreb, 1988); Boris Markovčić, "Kako je počela široka elektrifikacija u Hrvatskoj," [How widespread electrification began in Croatia] *Energija* 46 (1997): 49-51; Đurđa Sušec ed., *Zadarsko svjetlo: Od prve žarulje do danas – 110 godina elektrifikacije* [The Lights of Zadar: From the first light bulb to today – 110 years of electrification] (Zadar, 2004).

[32] Boris Markovčić, Ivan Prpić, Franjo Pilc and Ante Bussato eds., *Razvoj elektrifikacije Hrvatske: Od početka elektrifikacije do 1945* [Development of electrification in Croatia: From the beginning of electrification to 1945] (Zagreb, 1984); Boris Markovčić et al. eds., *Razvoj elektrifikacije Hrvatske od 1945. do 1983. godine* [Development of electrification in Croatia: From 1945 to 1983] (Zagreb, 1984).

[33] Davorin Brkić, "Međudržavne, međurepubličke i međupodručne razmjene električne energije do 1990. u hrvatskome kontekstu," [Interstate, interrepublic and interregional exchanges of electricity until 1990 in the Croatian context] *Povjest i filozofija tehnike* 11 (2023):1-53.

[34] Živko Andrijašević et al. eds., *Istorija crnogorske elektroprivrede* [History of electrification in Montenegro] (Nikšić, 2020).

[35] Selected publications: Jože Prinčič, "Pospešna elektrifikacija – temelj energetske strategije Slovenije v času obnove centralnoplanske ureditive (1945-1950)," [Successful electrification - the foundation of Slovenia's energy strategy during the renewal of the central planning regulation (1945-1950)] *Prispevki za novejšo zgodovino* 2 (2013): 120-132; Neja Blaj Hribar, *Živel napredek, živela svetloba!: zgodovina elektrifikacije Ljubljane* [Long live progress, long live light!: the history of the electrification of Ljubljana] (Ljubljana 2019); Zvonko Čampa and Franjo Jeraj, *100 let elektrifikacije Dolenjske in Bele krajine 1909-2009* [100 years of electrification of Dolenjska in Bela Krajina 1909-2009] (Ljubljana, 2009); Orest Jarh and Barbara Rezar Grlic, "Nova odkritja o zacetkih elektrifikacije Slovenije," [New discoveries about the beginnings of the electrification of Slovenia] *Elektrotehniški vestnik* 1 (2017): 66-67.

[36] Vjekoslav Korošec, *Elektrifikacija Slovenije v letih od 1945 do 1980* [Electrification of Slovenia 1945-1980] (Ljubljana, 1984).

Novak wrote a master thesis dedicated to electrification efforts on the Drava River, covering some cross-border approaches to the study of electrification.[37]

Finally, to my knowledge, there are no studies dedicated to the development of electrification in North Macedonia or Bosnia and Herzegovina. Even empirical studies dedicated to local or regional electrification efforts are rare.[38] However, a study by Dženita Sarač-Rujanac gives an excellent overview of the development and peculiarities of electrification in Bosnia and Herzegovina until the 1970s.[39]

Studies dedicated to the development of electric infrastructure in the broader Yugoslav space are rare, even during the existence of Yugoslavia. The studies that do exist are usually tied to the jubilees of the Yugoslav Electric Ministry. Even though they lack the analytical perspective, the information provided in them is accurate and written by the engineers who worked on major electric infrastructure projects.[40] In 2020, in my master thesis, I covered the electrification efforts during the period of the Kingdom of Yugoslavia, and this thesis is an effort to complement that study.[41] Recently, some considerations regarding the electrification

[37] Gregor Novak, *Zgodovina dravskih hirdorelektrarn med Dravogradom i Mariborom* [The history of the hydropower plants between Dravograd and Maribor] (Maribor: Univerza v Mariboru, Master Thesis, 2016).

[38] Selected studies dedicated to electrification of Bosnia and Herzegovina: Adnan Velagić, "Elektrifikacija Hercegovine nakon Drugog svjetskog rata" [Electrification of Herzegovina after the Second World War] In *Prilozi historiji urbanog razvoja BiH u 20. stoljeću* [Contributions to the history of urban development in BiH in the 20th century] ed. Husnija Kamberović (Sarajevo:Udruženje za modernu historiju, 2016): 105-114; Senad Hajdurović, "Energetika sjeveroistočne Bosne u period obnove i Prvog petogodišnjeg plana (1945-1952)," [Energetics of northeastern Bosnia in the period of reconstruction and the First Five-Year Plan (1945-1952)] *Baština sjeveroistočne Bosne* 6 (2013): 49-53; Selected studies dedicated to electrification of North Macedonia: Stojče Balkanski ed., *40 godini elektrifikacija na Strumica* [40 years of electrification of Strumica] (Skopje: Elektromakedonija, 1977); Ilija Pop Stefanija ed., *Elektromakedonija Ohrid: 55 godini elektrifikacija na Ohrid* [55 years of electrification of Ohrid] (Ohrid, 1973).

[39] Dženita Sarač-Rujanac, "Svjetlo u tunelu: Električna energija i elektrifikacija u Bosni i Hercegovini od sredine 1970-ih godina," [Light in the tunnel: Electricity and electrification in Bosnia and Herzegovina until the mid-1970s] *Prilozi* (2022): 247-296.

[40] Selected publications: Miloš Brelih et al. eds., *Razvoj elektroprivrede Jugoslavije 1945-1955* [Electrification development in Yugoslavia 1945-1955] (Beograd, 1957); Zdravko Milanović ed., Elektroprivreda Jugoslavije [Electric Power Utility of Yugoslavia] (Beograd, 1962); *Elektroprivreda Jugoslavije 1968* [Electric Power Utility of Yugoslavia 1968] (Beograd, 1969); Miloš Đurić, *Četiri decenije jugoslovenske elektroprivrede 1945-1955-1985* [Four decades of Yugoslav Electric Power Utility 1945-1955-1985] (Beograd, 1985).

[41] Tijana Rupčić, *Illumination of Yugoslavia. Electric Networks and Nation-Building (1918-1941)* (Budapest: Central European University, 2020) [Master's Thesis]

efforts in the Kingdom of Yugoslavia and the early years of socialist Yugoslavia were analyzed by Christian Heitmann, focusing mostly on the foundations and early plans for state-wide electrification.[42]

In summary, the research on critical infrastructures, and by extension, electric infrastructure as well, is still a developing one in the former Yugoslav space. Available historiography neglects this aspect of Yugoslav history. Yet, the comprehensive studies of Yugoslav electric infrastructure and their political and cultural entanglements are yet to be explored. In this sense, this dissertation addresses those aspects of Yugoslav history and hopes to inspire further research on this topic.

**Navigating the Archives**

Studying any area of Yugoslav history is always challenging due to its turbulent past. But archival sources offer a hidden benefit. Even though former Yugoslavia broke up into seven new states, there is a central archive dedicated to its historical period in one place, the former capital Belgrade.

This is where my archival journey began, at the Archives of Yugoslavia. The sources related to the electrification and development of electric infrastructure are abundant, but there lies the challenge. The early period, or more precisely, the first two decades of socialist Yugoslavia, saw many structural changes that were reflected in the state management and administration. Because of this, Yugoslav electric utility bodies and ministries were numerous, and sometimes, like between 1945 and 1952, they changed every two months. Because of this,



[42] Christian Heitmann, "The Electrification of Yugoslavia 1919-1952: Ideas, Plans and Realities," in *Taming the Yugoslav Space: Continuities and Discontinuities in Coping with the Infrastructural Challenges of the 20th Century* ed. Danijel Kežić, Vladislav Petrović and Edvin Pezo (Beograd: Institut za savremenu istoriju 2023), 67-88.

Yugoslavia has separate funds for each of the official bodies that govern the development of electric infrastructure. The period dedicated to the early electrification efforts was particularly challenging because it demanded searching for materials across several different funds. The most important one was the F. 11 Ministry of Electric Industry of FPRY [*Ministarstvo elektroprivrede Vlade FNRJ*]. This fund holds important documents that helped navigate the rest of the ministries that were in charge of electrification in this period. The main archival collection that I was using was the F. 850 Association of the Yugoslav Electric Industry [*Zajednica jugoslovenske elektroprivrede*].

The collections that supplemented the documentation from the various ministries for electrification were F. 130 Federal Executive Council [*Savezno izvršno veće-SIV*] and F. 837 Cabinet of the President of the Republic [*Kabinet predsednika republike*]. These two funds provided the more nuanced aspects of the political decisions that were tied to the projects that I was researching.

Another valuable source of archival material was the Diplomatic Archive of the Ministry of Foreign Affairs of the Republic of Serbia [*Diplomatski arhiv Ministarstva spoljnih poslova republike Srbije*]. The documents stored in this archive are related to all diplomatic missions and negotiations after 1945 and were invaluable sources of information, especially since my focus was on international or cross-border cooperation regarding major electric infrastructure projects. Unlike the sources in the Archive of Yugoslavia, which I had to "hunt" across numerous funds, the materials in the Diplomatic Archive, even though they are not explicitly dedicated to projects and are organized in order of countries, made it much easier to find documents related to the negotiations between the diplomats.

Finally, the Association of Engineers and Architects [*Savez tehničara i inženjera Srbije*] in Belgrade, provided valuable guidance and information on engineers that were part of the

Yougelexport project. The Museum of Science and Technology in Belgrade was also a valuable source of secondary literature and copies of various plans for the electrification of Yugoslavia.

Among the foreign archives, the most important were the United Nations Organization at Geneva Archives (UNOG). I was fortunate to have the support of Vincent Lagedijk, who shared his digital copies of the documents related to the Yougelexport project. The analysis of the international aspect of the Yougelexport project would not be nearly accurate without the consultation with the collection dedicated to the relations between the UNECE and Yugoslavia.

The limitations of my study lie in not fully consulting the archives of Romania and Albania regarding the shared projects I was analyzing. The documents I had access to were fairly objective regarding the technicalities; however, they do hold the Yugoslav point of view and interests. In that sense, this study leaves space for further study with possible consultation of archival sources regarding the development of electric infrastructure in Albania from 1945 to 1948 and the Romanian point of view regarding the diplomatic negotiations during the construction of Iron Gate.[43]

I also consulted a great number of mainstream and local newspapers, official document volumes, and political speeches that were published between 1945 and 1991.

The challenges of piecing together the narrative made me appreciate the complexity of my topic and the necessity of addressing this overlooked part of Yugoslav history. Furthermore, the heroes of my story are usually forgotten in histories dedicated to socialist Yugoslavia. The engineers and managers that I follow in my narrative are "hidden" from the main narratives present in contemporary Yugoslav historiography, even though, I would argue, many of them were the main drivers of the progress and development of Yugoslavia.



[43] For the detailed guide on all possible archival sources and existing literature regarding the research on Yugoslav electric infrastructure and industry see: Tijana Rupčić, "Navigating the Archives. Writing the History of Development of Electrical Infrastructure in Socialist Yugoslavia (1945-1991)," *Journal of Energy History/Revue d'Historie de l'Énergie* 12 (2024) [Forthcoming].

**Research Objectives: Why?**

The overarching question of this thesis is: What were the political uses of electric infrastructure in Yugoslavia between 1945 and 1991?

Why Yugoslavia? The peculiar history of Yugoslavia during the Cold War still represents a fascinating topic for research. The early change in political position of Yugoslavia, being wedged between the two opposing blocs during the Cold War, and, more importantly, Yugoslavia's own political pursuit of the "third way" and, finally, its own version of socialism, make it an interesting case study. The insufficient focus on the history of infrastructure development in Yugoslavia left a vast space of unanswered questions that this thesis aims to answer.

This thesis argues that firstly, Yugoslavia used electric infrastructure as one of the means to establish its political dominance, and secondly, that the projects I am analyzing were influenced by and influenced by the ideological shifts and political policies that were, not always, in its own advantage. The control of electric infrastructure is of great political importance because it directly affects the economic stability and security of countries. Since electricity powers all critical services, it is an indispensable factor for a successfully functioning society. In a political sense, controlling the electric infrastructure can influence economic growth and leverage control in making policy decisions. In an international framework, energy independence can be used as a powerful tool for diplomatic negotiations or expanding one's influence. Tendencies to use infrastructure, particularly electric and transport infrastructure, in Yugoslav ambitions towards its neighbors and later with the non-alignment outreach, even global partners, can be traced back to 1945.

The questions this thesis will attempt to answer are: What role did political ideology play in the planning and implementation of electric infrastructure projects in Yugoslavia from

1945 to the early 1990s? This question entailed further inquiry. In what ways did electric infrastructure development and the realization of international and cross-border projects reflect the broader political and economic strategies of Tito's regime? How did Yugoslavia's non-aligned status impact its approach to the development of electric infrastructure in relation to the East-West divide in Europe? What were the political and ideological implications of foreign investments and technological aid in Yugoslavia's electric infrastructure projects during the Cold War? How did internal political conflicts within Yugoslavia influence decisions related to the international electric infrastructure projects? And, finally, to what extent did Cold War geopolitics shape Yugoslavia's energy policies and infrastructure projects, particularly in relation to neighboring countries?

The main hypothesis of my thesis is that Yugoslavia actively used the critical infrastructure as a political tool, both domestically and internationally. This was expressed in different ways depending on the current political ambitions, but my argument is that with every change in political aspirations, infrastructure plays an important part of those ambitions. On domestic level these decisions ultimately contributed to the political differences between republics that led to dissolution of Yugoslavia, and on international level Yugoslavia actively used critical infrastructure as political tool to keep the unique position of the "third way."

My focus here is on electric infrastructure, more specifically, international and cross-border projects. The projects I choose reflect the key points in changes in Yugoslav state policy, foreign policies, and political ambitions. To answer these questions, I will focus on three levels of analysis of electric infrastructure: first, I will analyze the official discourse of the Yugoslav communist party and its leader, Josip Broz Tito; second, I will focus on the actual actors, such as engineers, scientists, and diplomats, in the implementation of the projects; and finally, I will examine what was planned and what actually came true regarding the analyzed projects.

The contributions of this thesis are twofold: empirical and conceptual. On an empirical level, this dissertation sheds new light on the history of Cold War Yugoslavia and electric infrastructures by revealing previously unresearched topics and actors. And, on the other hand, I will attempt to conceptually contribute to the scholarship of energy infrastructures and electricity networks by introducing my concept of Yugoslav technomanagers.

**Theoretical Framework: How?**

The theoretical framework is not only a tool that historians use to convey their message but also a vessel to select an audience. In that sense, this dissertation engages in conversation with energy infrastructure scholars and scholars of Yugoslav studies. The overarching theoretical framework that outlines the arguments of this thesis and the starting point in each case study is the concept of infrastructure.

What are infrastructures? The answer to this question remains elusive. Traditionally, infrastructures are various systems that represent the foundation of the economy and society. However, what we today recognize as infrastructure is historically closer to what Max Weber referred to as the "institutional state" than, for example, the scattered road system of the Roman Empire.[44] In that sense, governments, regional authorities, and entrepreneurs began the systematic construction of roads or pipelines that eventually integrated into networks that constitute modern infrastructure.[45]

The body of literature exploring the concepts of infrastructure is vast, and infrastructure is an object of study across many disciplines, from engineering or anthropology to science and technology studies (STS). Recent studies on infrastructure combine the notions of politics,

[44] Claus Wendt, *Max Weber and institutional theory* (Springer, 2016), 8-12.
[45] Dirk von Laak, Lifelines *of our society: A global history of infrastructure* (MIT Press, 2023), 24-25.

technology, space, and economy, as well as power and dominance.[46] Maybe because of this, there is no general consensus on the definition of infrastructure. Scholars like Harvey, Jensen, and Morita even suggest that defining infrastructure would be "conceptually and empirically counterproductive."[47]

There are several defining characteristics of infrastructure that this thesis will rely on and that will guide and inform my own conceptualization. Firstly, I recognize infrastructures as material structures (in this thesis: hydroelectric and thermal power plants, large dams, high-voltage transmission lines). Secondly, infrastructure is much more than just material. This thesis understands infrastructure as political and relational. Infrastructures are embedded in political projects, legal frameworks, ideologies, and everyday life and, as such, influence and shape these elements and their relations.[48]

The dynamics of networked infrastructure have far-reaching social, economic, and political implications. The technical artifacts that were considered "neutral" have become the subject of social negotiation processes and institutional dynamics, and, more importantly, the focus of social science research.[49] The main guidance in my study of electric infrastructure relies on the concept of Large Technological Systems (LTS) proposed by Thomas Hughes. Hughes defined the LTS approach as a research direction dedicated to the emergence and dynamics of infrastructure development, emphasizing the interactions of technical, institutional, and social factors. In the first place, Hughes conceptualizes the ontology of technology as comprising the internal components of an object, which are integrated into a



[46] Steve Graham and Simon Marvin, *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition* (London: Routledge, 2001); Steve Graham and Simon Marvin, *Telecommunications and the City: Electronic Spaces, Urban Places* (London: Routledge, 1996); Henri Lefebvre, *The Production of Space* (Oxford: Blackwell, 1991).
[47] Penelope Harvey, Casper Bruun Jensen and Atsuro Morita, *Infrastructures and Social Complexity: A Companion* (London: Routledge, 2016).
[48] Vincent Lagendijk, "Infrastructure," in *The Routledge Handbook on the History of Development* ed. Corinna R. Unger, Iris Borowy and Corinne Pernet (London: Routledge, 2022), 161-174.
[49] Langdon Winner, "Do artifacts have politics?" in *Computer ethic* ed. John Weckert (London: Routledge, 2017), 117-192.

larger system. In this way, Hughes puts the system at the focus of the analysis, which brings forward the nontechnological elements.[50] From the perspective of LTS, I will further study the interactions between infrastructure and politics within the Thomas Hughes concept of "system builders." The LTS approach addresses both the construction of system builders and their distinctive agendas. Hughes identified system builders as the main agents in the development and expansion of technological systems. System builders are characterized by their ability to envision large-scale systems, mobilize resources, and finally coordinate technical, social, and economic issues in order to achieve their goals. In my thesis, I follow both individual and institutional system builders. Even though the system builders' approach has received its fair share of critique, it still has methodological advantages. One of the proposed strategies for departing from the underlying properties of LTS is proposed by Arne Kaijser by differentiating between the four societal domains of LTS, or, as he put it, the "effects" of LTS on economic growth, geography, the political sphere, and the environment.[51] My focus is both on individual and institutional system builders. Building on these approaches, I will introduce my concept of individual system builders as concept technomanagers in the Yugoslav context. The institutional system builders I am following are state governments, international organizations, and common interest groups.

This thesis emphasizes the political dimension of infrastructures, more specifically electric infrastructures, by examining their role in the history of socialist Yugoslavia and how power relations embedded in infrastructures shape political realms. The literature exploring the interactions between infrastructure and politics is constantly expanding. Surprisingly, in a geopolitical context, the study of politics networked infrastructures remained unexplored for a



[50] Thomas Hughes, "The Evolution of Large Technological Systems," in *The Social Construction of Technological Systems* ed. Wiebe E, Bijker et al. (Cambridge: MIT Press, 1987), 131-133.
[51] Arne Kaijser, *I fädrens spar. Den svenske infrastrukturens historiska utveckling och framtida utmaningar* (Stockholm, 1994).

long time, but that is quickly changing.[52] There are many different approaches to concepts of infrastructure politics, but as Nolte pointed out, the usage of these concepts exposes similarities and overlaps.[53] In the most broader sense, concepts of infrastructure politics emphasize the political actors and processes that shape infrastructure [54] and the political agency gained by infrastructures.[55] In approaches to studying infrastructural politics, we can differentiate between two main fields: conventional and popular.[56] In that context, the approach in this thesis falls under the conventional infrastructure politics approach, as it follows the idea that infrastructures are used as mediators and conveyors of political ambitions and agendas.[57] This thesis engages with the questions of power and dominance that are established through infrastructure.[58] Michael Mann proposes in his considerations that a state's capability to enforce certain policies lies in exercising "infrastructural power".[59] Infrastructures their own agency and political symbolism. In his analysis of infrastructure, Dirk van Laak points out that after debates and discussions surrounding technical applications and economic questions, infrastructure tends to disappear from the official political discourse. This is where, as van Laak points out, scholars need to pay closer attention, as infrastructures keep being part of daily lives. Van Laak reminds us that in the context of the Cold War period, the usage of the term

[52] Selected publications on relationship between geopolitics and infrastructures: Andrew Barry, *Material Politics. Disputes along the Pipeline* (New York: Blackwell, 2013); Ashley Carse, *Beyond the Big Ditch. Politics, Ecology and Infrastructure at the Panama Canal* (Cambridge, Mass: MIT Press, 2014); Simone M. Müller, *Wiring the World. The Social and Cultural Creation of Global Telegraph Networks* (New York: Columbia University Press, 2016).
[53] Amina Nolte, "Political infrastructure and the politics of infrastructure: The Jerusalem Light Rail," *City* 20, no. 3 (2016): 441-454.
[54] Nate Millington, "Producing water scarcity in São Paulo, Brazil: The 2014-2015 water crisis and the binding politics of infrastructure," *Political Geography* 65 (2018): 26-34.
[55] Colin McFarlane and Jonathan Rutherford, "Political infrastructures: Governing and experiencing the fabric of the city," *International Journal of Urban and Regional Research* 32(2) (2008): 363-374.
[56] León Felipe Téllez Contreras, "Infrastructural politics: A conceptual mapping and critical review," *Urban Studies* 21(1) (2024): 1-20.
[57] Hannah Appel, Nikhil Anand, and Akhil Gupta, "Introduction: Temporality, politics, and the promise of infrastructure," in *The Promise of Infrastructure* ed. Nikhil Anand, Akhil Gupta and Hannah Appel (Durham, NC: Duke University Press, 2018), 1-38.
[58] Jens Ivo Engels and Julia Obertreis, "Infrastrukturen in der Moderne," *Saeculum* 58(1) (2007): 1-12.
[59] Michael Mann, "The Autonomous Power of the State: Its Origins, Mechanisms, and Results," *European Journal of Sociology* 25 (2) (1984): 185-213.

"infrastructure" was equated in the West with "modernity" and "progress," as opposed to the Soviet model of industrialization and mechanization, making it a highly politicized term.[60] This thesis examines not only how infrastructure was used as a political tool in Yugoslav political ambitions but also how geopolitical forces during the Cold War shaped the planning and implementation of electric infrastructure projects. In this perspective, electricity infrastructure is analyzed as "integral to geopolitics they fuel the material notion of power by their strategic relevance to political systems."[61]

Since I am indeed dealing with the political implications of infrastructural projects, there is a risk of becoming a victim of the pitfall of high politics. However, I would argue that it is hard to avoid high politics completely, but it should not be in the center of the narrative. Therefore, I will draw attention to the intermediaries, such as engineers and managers.

In approaching this study, I found it helpful to pick case studies on the "big projects" that employed international and cross-border cooperation. Therefore, my third guiding concept is transnational history. This allows me to focus on the broader context of these case studies and the various national and international actors that took part in their realization. Transnational turns in studies related to the LTS approach differentiate between two turns. The first transnational turn that emerged in the 1970s decentered transnational relations from the states to non-governmental organizations and networks.[62] The second turn, which I also follow in my thesis, emerged in the 1990s and approached studies focusing on the co-construction of



[60] Dirk van Laak, "Technological Infrastructure. Concepts and Consequences," *ICON. Journal of the International Committee for History of Technology*, vol. 10 (2004): 53-64; Dirk Van Laak, "Planung. Geschichte und Gegenwart des Vorgriffs auf die Zukunft," *Geschichte und Gesellschaft* 34, no. 3 (2008): 305-326.

[61] Itay Fischhendler et al., "Marketing Renewable Energy through Geopolitics: Solar Farms in Israel," *Global Environmental Politics* 15, no. 2 (2015): 98-120.

[62] This approach inspired research of transnational system building that relies on international politics of technology through international organizations and networks: Nil Disco and Eda Karnakis, "Toward a theory of cosmopolitan commons," in *Cosmopolitan commons: Sharing resources and risks across borders* ed. Nil Disco and Eda Karnakis (Cambridge, Mass: MIT Press, 2013), 13-53; Johan Schot and Vincent Lagendijk, "Technocratic Internationalism in the Interwar Years: Building Europe on Motorways and Electricity Networks," *Journal Modern European History* 6(2) (2008): 196-217.

regional, national, and international infrastructure.[63] Every case study reflects specific usage of infrastructure for political ambitions. Furthermore, selected case studies reflect the specificities of the Yugoslav case and the ways in which changes in both domestic and foreign political attitudes influenced the conception and realization of these projects.

Finally, the center of this thesis is the political use of Yugoslav infrastructure, not the Yugoslav state. This approach is not completely unique to the Yugoslav case but can be used in the study of similar countries that found themselves in the midst of Cold War tensions and used infrastructure as a means of establishing connections or certain political ambitions.

**Thesis Outline**

This thesis has six chapters. The first chapter sets the stage and gives a brief overview and introduction to the peculiarities of Yugoslav communism and the actors that this thesis will focus on. In this chapter, I will attempt to formulate some concepts related to Yugoslav communism. In the first place, this chapter attempts to develop and position the role of so-called technomanagers, a distinct class of system builders that emerged in Yugoslavia in the 1960s and 1970s, their role in the realization of selected case studies, and finally, the reasons for their downfall and the effects of this downfall on the development of infrastructure in the 1980s.

Chapter Two examines the transitional period from 1945 to 1948, during which Yugoslavia was significantly influenced by Soviet policies. The chapter starts by providing a comprehensive account of the initiatives undertaken to provide electricity in the Kingdom of

[63] Erik van der Vleuten and Arne Kaijser, "Networking Europe," *History and Technology* 21(1) (2005): 21-48; Per Högselius et al., *The making of Europe's critical infrastructure: Common connections and shared vulnerabilities* (Baskingstoke: Palgrave Macmillan, 2013); Ivaylo Hristov, *The communist nuclear era: Bulgarian atomic community during the Cold War, 1944-1986* (Amsterdam: Amsterdam University Press, 2014).

Yugoslavia. This serves as a foundation for comprehending the future choices made in infrastructure undertakings. This context is crucial for comprehending the origins of domestic conflicts related to centralization versus decentralization policies in infrastructural development. In addition, the chapter analyzes the strategic significance of electric infrastructure in Tito's aspirations for regional hegemony in the Balkans, with a specific emphasis on Yugoslavia's engagement in Albania. This engagement, among other factors, eventually led to an ideological and political division with the Soviet Union.

In Chapter Three I closely examine the international initiative known as Yougelexport. This collaboration between Yugoslavia, Italy, Austria, and West Germany took place in the 1950s under the auspices of the United Nations European Economic Commission. It was a somewhat unlikely, if not unique, partnership that brought together a socialist country and several capitalist ones. Yougelexport also had a novel political and economic story to tell. Its hydroelectric power plants, though not quite a Marshall Plan for the Balkans, were nevertheless a Western European investment in socialist Yugoslavia, working to bolster that country's economy—and, not insignificantly, its prestige—in the 1950s. On the other hand, Yugoslavia was keen to seize the chance to form new alliances and extend cooperation in order not to fall behind in industrialization and economic revival. This chapter calls attention to the important part played by technomanagers as chief negotiators and intermediaries in the implementation of Yougelexport. Moreover, the analysis of Yougelexport aims to address common criticisms of Hughes' LTS approach, which often focuses only on successful projects, by examining the project's ultimate failure.

In Chapter Four, I will address the underappreciated but significant infrastructural endeavor of building the SUDEL ring in Yugoslavia. This project arose from the leftover elements of the failed Yougelexport initiative and developed at the same time as the Iron Gates (though it received much less public attention). SUDEL received less involvement of the

federal government, even though the importance of the project was not smaller than Iron Gate and had long-lasting implications for all former Yugoslav countries. I will focus again on the technomanagers that were involved in the SUDEL ring project and outline the importance of the project in the interconnection of the Yugoslav electrical infrastructure with the West European UCPTE interconnection, why this choice was made, and what were the domestic implications that led to Slovenians being the main drivers of the project.

Chapter Five turns attention to the construction of the Iron Gates Hydro and Navigational System. Construction of these important infrastructural projects was initiated, delayed, and prolonged for more than twenty years due to the ambivalent political tendencies between Yugoslavia, Romania, and the Soviet Union. The history of this project stretches since the late nineteenth century, the chapter opens with a brief description of the various initiatives and solutions for harnessing the Danube's hydropower. Unlike other projects that I chose to analyze, Iron Gates is the only one that involved the direct participation of two (technically, three) state presidents. Communist regimes have always seen and used hydroelectric construction as a symbol of industrial progress and a monument to human conquest of nature. The Iron Gates project also reflects the political gameplay of Yugoslav-Soviet reproachment and is an example of a mega-project that was used to gain political acceptance, promised abundance, and was a vessel of technocratic ideology. Iron Gates served Yugoslavia and Romania in different ways. Tito used this project to reapproach the Soviet Union and later reassert his autonomous attitude, while Dej and Ceausescu used Iron Gates for their own political advancements and embraced the Soviet approach to infrastructure as a means to establish a certain ideological tone and tie together political leaders, experts, and the general population. Furthermore, Yugoslavia used the Iron Gate project as a showcase for its global partners in the context of the non-aligned movement.

In Chapter Six, the BALKEL project is briefly discussed. This project aimed to link th e electric networks of Balkan nations and was inspired by the successful SUDEL project. But increasing tensions among the Yugoslav republics, unresolved ethnic conflicts, and the consequences of infrastructure decisions that benefitted the center at the expense of the periphery generated discontent that ultimately erupted into civil war and the dismemberment of Yugoslavia. This chapter explores the role of infrastructure in the federal government's efforts to project an image of unity, appearing detached from official political discourse while simultaneously contributing to disputes among the republics. The BALKEL also symbolizes failed hopes that somehow always happen to all Balkan projects, whether they were political alliances or simply cooperation between interest groups.

The conclusion of this thesis discusses the political implications the selected large-scale infrastructural projects had on Yugoslav ambitions, how they were influenced by the political environments in which they emerged, and various actors that took part in their construction. These actors were not only political governments of the states and international organizations with their own technopolitical agendas but also political, economic, and technological individuals and groups within the state. The interactions between these actors ultimately shaped the large-scale infrastructure and their political implications of connection and disconnection, integration and fragmentation, within and beyond Yugoslavia.

# Chapter 1: Yugoslav Communism: A Patchwork of Policies and Peculiarities

The study of Yugoslavia always has to come with some clarifications and disclaimers about what it is and what it is not. In the introduction, I outlined the scope of the main research questions and hypotheses on the political functions of infrastructure. This necessitates a few words on the specificities of Yugoslav communism. The first part of this chapter will briefly address the historical context of the establishment of Yugoslavia and the specificities that were transferred from the Kingdom of Yugoslavia to socialist Yugoslavia, which, in my opinion, deeply influenced the further development of Yugoslavia, including critical infrastructure. Following this, the chapter will detail the changes in politics and ideology that were unique to Yugoslavia in the period between 1945 and 1991. Finally, I will present my concept of technomanagers, a distinct class of experts and managers that emerged in 1950s and 1960s Yugoslavia, which was crucial for the implementation, carrying out, and finalizing of infrastructural projects in the case studies I am analyzing.

## From Kingdom to Federation: The Evolution of Yugoslavia

The concepts of shared South Slavic ancestry, which shaped the identity of the Yugoslavs, significantly impacted the stability of both Yugoslavian states. In this thesis, I will not take into account these considerations in detail, as they are not the focus of my research. However, it is crucial to note that the various conflicts among the ethnic groups that comprised Yugoslavia shaped the delicate balance that Yugoslavia had to maintain from 1918 until its final dissolution in 1991. These tensions significantly influenced Yugoslavia's policies of infrastructural development and the establishment of the center and periphery. The Kingdom of Yugoslavia

was established in 1918. Not long after the establishment, the conflicts between the ethnic groups became evident, and these tensions plagued the Kingdom of Yugoslavia throughout its entire existence, leading to a centralized dictatorship and ultimately the assassination of King Aleksandar by Bulgarian and Croatian nationalists.[64]

The Second World War had a significant impact on Yugoslavia, causing devastating damage to both its population and infrastructure. Besides being occupied by Germany, Italy, Bulgaria, and Hungary, Yugoslavia was dealing with conflicts between the political factions. Among these conflicts, the partisan movement led by Josip Broz Tito came on top and led Yugoslavia in the liberation fight. This autochthonous revolution proved to be very important for the future development of Yugoslavia and its political aspirations. The federative state of Serbia, Slovenia, Croatia, Bosnia and Herzegovina, Macedonia, and Montenegro established the Federal People's Republic of Yugoslavia on November 29, 1945.[65] The Second World War's devastation left Yugoslavia in an unenviable position. However, the legacies of the uneven development of the economy of the Kingdom of Yugoslavia complicated the renewal. Despite the Kingdom of Yugoslavia having all the necessary prerequisites for industrial development, the government failed to nurture and stimulate such progress. Instead, the Kingdom of Yugoslavia prioritized the exploitation of natural resources and the encouragement of light industry. This resulted in inadequate infrastructure development and an increased dependence on foreign funds and investments. The infrastructural developments of each state in Yugoslavia also had lasting impacts on the future development of socialist Yugoslavia. In the case studies I chose for my analysis, I am also addressing the reasons for choosing those particular locations and the tensions between the republics that followed the implementation and construction of those infrastructural projects. The dissatisfaction and clashes between

[64] John R. Lempe, *Yugoslavia as History. Twice There Was a Country* (Cambridge: Cambridge University Press, 2000).
[65] Sabrina P. Ramet, *The three Yugoslavias: state-building and legitimation, 1918-2005* (Indiana University Press, 2006).

republics regarding electrification were noticeable from the very beginning, and not addressing this problem adequately affected the ultimate breakup in 1991.

**Yugoslav Socialism in Transition: The Interplay of Political and Economic Reforms**

In 1945, the Communist Party of Yugoslavia emerged victorious, establishing communist rule in a new state. Although the first constitution from 1946 recognized and legitimized the federative structure of the new states, with six republics (Serbia, Croatia, Bosnia and Herzegovina, Slovenia, Macedonia, and Montenegro) and two autonomous provinces (Vojvodina and Kosovo), in reality the rule was exceedingly centralized. In many ways, Yugoslavia followed the development plan laid out by the Soviet model and was present in other socialist countries of the Soviet Bloc. However, the peculiarity of the Yugoslav model, which was noticeable right from the start, was the high level of autonomy of the CPY and its leader, Josip Broz Tito, due to the autochthonous revolution and self-liberation in the Second World War.

The aim of this chapter is to point out the specificities and changes in Yugoslav socialism that happened due to various domestic and international reasons. Although the intention of this thesis is not to provide a detailed history or analysis of the subtle changes in socialism in Yugoslavia, it is crucial to understand the specificities of these changes. This is even more important because the Yugoslav model of self-management was unique to Yugoslavia, complementing the "third way" path of development. The specificities of Yugoslavia's unique path influenced all spheres of its development, including the critical infrastructure.

There is no definitive periodization of transitions in Yugoslav socialism, and there are several analysis models suggested by scholars.[66] In my periodization, I will follow the periodization suggested by Jože Mercinger.[67] However, I will adjust the time frames of the suggested periods and add a period from 1980 to 1991.

**Sovietization and Dictatorship of the Proletariat (1945-1950)**

After the Second World War, Yugoslavia was one of the most prominent allies of the Soviet Union. Consequently, Yugoslav communist parties copied the Soviet type of communism.[68] Accordingly, the first few years of Yugoslav communist rule were adjusted to the Soviet economic model known as administrative socialism, which roughly spanned from 1945 until 1950. The main aim after the war was rapid recuperation. In order to achieve these results, the CPY faithfully implemented the Stalinist model and very quickly carried out collectivization and nationalization. The first two years were characterized as the "transition phase," and regardless of the ruthless and forced nationalization practices, they did give some results to establish the central planning.[69]

Administrative socialism is a centralized type of management in which planners control the entire mode of production. In the planning system, the state is the only investor. Since the



[66] Some of the suggested periodization can be found in: Frederik B. Singleton, *Twentieth Century Yugoslavia* (London: Macmillan, 1976); Frederik B. Singleton and Bernard Carter, *The Economy of Yugoslavia* (London, 1982); Marko Kržan, "Razvoj i učenja jugoslovenskog samoupravljanja," [Development and lessons of Yugoslav self-management] in *Jugoslavija. Zašto, kako i kad?* [Yugoslavia. Why, when and how?] ed. Ildiko Erdei, Branislav Dimitrijević and Tatomir Toroman (Beograd: Muzej Jugoslavije, 2019), 126-148.
[67] Jože Mercinger, *Med socializmom in kapitalizmom ter odvisnostjo in neodvistnostjo* [Between socialism and capitalism and dependence and independence] (Ljubljana, 1994), 10-14.
[68] Saša Ilić, "Od nade do razoćaranja – pomoć Sovjetskog Saveza u izgradnji jugoslovenske privrede (1945-1948)," [From Hope to Disappointment – Soviet Union's Aid in Establishing of Yugoslav Economy (1945-1948)] *Godišnjak za društvenu istoriju* 1 (2016): 37-63.
[69] Branko Petranović, *Politička i ekonomska osnova narodne vlasti u Jugoslaviji za vreme obnove* [Political and economic basis of the people's power in Yugoslavia during the reconstruction] (Beograd: Institut za savremenu istoriju, 1968), 252-254.

major aim of post-war Yugoslavia was to rebuild as fast as possible with a focus on the development of industrialization (especially heavy industry), this type of governance produced results by 1948. In comparison to the situation before the war, the Kingdom of Yugoslavia had roughly 700,000 workers, while in 1949 that number reached 2 million.[70]

However, already in the transitional phase between 1944 and 1946, many prominent Yugoslav communists were expressing their dissatisfaction with the Soviet model and voiced considerations that it might not be the best solution for Yugoslavia.[71] Regardless of these concerns, Yugoslavia continued with the implementation of a planned economy model and, in 1947, presented its first five-year plan. The path of Yugoslav development significantly changed in 1948, with the expulsion of Yugoslavia from Cominform.

**Yugoslav Self-Management Socialism (1951-1965)**

The Tito-Stalin split in 1948 completely changed the trajectory of Yugoslav development. Yugoslavia faced severe economic isolation and growing fears of military conflict with the Soviet Union and its satellites. This situation especially affected the megalomaniac aspirations of the first five-year plan. As the situation was not already bad, to make things worse in 1948, there was a massive failure of the corps in the already badly managed agrarian sector.[72] The threat of hunger and fears of Soviet retaliation prompted Yugoslavia not only to seek allies in the West but to completely reform the state. Additionally, Yugoslav communists noticed that



[70] Lev Centrih, "Razredna logika v Kraljevini Jugoslaviji kot periferiji fašističnih sistemov," [Class logic in the Kingdom of Yugoslavia as a periphery of fascist systems], *Teorija in praksa* 48(1) (2011): 230-257.
[71] Branko Petranović ed., *Izvori za istoriju Jugoslavije: Zapisnici sa sednica Politbiroa Centralnog komiteta KPJ: jun 1945-7. jula 1948* [Sources for the history of Yugoslavia: Minutes of the sessions of the Politburo of the Central Committee of the KPJ: June 1945-7. July 1948] (Arhiv Jugoslavije: Beograd, 1995), 139-141.
[72] Sava Živanov, "Uzroci i posledice sukoba," [Causes and consequences of conflict] in *Jugoslovensko-sovjetski sukob 1948* [Yugoslav-Soviet Conflict] ed. Petar Kačavenda (Beograd: Institut za savremenu istoriju, 1999), 21-34.

speedy industrialization and tendencies to turn peasants into workers proved to be efficient only in the short run.[73]

This resulted in the 1951 Law on Planned Management of the National Economy. The economic concept of Yugoslav socialism was founded on the Marxist critique of capitalist relations of production that resulted in social inequalities.[74] Boris Kidrič, one of the creators of the new system, noted that work forced in administrative socialism stopped being a commodity while still not being an active participant in factory or enterprise management. The new reform established social ownership instead of previous state ownership. The self-management system effectively separated the communist party, state, and administration and, most importantly, put power into the hands of so-called workers' councils. In the framework of self-management, workers' councils became the cornerstone of organizing, giving employees access to decision-making processes, including plans of production, allocation of resources, and most importantly, distribution of profits. The process of more freedom in decision-making and wider decentralization continued after the Seventh Congress of the Communist Party of Yugoslavia in 1958.[75]

The new system increased management's microeconomic efficiency without making unnecessary sacrifices of macroeconomic rationality. The management of the factories and companies that were previously subordinated to the central planning bodies and were an integral part of the bureaucracy acquired a new social function in the form of the introduction



[73] Vladmir Unkovski-Korica, "Jugoslovensko samoupravljanje: upravljanje radništva ili upravljanje radništvom? [Yugoslav self-management: labor management or management of labor?] in *Nasledje jugoslovenskog socijalizma. Promišljanje. Razgovor. Rasprava. Kritika*. [The legacy of Yugoslav socialism. Reflection. Conversation. Discussion. Criticism.] ed. Marijana Stojčić and Dragomir Olujić Oluja (Beograd: Forum za primenjenu istoriju, 2014).

[74] Radivoj Uvalić, "Functions of the market and plan in the socialist economy," in *Yugoslav Economists on Problems of a Socialist Economy* ed. Radmila Stojanović (New York: International Arts and Sciences Press, 1964), 140-147.

[75] *Sedmi kongres SKJ: 22-26. aprila 1958, Ljubljana* [Knj. 1] [Seventh Congress of LCY: 22-26. April 1958, Ljubljana] (Beograd: Kultura, 1958).

of market activity.[76] In 1963, Yugoslavia introduced a new constitution based on the concept of self-management in all spheres: political, economic, and cultural. Singleton dubbed this period the period of "the four D's": decentralization, democratization, de-etatization, and de-politization.[77]

The introduction of self-management proved critical for infrastructure development for two reasons. In the first place, decentralization gave an opportunity for less developed republics to gain attention and finances for developing infrastructural projects. In 1945, the Federal Republic of Macedonia and Montenegro strongly protested that all the planned development of electric infrastructure, which they urgently needed, was circumventing them. In 1961, the state introduced the Federal Fund for Development of Underdeveloped Areas, which further increased the chances equal infrastructural development. Secondly, there was the establishment of a new social strata, popularly called "technocracy," to which the technomanagers belonged. There is no doubt that the role of the working class increased in enterprise management, but technocratic managers held the real power. Talented technomanagers influenced the course of the development and modernization of the Yugoslav economy and, by extension, society and political discourse.

**Market Socialism (1966-1975)**

Following the 1967 and 1971 Constitutional Amendments, the process of decentralization continued with the growing autonomy of the federative republics and less interference from the federal government in their internal affairs. The transition into market socialism was directly tied to the development of technocracy. During the 1960s, Yugoslav society found itself

[76] Chris Rojek and David C. Willson, "Workers' self-management in the world system: The Yugoslav case," *Organization Studies* 8, no. 4 (1987): 297-308.
[77] Singleton, *Twentieth Century Yugoslavia*, 137-139.

at a crossroads. With the introduction of self-management, Yugoslavia successfully managed to connect the immediate interests of working-class people with the indirect interests of each of them for the further development of the economy. The main hallmark of this period is the persistent emphasis on modernization and increasing efficiency in enterprises.[78] And most importantly, the state encouraged and funded the scientific research, increasing the number of specialized and skilled workers.

The economic reform introduced the market, which made it possible to increase personal incomes and mass consumption. Additionally, economic reform separated production from public services, which resisted market principles and in which self-management was effective. Rastko Močnik argues that in that time period, production degenerated into a variant of the capitalist economy.[79] Technocracy exploited the shortcomings of the planning system and made their interests official state interests, which ultimately led to the experiment with social democracy. In 1967, a Law on Joint Enterprises allowed that foreign investors could own almost 50% of shares in Yugoslav enterprises.[80] This period also witnessed the most engagement in pursuing cross-border and international infrastructure projects, including those analyzed in this thesis. This is no coincidence, and, as I argue, it is in direct correlation with the emergence of the technomanagers.

Market mechanisms created new positions of power, deepened class differences, and increased structural inequalities among regions, which ultimately led to the interference of the federal government to retain its control.



[78] Wlodzimierz Brus, "Market Socialism," in *Problems of the planned economy* ed. John Eatwell et al. (London: Palgrave Macmillan, 1990), 164-177.
[79] Rastko Močnik, *Tri teorije: ideologija, nacija, institucija* [Three theories: ideology, nation, institution] (Beograd: Centar za savremenu umetnost, 2003), 22-23.
[80] Miodrag Sukijasovic, "Legal Aspects of Foreign Investment in Yugoslavia," *Law and Contemp. Probs.* 37 (1972): 474-484.

**The Delegation System (1975-1980)**

The market mechanisms also had political consequences. The growing independence of the technomanagers and decentralization encouraged the respective republics to exercise more autonomy. This resulted in the fears of the Tito and the top of CPY that they might lose a grip. In order to assert dominance and reestablish power, the Yugoslav government launched a campaign directed against the "bourgeois" technomanagers and liberal politicians that were trying to establish a more democratic system. The League of Communists removed those who stood for national autonomy and "who, under the imperative of modernization, tried to advocate corporate business and the introduction of Yugoslavia into the Western capitalist system."[81]

In 1974, Yugoslavia introduced the new Constitution, which redirected a great portion of legislative power, which was before on local and regional levels, to the delegates of enterprise bodies.[82] This period is marked by constant back and forth between the federal government and federal republics in conflicts around the decision-making levels. At the same time, there were strong protests against the bureaucratization of the political system by Marxist philosophers gathered around the Praxis group[83] and the growing national groups, especially in Serbia and Croatia, demanding more autonomy.

For infrastructural investments, this period was marked by the cancellation of big projects in less developed republics because the financing of the projects now fell on the republics on whose territory the projects were being constructed. For example, this directly resulted in the refusal of the federal republic of Serbia to finance the Iron Gate II project. On



[81] Močnik, *Tri teorije*, 27.
[82] Teodor Olić, "The Assembly system of Yugoslavia – Delegations instead of members of parliament," *Options Méditerranéennes: La Yugoslavie* no. 33 (1976): 24-25.
[83] Oscar Gruenwald, "Praxis and democratization in Yugoslavia: From critical Marxism to democratic socialism?" in *The Road to Disillusion: From Critical Marxism to Post-communism in Eastern Europe* ed. Reymond Taras (London: Routledge, 1992), 175-196.

the federal level, this meant intensifying the center-periphery divide, only deepening the discord among the republics.

**Anti-Bureaucratic Revolution (1980-1991)**

The 1980s in Yugoslavia began with the death of Josip Broz Tito. This period is characterized by growing ethnic tensions, uncontrollable inflation, and pressures from the IMF. On the political scene, this period included the collective presidency, and louder demands for the separation of republics. The self-management system that had already started deteriorating in the mid-1970s was additionally constrained, and the federal bureaucracy was suppressed and replaced by an ideological (national) bureaucracy.[84] This period is not the focus of my thesis, and I address it very briefly in the chapter dedicated to the Balkan project. However, it is important to mention because it set the stage for the disintegration of socialist Yugoslavia.

**The Technomanagerial Paradigm in Yugoslavia: Examining the Interplay of Concept and Practice in Socialist Development**

The study of technocracy in this thesis will be twofold. The division comes from the word itself: techne (τέχνη) meaning "skill" and kratos (κράτος) meaning "ruler" or "to rule." This is where my venture starts as well, from what and who?

First, when referring to technocracy, I am referring to the form of rule reflected in the rule of engineers, scientists, and technicians that are responsible for decision-making based on their expertise.[85] Second, the technocracy here should be understood from the Yugoslav point

[84] Marko Grdešić, "Serbia's anti-bureaucratic revolution as manipulation? A cultural alternative to the elite-centric approach," *Comparative Studies in Society and History* 58, no. 3 (2016): 774-803.
[85] Miguel Angel Centeno, "The new Leviathan: The dynamics and limits of technocracy," *Theory and society* (1993): 307-335.

of view, which makes it significantly different from the technocratic movement in the US-American context or the Soviet style of technocracy. In the United States, the technocracy movement emerged within the framework of a capitalist democracy. This model emphasized innovation, efficiency, and the application of scientific principles to policymaking.[86] In contrast, the technocracy in the Soviet Union was tied to its centralized political system. Technocracy became part of the state ideology by emphasizing industrialization and scientific advancement. Therefore, in the Soviet Union, technocrats were often integrated into the political hierarchy.[87] Soviet technocracy was rigid, and state controlled.[88]

In this context, the Yugoslav technocracy that emerged after the Tito-Stalin split was directly tied to and embedded within the self-management system. Unlike the US model of technocracy, where experts could influence policy within a democratic framework, Yugoslav technocrats never reached that level of autonomy. On the other hand, with the decentralization of federal rule, the technocracy in Yugoslavia was not like the Soviet model either. Although the Soviet technocracy system was capable of achieving short-term goals and utilizing rapid mobilization for the purposes of large-scale projects, it lacked the sustainability for long-term plans due to rigidity and a lack of market dynamics. With the introduction of self-management and market socialism, I argue that Yugoslavia again wedged itself somewhere in between these two styles of technocracy and developed a unique class of technocrats.

Another important note is that in Yugoslav historiography, the terms "technocrats" and "technomanagers" have negative connotations, which is the direct consequence of the state propaganda and state reconning with them in the 1970s. In this context, the flamework in which



[86] Frank N. Laird, "Technocracy revisited: Knowledge, power and the crisis in energy decision making," *Industrial Crisis Quarterly* 4, no. 1 (1990): 49-61.
[87] In 1985 almost 90% of the Soviet Politburo members were engineers (Loren Graham, *The Ghost of the Executed Engineer: Technology and the Fall of the Soviet Union* (Cambridge, Mass: Harvard University Press, 1993), 73-74.).
[88] Erik P. Hoffmann and Robbin F. Laird, *Technocratic socialism: the Soviet Union in the advanced industrial era* (Durham, NC: Duke University Press, 1985).

I am analyzing Yugoslav technocracy and technomanagers could be perceived as revisionist. Additionally, in Yugoslav context terms "technocrat", "technocracy" and "technomanager" are used synonymously. I will use the term "technomanager"[89] when referring to both technocrats and managers to avoid the confusion, as they were all under the umbrella term "technomanagers" during the 1970s campaign against them.

In his analysis of discourse on bureaucracy and administrative government in post-revolutionary Yugoslavia, Branko Horvat differentiates between six social classes in Yugoslavia in the 1950s: managers and politicians; intellectuals, which consisted of three sub-groups: technocrats, bureaucrats, and intelligentsia; white-collar workers; blue-collar workers; entrepreneurs (small-business owners such as carpenters, glaziers, etc.); and peasants.[90]

In my analysis of Yugoslav technocracy, I will focus on technomanagers as a specific class that emerged during the 1950s and 1960s and was heavily involved in the development of critical infrastructures and the political discourse in which these infrastructures were used. Unlike the managers in the Soviet Union who were commercial bureaucrats, Yugoslav technocrats had more versatile roles.[91] In the first place, unlike their Soviet counterparts, they were not hard-pressed to achieve goals posed to them by high political officials. Yugoslav technomanagers were independent and free to make a wide range of decisions. On the other hand, they were not like technocrats in the West, because they still operated within the socialist society, and were embedded in Yugoslav socialist ideology. This ideological connotation would ultimately be used against them in the 1970s, when they were accused of being enemies of self-management and socialism.

The managers in Yugoslavia before 1951 were more attuned to the Soviet model, even though Tito and the top of the CPY had issues with them as well. The class with old-fashioned

[89] Serbo-Croatian: технменаџер/ tehnomenadžer.
[90] Branko Horvat, *Ogled o jugoslovenskom društvu* [Essay on Yugoslav society] (Mladost, 1969).
[91] Thomas H. Rigby, "The Soviet political executive, 1917–1986," in *Political leadership in the Soviet Union* ed. Archie Brown (Bloomington, 1989), 4-53.

managers is maybe best reflected in the directors of three nuclear institutes, and their early disputes with the federal government. Their style of management was deemed "too benighted".[92] The incident with the reactor in the Vinča nuclear institute created the possibility for the federal government to replace them.[93] Unlike old managers, the technomanagers that emerged in the 1950s were the young communists that were part of the revolution and were educated in "the spirit of socialism and Marxist values."[94] In reality, the new style of socialism demanded the new style of managers, and old communist managers were too rigid.

The newly acquired freedom that came with decentralization opened up new possibilities and an area for expressing creativity. While many of the technomanagers did use the shortcomings of the new system to establish their own little private enterprises, many of them were extremely capable and oriented towards the development and modernization of Yugoslav society. It is also important to note that not all engineers and other experts were technomanagers, and not all enterprise managers were experts or engineers. In the Yugoslav context, they also should not be separated into categories of engineers and scientists being technocrats and directors and managers of enterprises being technocrats. This separation is simplified and untrue, as many of them blurred those divisions in their engagement during the 1960s and 1970s. In this thesis I am following the classification of so-called "new professionals," a category created for the purposes of statistical data by the Ligue of Communists of Yugoslavia in 1964. In the official survey, these new professionals were "managers," "technical specialists" (mostly engineers), and representatives of cultural



[92] Dragomir Bondžić, "Prosveta i nauka u Srbiji i Jugoslaviji 1945-1990."[Education and science in Serbia and Yugoslavia 1945-1990]. *Istorija 20. veka* 2 (2008): 419-466.

[93]The Vinča nuclear incident occurred on October 15, 1958, at the Vinča Institute of Nuclear Sciences in the Yugoslav capital Belgrade. During the experiment, six students were exposed to high levels of radiation, resulting in severe injuries that demanded bone marrow transplants. In light of this incident, the Yugoslav government replaced not only the director of Vinča Institute, Pavle Savić, but also the directors of nuclear institutes in Zagreb and Ljubljana with younger, politically more suitable engineers.

[94] Rade Pantić, "Od kulture u ‚socijalizmu'ka socijalističkoj kulturi," [From culture in 'socialism' to socialist culture] in *Gradove smo vam podigli: O protivrečnostima jugoslovenskog socijalizma* [We built cities for you: On the contradictions of Yugoslav socialism] ed. Vida Knežević i Marko Miletić (Belgrade, 2018), 185-203.

intelligentsia.[95] Although most technocrats in Yugoslavia were members of the communist party, this was not the most important prerequisite for a leadership position. Most of the technomanagers were already raised as communists, being members of the youth sections, and in some cases, after they would acquire managerial positions, it was expected of them to become active members of the party. The most important prerequisite was expertise in their respective fields.

The engineers and managers that I am following in this thesis often merged these distinctions and were engaged in several professions. What makes them distinct is the high level of autonomy in decision-making, especially in the international arena. In the domestic sphere, technomanagers had the liberty to decide the priorities inside the bodies they were governing. The managers of the enterprises had the autonomy to decide in which direction certain enterprises would develop. This is especially important because they had the most say over what projects would be financed and which would not. In the international sphere, they had autonomy to negotiate things in their respective fields of expertise, as was the case with many enterprises, like, for example, the automobile company *Zastava,* led by engineer Prvoslav Raković.[96]

High political officials relied on professional knowledge and expertise of tehcnomanagers and did not interfere with their work regarding the projects that were realized during the 1950s and 1960s. This is perhaps best reflected in the example of Stjepan Han, a main actor in the Yougelexport case study. Beside his engagement in Yougelexport projects, Han was a founder and director of the Federal Institute for Labor Productivity in 1953 and was a professor at universities in Subotica and Novi Sad, where he taught statistics, information technology, and demography. Additionally, he was often consulted in matters of infrastructural

[95] Josip Županov, "Da li se rukovođenje preduzećem profesionalizira?," [Is Enterprise Management Becoming Professionalized?] *Moderna Organizacija* [Modern Organization] no.10 (1968): 803-823.
[96] "General automobliske industrije," [General of the automobile industry] *Borba* 33/135, 18.05.1968: 12.

and demographic projects and delegated to represent Yugoslavia in international bodies. In this sense, the institutes and bodies under his management always prioritized the training and specialization of Yugoslav technical and business experts in the institutes and universities abroad.

The situation will drastically change at the end of the 1960s and beginning of the 1970s. The transformation from the introduction of self-management towards market socialism was setting a new dynamic of economic and political trends. There are different opinions on why exactly the government interfered in the process of development and dealt with the technocracy. However, with the success of market socialism, Yugoslavia was nearing a transformation into social democracy.[97] The two decades between the Tito-Stalin split and the 1974 Constitution produced the new class of people reflected in technomanagers. In such an environment, educated youth were inclined toward liberal ideologies, which produced a new political strata that was significantly different from politicians from the early 1950s.[98] With further decentralization and more foreign investment engagement, the federal government was starting to lose a grip on the direction in which Yugoslavia was going. There was no doubt that Yugoslavia at the beginning of the 1970s was at a crossroads, and the federal government had two possibilities to react to changes: for the Communist Party to reform and catch up with the Yugoslav economy that has caught up with the world, or to rein in the economy and bring it back to a level where it can control it. The latter happened.

In the political sphere, this turn in Yugoslav domestic politics was characterized by hostilities towards the liberal elements, resulting in political repressions and forcible replacements. Following Tito's letter in 1972, "the government was going into the final



[97] Michał Zacharias, "Decentralization Tendencies in the Political System of Yugoslavia in the 1960s," *Acta Poloniae Historica* 84 (2001): 137-166.
[98] Lenard Cohen, "Partisans, Professionals, and Proletarians: Elite Change in Yugoslavia, 1952-1978," *Canadian Slavonic Papers* 21:4 (1979): 446-478.

settlement with liberalism in Yugoslavia."[99] The new enemies that were targets of the secret service were not a homogenous group; however, the majority of those targeted were the managers of the big, successful enterprises and members of the intelligentsia that were heads of institutes.[100] Edvard Kardelj pointed out the new type of enemy of Yugoslav self-management and socialism: technomanagers, and the majority of them were in Serbia, Croatia, and Slovenia.[101] This is also the first time the term "technomanager" appeared in Yugoslav public discourse and was meant to have negative connotations. According to the official reports of the secret service, techomanagers were seen as enemies of the state and socialism because they were using their privileged positions to enlarge personal wealth.[102] There probably was some truth to these claims, but without inspection of official documents of the secret service, we can only speculate on the actual scale of economic crime.

In the whirlwind of the "hunt for the foreign enemy" or "red bourgeoisie," as the media was portraying them, many capable technomanagers were forcibly replaced.[103] One of the prominent examples of the media hunt against technomanagers was against the director of the electronic and computer equipment enterprise *EI Niš*, Vladmir Jasić. After a short media campaign and the protests of the workers, Jasić was pressured to resign.[104] The 1974 Constitution abolished all forms of privatization of social assets, and with this the possibilities of foreign investments in Yugoslav enterprises. The Constitution also emphasized that "all



[99] Nebojša Popov, *Društveni sukobi – izazov sociologiji* [Social conflicts - a challenge to sociology] (Belgrade: Službeni glasnik, 2008), 210-212.
[100] Srđan Cvetković, "Delovanje unutrašnjeg neprijatelja u Srbiji 1968-1975," [The actions of the internal enemy in Serbia 1968-1975] *Istorija 20. veka* 2 [History of 20th Century] (2019): 239-256.
[101] This is when the term "technomanager" in Yugoslav context got a negative connotation.
[102] Archive of Yugoslavia (in further reference AY), 837, II-5/202. Ocena delovanja unutrašnjeg neprijatelja i stranih obaveštajnih službi [Evaluation of the actions of the internal enemy and foreign intelligence services], 10.01.1972, 1-5.
[103] "Tehnomenadžerstvo ne može proći," [Technomanagers are not acceptable] *Borba* 50/330, 28.11.1972: 26-27; "Kako se stvarala tehnobirokratsa sprega," [How the techno-bureaucratic coupling was created] *Borba* 52/349, 19.12.1973: 10; "Operativna rešenja daljeg razvoja našeg sistema," [Operational solutions for the further development of our system] *Borba* 55/136, 21.05.1976: 6.
[104] "Radnici primaju zarade-rukovodioci podnose ostavke," [Workers receive salaries - managers resign] *Borba* 51/307, 6.11.1972: 5; "Podrška organima za utvrđivanje odgovornosti," [Support to authorities for determining responsibility] *Borba* 52/358, 28.12.1973: 11.

forms of technocratic usurpations of assets or monopolization of decision-making by technomanagers are considered unlawful and contrary to the constitution."[105] The avalanche of technomanagers replacing technomanagers swept away nearly 1500 successful directors and managers of various Yugoslav companies and institutes. The climax of this mindless reckoning with progress and development was the incident at *INSI* Zemun in Serbia, where a clock assembly robot was thrown through the window and smashed ceremonially in front of the building.[106]

The infrastructure projects under analysis in this thesis also echoed this shift. The Iron Gate project profoundly reflects the government's involvement. The engineer managers, who were in some way in the center of media attention in a positive light in the late 1960s, quickly disappeared from the public eye, and everything related to the Iron Gates project was directly decided by the highest political strata. The reconning of the federal government with the technoamangers was decisive, and they disappeared from the public discourse. After Tito's death, there was an emergence of a new type of technomanagers, who, unlike their counterparts from the 1960s and 1970s, were oriented towards the national interests of their republics. During the 1980s, the party technocrats in Yugoslavia completely relied on the "liberal" reform strategy; now, these reforms are explicitly market-oriented and openly directed against the interests of all working classes. In the case study of BALKEL, the Balkan project, they appear as negotiators briefly, and already there it is noticeable that by "Yugoslavia" they mean "Serbia" because the animosities between republics were already apparent, and the conflict was brewing on the horizon.



[105] Dimitrije Kulić, "Promene u ustavnom sistemu Jugoslavije od Ustava SFRJ 1963. do Ustava SFRJ 1974.," [Changes in the Constitutional System of Yugoslavia from the Constitution of the SFRY of 1963 to the Constitution of the SFRY of 1974*] Zbornik Pravnog fakulteta u Nišu* [Collection Papers Fac. L. Nis] 17 (1977): 73-94.

[106] Milutin Mitrović, Samoupravljanje: Budućnost jedne utopije [Self-Government: The Future of a Utopia], Peščanik, accessed October 26, 2023, https://pescanik.net/samoupravljanje-buducnosti-jedne-utopije/.

## Conclusion

This brief overview of the development, changes, and peculiarities of Yugoslav socialism was needed to better clarify the case studies in this thesis. In choosing my case studies, I deliberately chose each that reflects the specificities of different periods of socialism in Yugoslavia and different approaches to the usage of electric infrastructure in achieving political ambitions.

The ideological motivations deeply affected all areas of Yugoslav life, including infrastructure. The technocracy that emerged in Yugoslavia significantly differed from the technocracies of the West or those in the Soviet Union. Again, the Yugoslav case is somewhere in between. Yugoslav technocrats were not rigid Soviet managers under the direct orders of the central political bodies because they had a high level of autonomy and were able to decide the courses of development of their respective enterprises or institutes. However, they still existed in socialist frameworks, unlike their western counterparts. Each period of Yugoslav socialism had different actors and system builders; however, after 1951 and the introduction of self-management, the emergence of so-called technomanagers puts them in the middle of the narrative. Their engagements varied, from very independent decision-making in Yougelexport and SUDEL projects to their demise near completion of the Iron Gates project.

This thesis aims to reexamine the technomanagers from a fresh perspective. Existing historiography has consistently linked the technomanagers to the downfall of Yugoslav liberal politicians, yet little attention has been given to their unique contributions to infrastructure development during the 1950s and 1960s. By focusing on their pivotal roles, this study seeks to highlight the significance of technomanagers in shaping Yugoslavia's infrastructural landscape during this transformative period.

# Chapter 2: Electric Dreams: Yugoslav Infrastructure Development and Balkan Ambitions

After 1945, Yugoslavia emerged as a socialist federation under the leadership of the Communist Party and Josip Broz Tito. The new Yugoslavia was a federation comprised of six republics: Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia, and Slovenia, and two autonomous provinces within Serbia: Vojvodina and Kosovo. In the aftermath of the Second World War, Yugoslavia aligned itself closely with the Soviet Union and adopted many elements of Soviet-style governance and ideology. In 1945, the Communist Party of Yugoslavia emerged victorious, consolidated power, and suppressed political dissidents. In accordance with its alignment with the Soviet Union, the Communist Party of Yugoslavia implemented centralized economic planning and the collectivization of private property. The Yugoslav government nationalized key industries, transport, and financial institutions, aiming to rapidly transform Yugoslavia into a socialist state.

In the first part of the chapter, I will briefly address the situation regarding the electrification efforts in Yugoslavia from 1918 until 1945, especially focusing on the inequalities between the regions that would become federal republics in 1945 and the beginnings of tensions between the center and periphery regarding the critical infrastructural projects. Next, the chapter will focus on the challenges in the implementation of central planning in Yugoslavia and how they reflect on the development of electric infrastructure.

The main argument in this chapter will be centered on how the electrical infrastructure was used as a political tool in Yugoslav postwar ambitions in the Balkans. Although Yugoslavia was one of the most faithful supporters of the Soviet Union, the fact that Yugoslav leader Josip Broz Tito came out of the Second World War as an independent fighter and that the Yugoslav revolution was autochthonous became a stumbling block in Soviet-Yugoslav relations. Due to

Tito's desire for greater autonomy in pursuing Yugoslavia's path to socialism, tensions began to surface regardless of initial alignment. Tito had bigger aspirations, emerging after the war on the winning side and setting his eyes on Trieste, Carinthia, and Albania. However, due to pressure from the Soviet Union, Western Europe, and the United States, Tito ultimately abandoned pretensions over all territories except Albania. Yugoslav influence in Albania was similar to Soviet influence in Yugoslavia and other Soviet bloc countries, and it was clear that Tito had intentions of positioning himself as "a strongman of the Balkans."

My claim in this chapter is that Yugoslavia deliberately used the electric infrastructure to pursue its political ambitions of enlarging its territory. It is not unknown that Tito had a drive to pursue greater autonomy. However, I argue that Tito's never had a plan of first recovery and development and then expansion, but rather that he pursued a particular developmental scheme that presupposed grander territorial ambitions from the beginning. And this attitude was very much reflected in his use of critical infrastructure, especially electrical infrastructure, to impose his political ambitions. Tito's vision of autonomy was never simply a reaction to Soviet politics and pressures, it grew out of specific convictions about how the Soviets had achieved their economic autarky. I argue that these convictions understood autarky as only achievable at certain scales, which Yugoslavia had not yet attained.

In this chapter, I will demonstrate in which ways Yugoslavia used electric infrastructure to pursue territorial ambitions in Trieste, Carinthia, and most importantly, Albania. While the ambitions for Trieste and Carinthia were quickly cut, Tito's aspirations towards Albania were not, and I argue that Tito needed Albanian hinterland to achieve autarky. That is why the Albanian case will be more detailed, as it reflects deeper aspirations of establishing the ultimate Yugoslav dominance in the Balkans. The aspirations towards Albania were entangled with the greater pursuit of the Balkan federation, where Tito would have a leading role, and dominance over critical infrastructure, including the electricity infrastructure, had one of the main roles in

achieving these goals. These aspirations ultimately led to the rift between the Soviet Union and Yugoslavia.

Since Yugoslav politics between 1945 and 1948 leaned towards a centralized model, the main actors in this chapter will be high political officials. This does not mean that engineers will not have the spotlight. Although their role mostly depended on the decisions of higher officials, that does not mean they did not have some type of agency. However, this agency was starkly different from the type of agency and involvement in decision-making that engineers had after 1951 in Yugoslavia.

Finally, the chapter will outline the events leading to Yugoslavia's resistance to Moscow's demands for tighter control and integration into the Soviet bloc, favoring a more independent form of socialism. These ideological and strategic differences culminated in the Tito-Stalin split in 1948, a decisive break that led to Yugoslavia's expulsion from the Cominform. The split marked a significant turning point in Yugoslavia's governmental framework, as Tito distanced the country from Soviet influence and sought to develop a unique socialist model.

**Yugoslavia's Electrification: Foundations Before 1945**



The story of Yugoslavia before 1945 must be separated into two parts: the history of the electrification efforts of Croatia, Slovenia, Serbia, Bosnia and Herzegovina, Montenegro, and Macedonia before 1918, and the history of the Kingdom of Yugoslavia. On December 1, 1918, the newly formed Kingdom of Serbs, Croats, and Slovenes (Kingdom of Yugoslavia from 1929) included the former Austro-Hungarian provinces of Croatia, Dalmatia (without Istria), Slovenia, Slavonia, Bosnia and Herzegovina, the Kingdom of Serbia, and the Kingdom of

Montenegro. Because of this, each part of Yugoslavia had a different dynamic of electric infrastructure development.

When the initial enthusiasm for unification subsided, it turned out that the newly formed Kingdom had many problems, among them the unequal development of infrastructure in different parts of the country. Electrification was a new form of infrastructure at the beginning of the twentieth century, and the Kingdom of Yugoslavia at the time had a sizable foundation to expand the electric network. However, this failed to come true, mostly due to the inability of King Alexander and the government to abandon their conservative role in protecting the small properties of the impoverished peasantry for the sake of social peace.[107] Because of this decision to help the agrarian sector, the development of industry and thus electric (and other critical) infrastructure suffered, and the Kingdom of Yugoslavia quickly fell behind the rest of Europe.[108]

Beside the conservative stance of the government on critical investments, it was clear that electrification took place without a general plan in the Kingdom of Yugoslavia. In the first place, there was unequal development and coverage of existing power plants prior to 1918. In contrast to, for example, the Third French Republic, where the unification of different parts of the country was overcome by providing equal access to infrastructure to all citizens in whatever part of the country they were in, this was not the case in Yugoslavia.[109] The parts of Yugoslavia that already had sizable electric infrastructure and, by extension, significant industrial activity, continued to develop, such as Croatia, Slovenia, and central Serbia, whereas the parts of the country that were mostly agrarian and without any critical infrastructure, including the



[107] Nikola Gaćeša, "Agrarne reforme i kolonizacija u Jugoslaviji," [Agrarian reforms and colonization in Yugoslavia] in *Jugoslovenska država 1918-1998. Zbornik radova sa naučnog skupa* [The Yugoslav state 1918-1998. Proceedings of the scientific meeting] ed. Vlado Strugar (Beograd, 1999), 313-326.
[108] Smiljana Đurović, "O uzrocima zaostajanja Jugoslavije u ekonomskom razvoju početkom 20. veka," [Yugoslavia's Slow Economic Developmnt in the Early 20th Century], *Istorija 20. veka* 1-2 (1991): 170-179.
[109] Eugen Joseph Weber, *Peasants into Frenchmen: The Modernization of Rural France, 1870-1914* (Stanford University Press, 1976).

electrical networks, remained neglected, mostly Macedonia, Bosnia and Herzegovina, and Montenegro.

Due to the lack of a clear government plan and involvement, most electric power plants were built by private entrepreneurs. The lack of a branched electrical network necessitated the construction of small and medium-sized power plants that were built mainly for local needs.[110] The pattern of small and medium-sized power plants intended for local usage was common in Europe at the time and was different from the large-scale choices made by the Soviets in the 1920s.[111] Several engineers in the Ministry of Construction pushed the idea that the war reparations should be used for electrification and presented the draft of the plan in 1925, but it was never discussed, much less considered by the Council of Ministers.[112] Only in 1929, when the royal dictatorship was introduced, did centralized efforts to equalize electrification in all parts of the country have some effect. Thus, in 1929, the Association of Electric Companies (AEC) was formed with the idea of coordinating electrification endeavors on the state level and negotiations for the potential integration of the unified electric system.[113] By the end of the 1930s, only Croatia and Slovenia had modest electro-energy systems,[114] and the engineers in AEC strived to make the electrification plan and correct the inequality of electric network development. The first tangible plan for electrification of the Kingdom of Yugoslavia was presented by Živojin Perić, assistant Minister of Transport, in 1937.[115] However, all efforts to put the plan of electrification for a vote in front of the National Assembly into action did not



[110] Milaković, "Električne centrale u Srbiji 1882-2006", 53-55.
[111] Coopersmith, *The electrification of Russia,* 151-152.
[112] Dragutin Katušić, "Razvoj opšte elektrifikacije zemlje u Jugoslaviji," [Development of general electrification of Yugoslavia] *SEP: Časopis električnih preduzeća Kraljevine Jugoslavije* 3 (1938): 9.
[113] Momčilo Petrović, "Naš program," [Our Program] SEP: *Časopis električnih preduzeća Kraljevine Jugoslavije* 1/1 (1936): 1.
[114] Žarko Srdić, "Elektroenergetski sistem u Jugoslaviji" [Electro power system in Yugoslavia] in *Elektroprivreda Jugoslavije* [Electric Power Utility of Yugoslavia] ed. Zdravko Milanović (Beograd, 1962), 37-38.
[115] "Izveštaj o VII Glavnoj skupštini Saveza električnih preduzeća," [Report on the VII General Assembly of the Union of Electric Companies] *SEP*: *Časopis električnih preduzeća Kraljevine Jugoslavije* 2/3 (1937): 38.

come to fruition. The king and government showed a lack of interest in making a uniform law for further electrification, and the main carriers of electrification were the engineers and private enthusiasts. The lack of a uniform or clear technical plan and electrical legislation slowed down the development and created chaos, in which the possibility of integrating the electrical system proved to be nearly impossible.[116]


*Figure 2. State electrification project by engineer Živojin Perić 1937 (Source: Archive of Yugoslavia)*

The main problem, beside the lack of central management of electrification networks, was the fact that most of the power plants were in private possession. Building the power plants proved to be an expensive venture that many cities in the Kingdom of Yugoslavia could not afford, as there was no specific budget allotted for building the electrical infrastructure. Because of this, many cities resorted to concessions. This opened the doors for foreign investors

[116] Darko Markovina, *Naša elektrifikacija i njeni problemi,* [Our electrification efforts and its problems] (Beograd, 1938),107-111.

to take advantage of the lack of centralized development and investments in Yugoslavia to exploit abundant natural resources and establish monopolies. Finally, most of the existing power plants in the Kingdom of Yugoslavia were thermal or diesel-powered. There were hydroelectric power plants, but in a much lesser number because the construction of the hydroelectric power plants was much more costly and required skilled workers and experts.[117] The lack of legislation on electrification was evident in the fact that the Ordinance on the Construction and Exploitation of Electrical Installations in the Kingdom of Serbia from 1902 was still in use in the Kingdom of Yugoslavia.[118] It was not until 1926 that the Ministry of Construction published the Regulation for the Uniform Rules for Electrical Installations.[119] This regulation booklet was confusing and far from uniform and reflected incoherent development, which was not that different from anywhere else, as the installation practices were diverse and not entirely compatible.[120]

By 1940, before Yugoslavia entered the Second World War, the number of power plants (steam, gas, diesel, hydroelectric, and thermal) was 1279, which produced 1089.8 kWh of electric energy.[121] According to the statistical reports, the highest production was in Croatia (35.7%), followed by Slovenia (29.8%) and Serbia (23.4%). The rest of the country had a significantly smaller production output with Bosnia and Herzegovina (10.3%), and even lower output in Macedonia (0.7%) and Montenegro (0.1%).[122] Most of these power plants were in private ownership and were, in most cases, unprofitable. The power plants with the highest output were usually in the service of foreign investment enterprises. For example, the



[117] Ranka Gašić, "Strani kapital u elektrifikaciji Beograda," 11-32.
[118] Miloš A. Kremić, "Elektrifikacija Srbije do Drugog svetskog rata," [Electrification of Serbia before the Second World War] in *Vek Elektrike 1893-1993* [Century of Electrification 1893-1993] ed. Radmilo Ivanković (Belgrade, 1993), 19-67.
[119] Stevan Kukoleča, *Analiza privrede Jugoslavije pred Drugi svetski rat* [Analysis of Yugoslav industry before the Second World War] (Beograd, 1956), 2-11.
[120] Hughes, *Networks of Power*, 127.
[121] *Statistički godišnjak Kraljevine Jugoslavije 1940* [Statistical Yearbook of the Kingdom of Yugoslavia 1940] (Beograd: Državna štamparija,1941), 191.
[122] *Statistički godišnjak FNRJ 1954* [Statistical Yearbook of the FPRY 1954]. (Beograd: Savezni zavod za statistiku i evideniciju, 1954), 317-318.

monopoly on electrification in Dubrovnik was in the hands of the Austrian *Gesellschaft für elektrische Industrie* (ELIN).[123] Moreover, the transmission electricity network was practically nonexistent, and the power plants that did provide electricity to both public buildings and households had a limited number of users. In this sense, it is important to emphasize that early electrification was usually for the use of industrial enterprises, public buildings, and public lighting, and that the use of electricity in private households at the beginning of the twentieth century was not a common thing. The world economic crisis did not circumvent the Kingdom of Yugoslavia. As a result, an already fragile and developing industry suffered. The electric sector and its infrastructure faced significant setbacks. The economic crisis led to the introduction of an additional tax on electricity consumers in 1932, further hampering the already slow process of electrification.[124]

Although the development of the electrical network was a failed project during the time of the Kingdom of Yugoslavia, the overall electrification was far from unsuccessful. Therefore, the claims that communist propaganda pushed after 1945 that there were no electrification efforts or plans during the monarchy were far from the truth. Nevertheless, the infrastructural integration of Yugoslavia proved to be a failure, and it left the southern parts of the Kingdom without critical infrastructure, including poor electrification infrastructure. This tendency toward peripheralizing the southern parts of Yugoslavia continued after 1945 and deepened the tensions between the republics.



[123] Marija Benić Penava, "Proizvodnja električne energije i prehrambena proizvodnja na dubrovačkom području do Drugog svejtskog rata," [Electricity production and food production in the Dubrovnik area until the Second World War] *Anali Dubrovnik* 52/2 (2014): 549-564.
[124] "Razne vesti" [Current News]. *SEP: Časopis Saveza električnih preduzeća Kraljevine Jugoslavije* 2/4 (1937): 38-39.

**Building the New Yugoslavia: Pathways to Reconstruction and Renewal**

The development of the electric industry and the rebuilding of the electric network in Yugoslavia after the Second World War were conditioned by economic policy and the circumstances in which the country found itself in 1945. Yugoslavia reemerged after the Second World War as a country with a radical change of government and new socio-economic relations. The infrastructure in Yugoslavia was utterly devastated after the war, and the new regime had to act quickly to salvage what could be saved and establish a plan for the new development of the economy and industry.[125]

In the immediate aftermath of the war, Yugoslavia, under Tito's leadership, aligned closely with the Soviet Union, adopting a socialist government model and benefiting from Soviet military and political support. This change in government model did not influence the international position of Yugoslavia; in 1944, aside from the Soviet Union, Tito had support from other allied countries. At the same time, with the political change, there was a reorganization of the Yugoslav economy, with the application of land collectivization and centralized economic planning. Confiscations and sequestrations of private property based on the decisions of the Anti-Fascist Council for the National Liberation of Yugoslavia (AVNOJ) began during the war, and after the liberation in 1945, the Yugoslav government continued the trend of expropriations. By the time the Law on Nationalization was adopted in 1946, it only acknowledged and codified the process that was already finished.[126] Interestingly, the collectivization of private property in Yugoslavia was done much faster than in the Soviet



[125] "Industrijalizacija i elektrifikacija naše zemlje – veliki borbeni zadatak radničke klase u Jugoslaviji" [Industrialization and electrification of our country - a great task of the working class in Yugoslavia]. *Borba* 11/275, 17.11.1946: 2.
[126] "Zakon o nacionalizaciji privatnih privrednih preduzeća," [Law on Nationalization] *Službeni list FNRJ* 98 (Beograd, 1946).

Union, underscoring Yugoslavia's eagerness to prove itself as one of the most devoted followers of the Soviet Union.[127]

In April 1945, a Yugoslav delegation led by Tito traveled to Moscow to sign the Treaty of Friendship and Mutual Assistance. This treaty was pivotal, accentuating the mutual commitment to support each other against potential external threats and solidifying the military alliance between the two nations. Additionally, this treaty included provisions for economic cooperation, which was crucial for Yugoslavia's post-war reconstruction efforts.[128] The new foreign policy of Yugoslavia was being built on the assumption that only the Soviet Union would be a certain partner in the protection of Yugoslav interests in the international arena. Most importantly, the Soviet Union agreed to provide financial aid and technical support to help rebuild the war-torn Yugoslavia, emphasizing their solidarity and shared socialist ideals.[129] The following year, in 1946, Yugoslavia established an interest in signing economic agreements with the Soviet Union. Since Yugoslavia placed strong emphasis on rebuilding the economy and industry, the pursuit of this demanded more trade and industrial cooperation agreements. In April 1947, a Yugoslav delegation led by Edvard Kardelj[130] traveled to Moscow to sign the first economic agreement between Yugoslavia and the Soviet Union.[131] According to this agreement, Yugoslavia would export raw materials and agricultural products while importing machinery, industrial equipment, and consumer goods from the Soviet Union. The goal of this



[127] Vilim Ribić, "Koncepcija prvobitne socijalističke akumulacije u Jugoslaviji – razdoblje četrdesetih i pedesetih godina 1945-1954," [Conception of the original socialist accumulation in Yugoslavia - the period of the forties and fifties 1945-1954] *Časopis za suvremenu povjest* 21 1/3 (1989): 105-127.
[128] Ljubodrag Dimić ed., *Jugoslovensko-sovjetski odnosi 1945-1956: Zbornik dokumenata* [Yugoslav-Soviet relations 1945-1956: Collection of documents] (Beograd, 2010).
[129] Đoko Tripković, "Spoljni faktori i politička kretanja u Jugoslaviji (1945-1955)," [External factors and political developments in Yugoslavia (1945-1955)] *Istorija 20. veka* 2 (1995): 77-90.
[130] Edvard Kardelj (1910-1979) was a Yugoslav politician. He was a prominent member of the Communist Party of Yugoslavia and played significant role during the Second World War. After the war he became one of the key architects of Yugoslav socialism, and during his career served as President of the Federal Assembly of Yugoslavia, Minister of Foreign Affairs of Yugoslavia, and Deputy Prime Minister of Yugoslavia.
[131] Diplomatic Archive of the Ministry of the Foreign Affairs of Republic of Serbia, Politica Archive (further on MSPRS, PA), Sovjetski Savez, 1947, 107. Sporazum SSSR i Jugoslavije o isporuci industrijskih postrojenja i uređaja Jugoslaviji [Agreement between the USSR and Yugoslavia on the delivery of industrial machinery and equipment to Yugoslavia], 25.07.1947, 27403.

exchange was to help Yugoslavia modernize its industry and infrastructure, aligning it with broader economic goals. The problem was that Yugoslavia lacked experts to assemble and operate the industrial machinery and equipment, and because of this, there was an additional agreement that outlined specific areas where Soviet technical expertise and equipment would be provided. This included help in the construction of factories, the development of mining operations, and the establishment and coordination of energy projects. The Soviet Union's role was to provide not only the necessary equipment but also the technical knowledge required for the large-scale projects.[132]

Be that as it may, these agreements, while outwardly promising, also revealed underlying tensions. The Soviet Union's insistence on detailed economic plans and close monitoring of their implementation often clashed with Yugoslavia's desire for greater autonomy. Tito's government increasingly felt that the agreements were instruments of Soviet control rather than equal partnerships, setting the stage for the ideological and political rift that would later lead to the Yugoslav-Soviet split.[133]

**Blueprint for Recovery: First Five Year Plan**

The rebuilding of the devastated economy and infrastructure of Yugoslavia was dictated by the immediate circumstances of the afterwar necessities, meaning to concentrate on repairing and repurposing what was left after the fights. Yugoslavia was one of the most ravaged countries in Europe after the war. To make things worse, the economy and infrastructure before the war were not at a significant level. In such circumstances, the new Yugoslav government did what



[132] DA MSPRS, PA, Sovjetski Savez, 1947, 107. Sporazum o pružanju tehničke pomoći [Agreement on the provision of technical assistance], 25.04.1947, 27403.
[133] Vojin Majstorović, "The Rise and Fall of Yugoslav-Soviet Alliance, 1945-1948," *Past Imperfect* 16 (2010): 132-164.

was possible: locate objects that were still usable and rebuild them. Although Yugoslav communists struggled to implement any kind of planned action, the process of collectivization was finished quickly, and already in 1945, the state owned most of the property.[134] In January 1945, the Politburo of the CPY drew up the first plan to establish the Federal Planning Commission, envisioned in accordance with the model of the Soviet Gosplan. The most important task of the Federal Planning Commission was to establish the actual state of the afterwar infrastructure, send experts to the most important places to start rebuilding, and prepare a solid foundation for the introduction of the state planning economy.[135]

In many ways, the Yugoslav Communist Party was still consolidating its power and was not capable of making centralized decisions. In this period (1945-1946), the main carriers of economic and infrastructural renewal were People's Committees at the level of cities and counties.[136] The Communist propaganda machine also made sure that the vigor for rebuilding the country would be at the highest levels, and people were more than willing to volunteer for big rebuilding projects.[137] In 1945, the government separated the enterprises and factories into those that were under the direct management of the state and those that were entrusted to the appointed administrators with the task of assessing the damages and the costs of rebuilding and repairing. These appointed managers were, in most cases, engineers, who continued the work on rebuilding the infrastructure according to their expertise.[138] The first managers did not have much agency in decision-making and blindly followed the directions from the central government. Despite the fact that there was a discernible lack of experts, the Communist Party



[134] AY, 41, 5-5, Studija za privrednu obnovu zemlje za 1945 [Study for the economic reconstruction of the country for 1945], 1-7.
[135] AY, 41, 1-1. Predlog nacrta Planske komisije [Draft proposal of the establishment of Planning Commission], 23.01.1945, 1-3.
[136] AY, 17, 147/148/149. Obnova privrednih preduzeća po republikama [Renewal of factories and enterprises by republics], 3-5.
[137] Ljubodrag Dimić, *Agitprop kultura: agitpropovska faza kulturne politike u Srbiji: 1945-1952* [Agitprop culture: the agitprop phase of cultural policy in Serbia: 1945-1952] (Beograd, 1988), 75.
[138] AY, 41, 9. Referat Bojana Kuglera, seketara Savezne planske komisije [Report by Bojan Kugler, secretary of the Federal Planning Commission], 26.01.1946, 2-3.

insisted that the managers could only be "politically suitable" individuals, and the distrust of the experts that were prominent in the "old regime" in many ways stalled the efforts.[139] Moreover, the Planning Commission failed to operate in unison and devised separate plans for each infrastructural project. This only brought more chaos to an already intricate bureaucracy. As a result, the Federal Planning Commission's primary tasks remained unachieved, and at the beginning of 1946, the Yugoslav economy was still ill-prepared for the introduction of state planning. Tito blamed this on the lack of clearly defined economic policy and the needless entanglements of bureaucratic couplings.[140] Andrija Hebrang,[141] Minister of Industry, characterized the reconstruction methods as insufficiently organized.[142] Although the foundation for the introduction of centralized planning was not yet achieved, the recovery of the industry could not wait. By early 1946, the course of Yugoslav economic policy was even more solidified into the Soviet model with the introduction of the new Constitution of the Federal People's Republic of Yugoslavia. This constitution was almost an exact copy of the Soviet 1936 Constitution, with the difference that the Communist Party of Yugoslavia was not equated with the concept of the state as it was in the Soviet one. In practice, however, the methods were a direct copy of the Soviet methods, with the Communist Party being the central governing body of the Yugoslav state.[143]

Despite the initial setbacks, in 1946, the Federal Planning Committee passed a one-year plan to test the possibilities of recovering the economy for more feasible implementation of



[139] AY, 41, 9. Referat Bojana Kuglera, 4.
[140] Branko Petranović ed., *Izvori za istoriju Jugoslavije: Zapisnici sa sednica Politbiroa Centralnog komiteta KPJ: jun 1945-7. jula 1948* [Sources for the history of Yugoslavia: Minutes of the sessions of the Politburo of the Central Committee of the KPJ: June 1945-7. July 1948] (Belgrade: Arhiv Jugoslavije, 1995), 139-141.
[141] Andrija Hebrang (1899–1949) was a Yugoslav communist revolutionary and politician. After the Second World War, he became a prominent figure in Yugoslav politics and held several governmental positions until 1949. In 1949, he was accused of being a Soviet spy and arrested.
[142] AY, 837, 3-3/1. Predlog predsednika Savezne planske komisije Andrije Hebranga o izradi programa i plana privrede [Proposal of the President of the Federal Planning Commission, Andrija Hebrang, on the preparation of the economic program and plan], 21.03.1946, 1-3.
[143] "Ustav Federativne Narodne Republike Jugoslavije," [Constitution of the Federal People's Republic of Yugoslavia] *Službeni list FNRJ*, 10/46 (Beograd, 1946).

central planning.[144] This plan laid the foundation for the establishment of the structures that will implement the first Five-Year Plan. Yugoslav planners strived and hoped that the Five-Year Plan would be the fastest way to develop the economy, coupled with continuing industrialization and electrification.[145] Finally, the adaptation of the first Five-Year Plan ended the disagreements about the course of the Yugoslav industry. The decision was made that the main efforts should be focused on the expansion of the heavy industry.[146] The proponents of the light industry had to step back because investments in the metal industry, electro industry, and chemical industry were prioritized. It goes without saying that all these plans were dependent on the fast rebuilding and development of the electric infrastructure.[147] In order to achieve this, the role of the engineers in organizing the administrative body was crucial for the fast and efficient planning of the rebuilding of the Yugoslav electric infrastructure. However, this proved quite a challenging task and significantly prolonged the concrete implementation of the plan for electrification.

**Navigating the Chaos: Administrative Bodies of the Yugoslav Electric Power Industry 1945-1948**

Rebuilding the existing energy capacity of Yugoslavia was one of the primary tasks entrusted to the newly formed Federal Planning Committee. The electric infrastructure was essential; without it, it would not be possible to pursue the development of heavy industry. Therefore, in 1945, the Yugoslav engineers were tasked with making a survey of all surviving electric power



[144] "Zakon o opštedržavnom privrednom planu i državnim organima za planiranje," [The Law on the Statewide Economic Plan and State Planning Authorities] *Službeni list FNRJ* 45 (Beograd, 1946).
[145] AY, 41, 138-141. Petogodišnji plan 1947-1951. Opšti zadaci [Five-year plan 1947-1951. Tasks], 15.04.1947, 1-2.
[146] Petranović, *Zapisnici sednica Politbiroa*, 198-200.
[147] AY, 41, 217-235. Plan za industrijalizaciju zemlje [Plan for industrialization of the country], 19.04.1947.

plants and transmissions in Yugoslavia and devising a plan for what should be repaired first. This was even more important because the Yugoslav government did not have a vast budget or a significant number of experts that could carry out such a task.[148] The beginnings of planned electrification were very confusing and chaotic, and there were a lot of obstacles before the Yugoslav engineers even started working on the first electrification plan.

Like other Yugoslav governing bodies, the administration of electric infrastructure had to go through reconstruction after the war. This was mostly because most of the power plants were previously in private ownership. It was only after the process of collectivization was done that engineers and managers could start devising the initial plan for rebuilding the electric infrastructure. In 1944, the problems related to the electric infrastructure were under the jurisdiction of the Department of Heavy Industry, which was part of the Committee for Industry and Trade. The questions concerning electrification were also handled by the Section for Electrification that was part of the Commission for the Economic Rebuilding of the Country.[149] Additionally, there was a section inside the Committee for Construction tasked with organizing the collection of available electro materials and statistical data related to the state of electric infrastructure.[150] Finally, some parts of the electrification efforts were under the jurisdiction of the State Administration of National Assets.[151] Not surprisingly, this many bodies without any internal coordination created unnecessary chaos. Such a state of administration clearly did not result in any productive or tentative plans for rebuilding the electric infrastructure. There was no communication between these bodies and no efforts to meet and exchange ideas, which signaled that a reorganization of administration was necessary. In efforts to avoid further



[148] Branko Petranović ed., *Zapisnici NKOJ-a i Privremene Vlade DFJ 1943-1945* [Minutes of the NKOJ and the Provisional Government of the DFJ 1943-1945] (Beograd, 1991), 420-425.
[149] AY, 11, 15-19. Organizacija električnih preduzeća [Organization of electric companies], 14.10.1945.
[150] AY, 11, 10-17. Sastanak inženjera i delegata povereništava po pitanju nalaženja rešenja za elektrifikaciju [Meeting of engineers and delegates of the commission regarding finding a solution for electrification], 18.01.1945.
[151] AY, 15, 4/76. Sekcija za elektrifikaciju Državne uprave narodnih dobara [Electrification Section of the State Administration of National Assets], 11.03.1945.

confusion, the experts working on various parts of the electrification efforts organized the meeting to discuss the possibilities of establishing some kind of central body that would coordinate the efforts at the state level.[152]

Relying on the conclusions of this meeting in February 1945, AVNOJ established a separate section inside the Committee for Industry and appointed engineer Ivo Bulić to preside over it.[153] However, this committee was short-lived, as already in early March 1945, the government formed the first ministries in socialist Yugoslavia. Hence, all the jurisdictions that the Committee for Industry had were transferred to the newly formed Ministry of Industry, and the electrification duties were assigned to the Section for Electrification.[154] The primary task of this section was to draft the first electrification plan, to study the possibilities of the development and expansion of an electric network, to draft projections on available energy sources needed for building new power plants, and to rebuild the existing electric infrastructure. Surprisingly, the section for the central planning of electric infrastructure was not part of the Section for Electrification but instead fell under the jurisdiction of the Ministry of Construction. Expectedly, this led to some conflicts between these two sections, and the Federal Planning Committee had to resolve this conundrum.[155] It was decided that the planning section should be transferred to the Section for Electrification, and the section was renamed the Department of Energy (still part of the Ministry of Industry).[156] After all that confusion, the Department of Energy started working on the first plan for electrification. The engineers working in this department faced very challenging tasks. However, before drafting the electrification plan, the



[152] AY, 11, 4-74. Sastanak inženjera i delegata povereništava po pitanju nalaženja rešenja za elektrifikaciju [Meeting of engineers and delegates of the commission regarding finding a solution for electrification], 18.01.1945, 1-5.
[153] "Osnivanje Povereništava" [Establishment of Commissions]. *Službeni list DFJ* 4/45 (Beograd, 1945), 39.
[154] AY, 11, 1/1. Odluka o organizaciji Ministarstva industrije [Decision on the organization of the Ministry of Industry]. 9.03.1945, 1-5.
[155] AY, 13, 2-16. Odsek za plansko iskorišćavanje energije [Department for planning of energy use], 17.03.1945.
[156] AY, 11, 1/1-4. Osnivanje odeljenja za energiju [Establishment of the Department of Energy], 1-8.

experts had to determine which power plants proved to be inefficient and uneconomical, organize the construction of the new facilities, and finally, organize the interlinking of the existing systems into a singular integrated Yugoslav system.[157]

The most crucial step in further developing the plans for electrification was the first all-Yugoslav conference of engineers and other energy experts organized in Belgrade in July 1945.[158] During this conference, experts from each federal republic exchanged information on the current state of electrical infrastructure and the challenges they were facing in reconstruction efforts. According to reports, Serbia had 140 000 kVA of installed power and around 20% damage to the distribution network; Croatia had at its disposal around 280 000 kVA of installed power, with heavy damages in Dalmatia and Istria; Slovenia had 234 000 kVA of installed power and suffered 22% damage to its electric infrastructure; and Vojvodina had 42 000 kVA of installed power and around 26% damage. On the other hand, the less developed republic, unfortunately, already had poorly branched electric infrastructure devastated by the war. Bosnia and Herzegovina had 72 000 kVA, Macedonia had 8 710 kVA, and Montenegro had 4 130 kVA of installed energy. Montenegro suffered the biggest losses; around 46% of its electric infrastructure was destroyed.[159]

Beside the heated debates about where the new power plants should be constructed, one of the pressing questions that all attendees agreed on was the lack of experts. This problem was twofold. Firstly, the number of existing experts was limited, and, because of this, their appointments should be decided at the state level. Secondly, it was decided that there should be a consensus on the curriculum for the education of new experts at the state level.[160] In order



[157] AY, 11, 4/115. Izveštaj o radu Odeljenja za energiju [Report on the work of the Department of Energy], 14.06.1945, 1-3.
[158] AY, 11, 4-101. Konferencija energetskih stručnjaka [Conference of energy experts], 15-22.07.1945, 1-2.
[159] AY, 11, 4-119. Dopis ministru industrije i rudarstva o stanju električnih centrala u Jugoslaviji [Letter to the Minister of Industry and Mining on the state of power plants in Yugoslavia], 1-2.
[160] AY, 11, 4-108. Zaključci konferencije energetskih stručnjaka [Conclusions of the conference of energy experts], 3-4.

to solve the lack of experts' problem, experts also advised that the German prisoner experts should be employed in planned projects and that the Soviet Union must honor the promise of sending the experts that were requested before.[161] Engineer Ivo Bulić reported that, despite the increase in pay for experts, many were leaving the industry to work in small craftsman enterprises because the pay was better and that this problem should be addressed with more seriousness.[162]

The Department of Energy continued to work on drafting the plan for electrification and the law on electrification, but, once again, the political currents mudded the progress they were making. Namely, Ivo Bulić had to officially write to the central government that the official laws on secrecy were stalling the work of the Department of Energy, pointing out the ridiculousness of it as the experts were expected to achieve results but at the same time were forbidden to see data, plans, and consult official documentation.[163]

By the end of 1945, the Department of Energy had finalized the establishment of separate electrical administrations for each republic, and their respective managers were tasked with a specific agenda for rebuilding and expanding the electric infrastructure.[164] With this obstacle out of the way, experts engaged in negotiations about establishing the central administration at the state level. This prompted a heated debate. The Slovenian delegation insisted that the establishment of the central body seemed premature but was outvoted by



[161] AY, 11, 4-28. Plate za rukovodioce i specijalne stručnjake [Salaries for managers and special experts], 1-2.
[162] AY, 11, 1-747. Dopis inženjera Bulića o platama stručnjaka [Engineer Bulić's letter about the salaries of experts], 1-2.
[163] AY, 11, 1-765/767. Dopis inženjera Bulića ministru industrije u vezi konspirativnosti [Engineer Bulić's letter to the Minister of Industry regarding conspiracism], 1-3.
[164] AY, 11, 1-48; 1-50; 1-52; 1-56; 1-59; 1-60; 1-67; 1-70. Osnivanje elektroprivrednih uprava u Makedoniji, Crnoj Gori, Bosni i Hercegovini, Srbiji, Hrvatskoj i Sloveniji [Establishment of electric power managements in Macedonia, Montenegro, Bosnia and Herzegovina, Serbia, Croatia and Slovenia], 3.05-10.10.1945.

representatives of other republics. The discussion also revolved around the location of the future central administration, with Zagreb and Belgrade as options.[165]

The central government also shared the sentiment that the establishment of the central administration for electrification would bring faster results and concluded that it was necessary that there should be a permanent body that would coordinate work and information exchange between republics. In May 1946, the government established the Head Administration of Electric Power Utilities (UPEL), with headquarters in Zagreb.[166] The choice of location for the headquarters shows that the central government followed the discussions closely and decided to intervene in the choice. If it were up to the votes of the republics, the headquarters would be in Belgrade, because only Croatia and Bosnia and Herzegovina voted for the Zagreb option. Having in mind that the lack of governing bodies in other parts of Yugoslavia before 1945 led to deep tensions, especially between Serbia and Croatia, the central government decided to intervene and advise on the Zagreb choice and reminded all parties involved that some compromises had to be made in favor of shared interests. To reach compromise with other republics, primarily Slovenia and Serbia, UPEL established subcommittees for hydroelectric power plants located in Belgrade and for transmission networks in Ljubljana.[167] With the establishment of UPEL, the Department of Energy was disbanded. During 1946, the experts at UPEL were preparing the first electrification plan, which was going to be implemented into the first Five-Year Plan in 1947.

However, in 1947, UPEL was disbanded after the reorganization of the Ministry of Industry. Instead of UPEL, the central government established the General Directorate of Federal Electric Utilities (GDSE), and headquarters were transferred from Zagreb to

[165] AY, 11, 4-163. Zaključci konferencije stručnjaka za elektrifikaciju zemlje [Conclusions of the conference of experts on electrification of the country], 3-5.04.1946, 1-7.
[166] AY, 11, 1-82/87. Rešenje o osnivanju Glavne uprave elektroprivrede [Decision on the establishment of the Head Administration of Electric Power Industry], 23.05.1946, 1-6.
[167] AY,11, 1-205. Današnja organizacija [Today's organization], 1946, 1-7.

Belgrade.[168] This reorganization was not welcomed, and the criticisms of the experts became even more frequent, calling for the separation of electric infrastructure and industry into distinct ministries. The experts emphasized that such a move would give them autonomy from the Ministry of Industry and enable them to organize and work with greater efficiency. After several months of pressure, the Presidium of the National Assembly of FPRY finally established the Ministry of Electric Utilities of FPRY (MINEL) in July 1947.[169] In the wake of the first Five-Year Plan, the newly established MINEL started exercising its autonomy by further decentralizing the departments of the ministry, as it was deemed in the conference of the electric experts that this would be the most productive path for rebuilding and expanding the electrical network.[170]

This short summary of the perils of the organization of the electric infrastructure bodies shows that Yugoslavia was facing many challenges in establishing central planning governance. This wandering in the organization of the administration had only brought additional chaos into already chaotic circumstances. The constant changes in administration slowed down efforts to rebuild the damaged electric infrastructure and set goals for the construction of new facilities. It was only in 1947 that the electric utilities formed an autonomous ministry, and experts could start work on a new integrated electric network. The MINEL had no new reorganizations until 1948, when new challenges arose again after the Tito-Stalin conflict.



**First Electrification Plan**

[168] AY, 11, 1-188. Osnivanje Generalne direkcije savezne elektroprivrede [Establishment of the General Directorate of the Federal Electric Industry], 13.03.1947.
[169] "Osnivanje Ministarstva elektroprivrede vlade FNRJ," [Establishment of the Ministry of Electric Industry of FPRY] *Službeni list* 61/47, 22.07.1947 (Beograd, 1947).
[170] AY, 11, 45-151. Pravilnik o poslovanju i organizaciji Ministarstva elektroprivrede FNRJ [Rulebook on administration and organization of the Ministry of Electric Power Utilities FPRY], 1-17.

In July 1945, the experts inside the Department of Energy started working on a draft for the first electrification plan. In January 1946, Ivo Bulić and Jerko Jerić presented the first plan for the electrification of Yugoslavia.[171] The main principle of this plan was to focus efforts on the development of large projects that would utilize the abundant water resources of Yugoslavia to produce large quantities of electricity and that were economically more convenient.[172] The focus on hydraulic resources represented the foundation of the entire plan for electrification. The use of the coal reserves was not out of the picture. The plan expected that thermal power plants should produce electric energy only if there was a shortage and that hydroelectric power plants should, wherever possible, be constructed near coal deposit areas. The experts justified this attitude not only with the economical stance of using hydroelectric energy but also with the fact that it would reduce pollution in the environment. This is an interesting observation for late 1946, especially for the country that was fully concentrated on rebuilding the industry without further delays.[173] Additionally, the plan insisted that only the coal deposits of low quality and from the coal mines with coal unusable for anything else could be used for the purposes of electricity production.

Furthermore, the plan carefully considered the draft of the future high-voltage electrical network. The configuration of this network was planned on the basis of the distribution of energy sources, on the one hand, and consumers, on the other. This was also the basis for the later creation of so-called "electric regions."[174] The consumption plan of this study analyzed the total production of electricity for the next 12 to 15 years. The plan divided the country into forty so-called "electrification districts," and in each of these district's consumption was



[171] Jerko Jerić, *Plan elektrifikacije Federativne Narodne Republike Jugoslavije* [Electrification plan of the Federal People's Republic of Yugoslavia] (Beograd: Ministarstvo industrije FNRJ, 1946).
[172] "Elektrifikacija i industrijalizacija osnova snage i napretka socijalističke privrede," [Electrification and industrialization are the basis of the strength and progress of the socialist economy] *Borba* 12/266, 7.11.1947, 2-3.
[173] Jerko Jerić, "Prvi plan elektrifikacije Jugoslavije," [First plan of electrification in Yugoslavia] in *Razvoj elektroprivrede Jugoslavije 1945-1955* [Development of Yugoslav Electro Utilities 1945-1955] ed. Miloš Brelih (Beograd, 1957), 55-59.
[174] Jerić, *Plan elektrifikacije*, 5-6.

estimated for five categories of consumers: general consumption, small craftsman enterprises, agriculture, industry, and railways.[175] The plan also considered that a high-voltage transmission network would be built in the next nine years and anticipated the construction of 1250 km of the network.

During the conference of the electrical experts in Belgrade in March 1945, the discussion around the draft presented by engineer Jerić lasted for days. Finally, this first draft was rejected with the explanation that it cannot be adopted due to its limited range and that this would not be a good foundation for the electrification of Yugoslavia.[176]

Following this decision, the newly established Head Administration of Electric Power Utilities (UPEL) continued work on developing the plan for electrification with the goal that this draft should be included in the first Five-Year Plan projected for 1947. In November 1946, the experts presented the "Electrification Plan Proposal."[177] This study included projections for facility production, the development of the 110 kV network, a time plan for constructing new power plants and transmission lines, personnel training and education, a consumption plan through the end of 1951, and a detailed financial plan. The experts judged that this plan was too ambitious and that such projections should wait some other time. In the end, they concluded that "the construction of all projected objects might not be technically possible, and many parts of the plan will be changed to adhere to the needs of other industries and economic branches. The experts are hopeful that the projected possibility might inspire the builders."[178]

In April 1947, the National Assembly of FRPY adopted the Law on the First Five-Year Plan. The part regarding the electrification efforts for the first five years projected that



[175] Jerić, *Plan elektrifikacije*, 6.
[176] AY, 11, 4-80. Zapisnik sastanka načelnika odeljenja [Minutes of the meeting of department heads], 7.06.1946, 1-3.
[177] *Koncept za idejni plan elektrifikacije FNRJ* [Concept of the electrification plan] (Zagreb:Ministarstvo industrije FNRJ, 1946).
[178] *Koncept za idejni plan elektrifikacije*, 51-52.

electricity production would increase to 4.35 billion kWh by the end of 1951.[179] Furthermore, by focusing on the construction of hydroelectric power plants, the Yugoslav electric utilities would implement modern machinery in existing hydropower plants in order to raise their output. These new facilities were projected to produce around 1.55 million kWh. And, finally, the idea from the first electrification plan by engineer Jerković that thermal power plants should use only low-quality coal was codified.

This brief overview of the electrification efforts illustrates the degree of autonomy granted to engineers and managers in decision-making processes in the period between 1945 and 1947. It is evident that the majority of decisions were centralized by the government, with minimal expert consultation, driven primarily by the objective of rapidly implementing the Soviet central planning model and presenting Yugoslavia as one of the most devoted followers of the Soviet Union. However, I would argue that Tito had much bigger plans, which included not only Yugoslavia's recovery followed by expansion, but that the expansion was already embedded in his plans and that critical infrastructure played a crucial role in this. The subsequent chapters will examine how Tito leveraged the infrastructure to assert his influence, particularly focusing on his interests in Trieste, Carinthia, and, most notably, Albania.

**The Balkan Titan: Tito's Influence over the Post-War Balkans**

In the aftermath of the Second World War, the Yugoslav Communist Party strived to strengthen its position not only in Yugoslavia but also on an international level. Tito and his closest associates did not have extensive experience in conducting international negotiations. At the same time, they were determined to take advantage of the post-war situation and expand

[179] "Prirodna bogatstva naše zemlje jamče nam da ćemo ostvariti sve zadatke u cilju ispunjenja petogodišnjeg plana," [The natural resources of our country guarantee us that we will accomplish all the tasks in order to fulfill the five-year plan], *Borba* 12/100, 27.04.1947, 3.

Yugoslav territory and interests. The foreign policy pursued by Tito was very aggressive, and, in a short time, Yugoslavia challenged the Western powers with its expansion attempts.[180]

There is a rich literature on Tito's expansion appetites in the period from 1945 to 1948. Yet it rarely pays any attention to the aspects of using infrastructure as a means to establish influence, and, conversely, political and territorial ambitions obstructed the development of critical infrastructure. This chapter will focus on the development and use of electric infrastructure in the territories Yugoslavia deemed to incorporate. Electric infrastructure can play a significant role in the expansion of political influence in many ways. Firstly, control over electric infrastructure allows economic leverage.[181] Governments can stimulate economic growth and the standard of living by investing in electric infrastructure.[182] More importantly, the control over energy resources and electric infrastructure determines the levels of distribution, which also provides significant political leverage.[183] Yugoslavia understood early on that investing in electric infrastructure in developing countries, namely Albania, can be a form of soft power, fostering goodwill and stronger diplomatic ties. Additionally, I argue that Tito initially thought he needed Albania in order to achieve economic autarky.

The position of Yugoslavia after the Second World War was unique, as it was a communist country under Soviet influence, but its revolution was not imposed but autochthonous. In the turbulent years after 1945, Yugoslavia found itself aligned with the Soviet Union, and therefore, its foreign policy was also aligned with Soviet views.[184] However,



[180] Phyllis Auty, "Yugoslavia's International Relations (1945-1965)," in *Contemporary Yugoslavia: Twenty Years of Socialist Experiment* ed. Wayne S. Vucinich (University of California Press: Berkeley, 1969), 165-168.
[181] Tanja Winther, *The Impact of Electricity: Development, Desires and Dilemmas* (Oxford: Berghahn, 2008), 11-15.
[182] Tanja Winther and Harold Wilhite, "Tentacles of modernity: Why electricity needs anthropology," *Cultural Anthropology* 30/4 (2015): 569-577.
[183] James Ferguson, *Expectations of Modernity: Myths and Meanings of Urban Life on the Zambian Copperbelt* (Berkeley: University of California Press, 1999), 22-31.
[184] Leonid Gibanskii, "Soviet-Yugoslav Relations, the Cominform and Balkan Communist Parties: Documentary Sources and Some Aspects of Research," in *The Balkans in the Cold War: Balkan Federations, Cominform, Yugoslav-Soviet Conflict* ed. Vojislav G. Pavlović (Belgrade, 2011), 265-303.

exactly because the Yugoslav Revolution was independent, Tito and the Communist Party of Yugoslavia had many other aspirations that may not always be aligned with Soviet interests. Yugoslavia had set eyes on formerly contested frontier regions with Austria and Italy, more specifically Carinthia and Venezia-Giulia with the city of Trieste.[185]

After the First World War, Yugoslavia had to give up Istria, and in 1945, taking it back also opened up the possibility of annexing the Venezia-Giulia region. Tito did not waste time and decided to send the Yugoslav troops to seize Trieste. In May 1945, the Yugoslav army marched into Trieste and remained there for forty days. Vojtech Mastny described this act as "the first postwar confrontation between the East and West."[186] This crisis quickly attracted the attention of the Western Allies. The United States and the United Kingdom were wary of Yugoslav expansionism, viewing it as a potential foothold for Soviet influence in the Adriatic Sea and southern Europe.[187] After the involvement of the United States and the United Kingdom in the matter of Trieste, Tito quickly realized that incorporating the region into Yugoslavia without any resistance was impossible and agreed to negotiate the resolution of this problem without armed conflicts. The Allies proposed a temporary division of the region into two zones: Zone A, including Trieste, to be administered by the Allied Military Government, and Zone B, encompassing the surrounding area, to be controlled by Yugoslavia.[188] Although Yugoslav aspirations over Trieste were quickly cut short, especially after the Soviet Union advised Tito to retreat the Yugoslav army and with the formation of the Free Territory of Trieste, that did not mean that in these early years Tito abandoned his plans for this region.[189]



[185] "Ekspoze Maršala Tita," [Marshal Tito's Speech] *Borba* 11/28, 2.02.1946, 2.
[186] Vojtech Mastny, *Russia's Road to the Cold War: Diplomacy, Warfare, and the Politics of Communism, 1941-1945*. (New York, 1979), 282-283.
[187] Glenda Sluga, *The Problem of Trieste and the Italo-Yugoslav Border: Difference, Identity, and Sovereignty in Twentieth Century Europe* (State University of New York Press, 2001), 17-29.
[188] Roberto Rabel, "Prologue to Containment: The Truman Administration's Response to the Trieste Crisis of May 1945," *Diplomatic History* 10/2 (1986): 141-160.
[189] "Trst bo branili in podopiral svojo demokratično oblast" [Trieste will defend and support its democratic area]. *Primorski dnevnik* 1/25, 10.06.1945, 1.

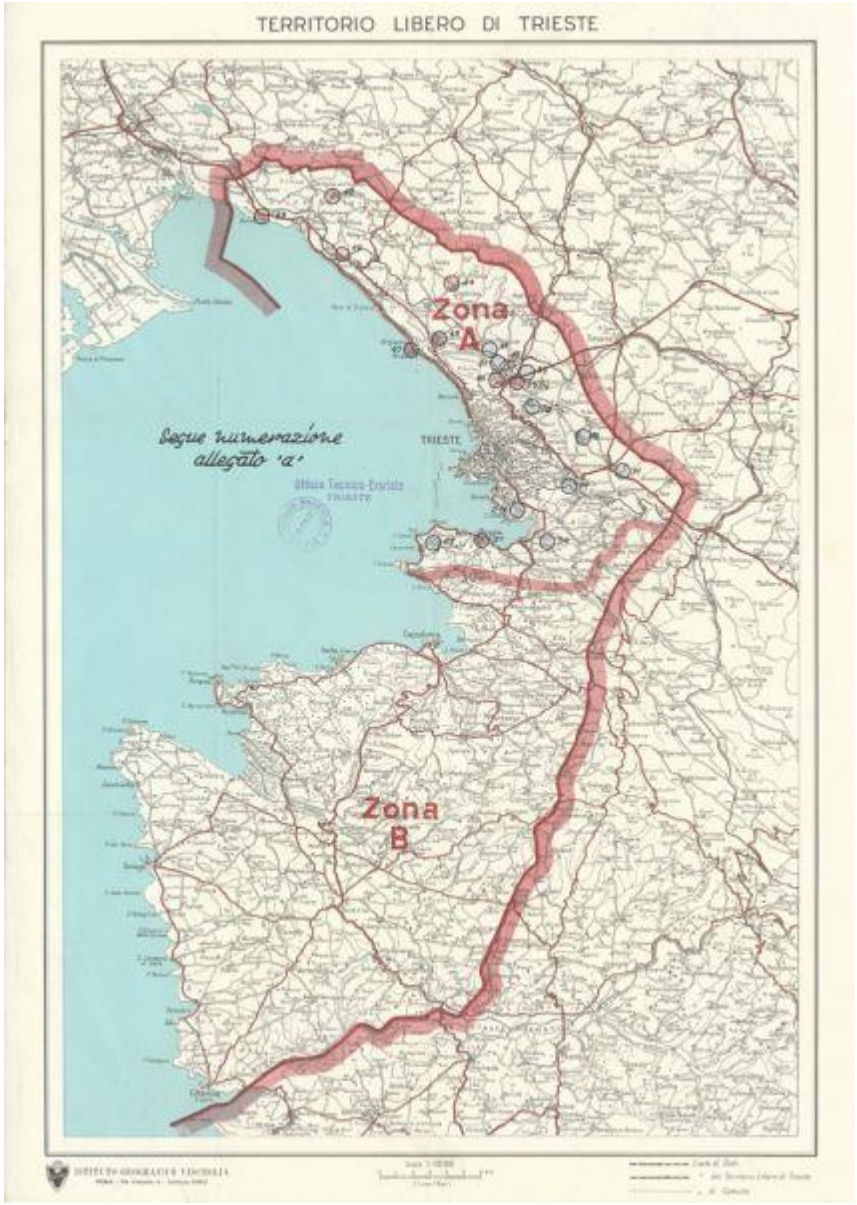


*Figure 3. Map of Free Territory of Trieste (Source: Archivio di Stato di Trieste)*

Tito understood that the contested region, which suffered significant damage during the war, continued to suffer during the tense political negotiations over Yugoslav aspirations toward Trieste. Yugoslav engineers were tasked not only with rebuilding the electrical infrastructure in Istria and the Julian Alps but also with finding solutions to provide electricity to Trieste as well. In 1947, engineer Jerko Jerić wrote to the Ministry of Industry about the problems of supplying Istria and the Slovenian coast with electricity. Conversely, Jerić was also invested in finding solutions for supplying the city of Trieste with electricity. He pointed

out that the electric power system of Trieste remained connected with both Yugoslavia and Italy and concluded that the situation in the critical period of maximum load remains the same as before the war. However, surplus power from the Yugoslav power plants could be made available to the Trieste system.[190] On the other hand, the region of Coastal Slovenia was dependent on the Italian electricity system, and engineers felt reluctant to spare their efforts in finding solutions for providing Trieste with electricity, while one part of Yugoslavia, although very small, remained outside the Yugoslav system. Because of this situation, the Ministry of Industry wrote back to Jerić that the priority should be the integration of Slovenian electric system into Yugoslav.[191] Only after the establishment of a unified system that would cover the entire western part of the country could attention be redirected towards finding solutions for providing Trieste with electricity without Italian help.[192]

In December 1948, Yugoslavia organized a conference at Lake Bled in hopes of negotiating the electricity supply of the Free Territory of Trieste with the Anglo-American authorities. Namely, Yugoslav representatives were concerned because the measuring instruments were not on their side of the territory and insisted that the Anglo-American authorities should assist in resolving this issue. This conference did not result in any plans because there was no willingness to make compromises on both sides, but it signaled that Yugoslavia was still using the electricity infrastructure as leverage in determining who has a say in Trieste.[193] The 1948 crisis delayed Yugoslav plans, and they never materialized. Still, the overview of plans that the Ministry of Industry and the Department of Energy had for Trieste



[190] AY, 850, 12-151. Dopis inženjera Jerića povodom snabdevanja električnom energijom grada Trsta i oblasti [Letter from engineer Jerić regarding the supply of electricity to the city of Trieste and the area], 2.10.1947, 1-2.
[191] AY, 850, 12-153. Privreda i odlike Julijske krajine [Economy and characteristics of the Julian Territory], 1-19.
[192] This proved to be a challenging task, and the coastal region was connected to central Slovenia only in 1949.
[193] "Prekinuti pregovori izmedju FNRJ i angloameričkih vlasti STT o snabdevanju Slobodne teritorije Trsta električnom energijom," [Interrupted negotiations between FPRY and the Anglo-American authorities of STT on supplying the Free Territory of Trieste with electricity] *Borba* 13/293, 5.12.1948, 5.

clearly shows that Tito and his regime did not lose sight of the importance of providing access to critical infrastructure. This proved even more important in ethnically contested regions, as was the case with Trieste. In the end, the rupture between the Soviet Union and Yugoslavia shifted the balance of the Cold War, and the question of Trieste was resolved in 1954.[194]

Tito aspired to exploit the postwar situation to the fullest, leveraging his position on the winning side for his own advantage. The aspirations to enlarge Yugoslavia gave him additional support and the possibility to strengthen his position of power if he proved successful. Similarly to his aspirations towards Trieste, Tito did not miss the opportunity to try to incorporate the contested part of Austria, the region of Carinthia, over which Austrians and Yugoslavs had previously clashed. Tito's interests in Carinthia and Trieste were not only political. These regions were economically developed and would be valuable parts of the new state he was trying to construct.[195] Unlike Trieste and the Venezia-Giulia region, the situation with Tito's aspirations in Austria was drastically different. None of the Big Four wanted Austria to be further agitated. Allies insisted that Austria must remain neutral and more or less content.[196] In this case, the ethnic and war-winning arguments that Tito tried to use proved to be in vain. Already in May 1945, Stalin signaled to Tito to withdraw his troops from Austria, as he considered Carinthia to be even less worthy than Trieste to cause a dispute with the United States and Western Europe.[197] However, relations between Yugoslavia and Austria did not improve over the next two years. Since the Drava River was economically important both for



[194] The London Memorandum was signed in October 1954, officially dissolving the Free Territory of Trieste, and dividing the territory between Yugoslavia and Italy. Zone A was given to Italy and Zone B to Yugoslavia, with the addition of smaller parts of the Zone A, namely city of Koper and surrounding villages (Bojan Dimitrijević, *The Trieste Crisis, 1953: The First Cold War Confrontation in Europe* (Warwick: Hellion Company Limited, 2019)).
[195] Robert Niebuhr, *The Search for a Cold War Legitimacy: Foreign Policy and Tito's Yugoslavia* (Brill: Leiden, 2018), 20-52.
[196] Robert Niebuhr, "Enlarging Yugoslavia: Tito's Quest for Expansion, 1945–1948," *European History Quarterly* 47/2 (2017): 284-310.
[197] Robert Knight, "Ethnicity and Identity in the Cold War: The Carinthian Border Dispute, 1945–1949," *The International History Review* 22/2 (2000): 274-303.

Yugoslavia and Austria, the cooperation between them proved to be essential for the development of that region.[198]

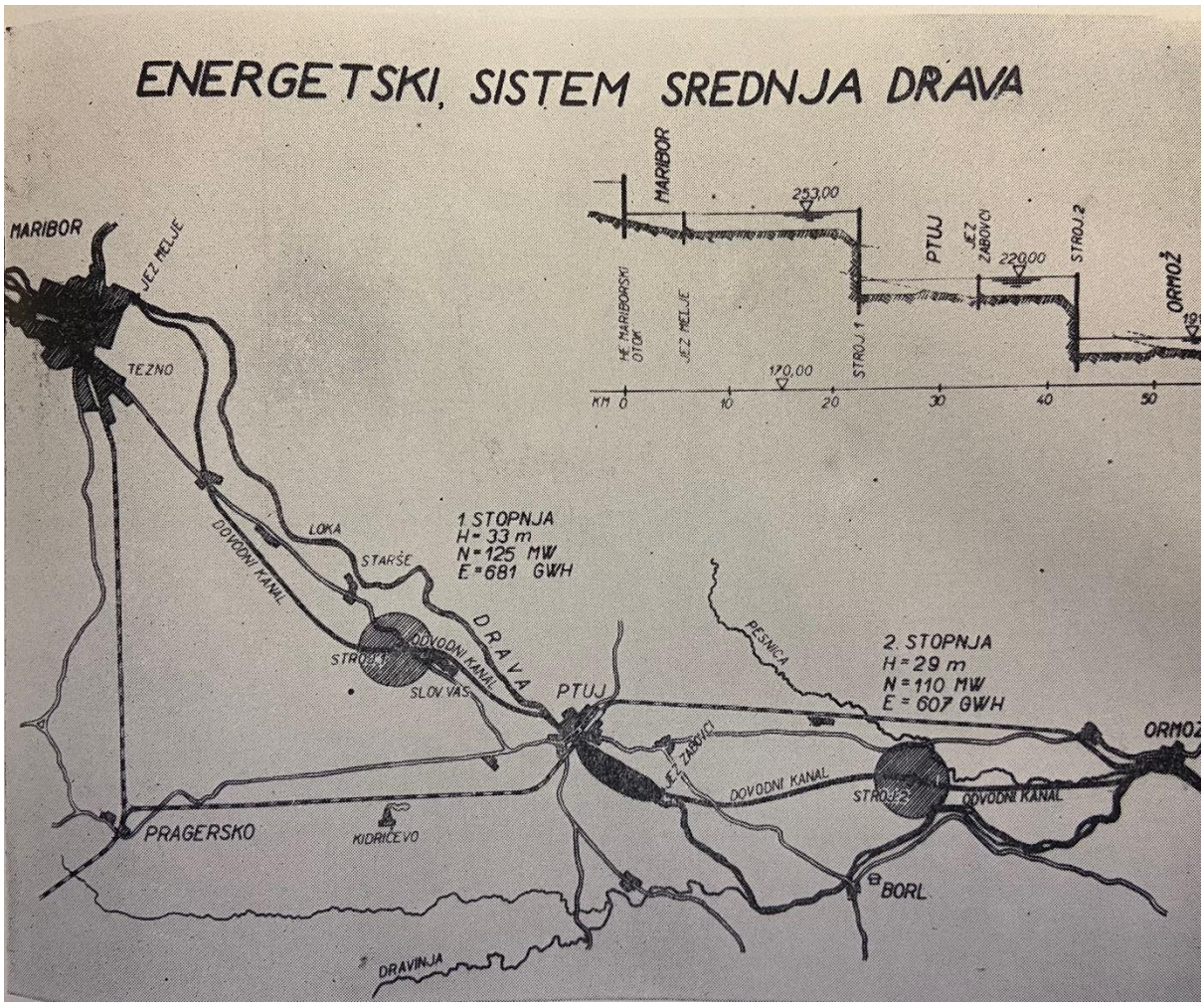


*Figure 4. Energy system on Drava River (Source: Zdravko Milanović ed., Elektroprivreda Jugoslavije (Beograd, 1962))*

The disputes between Austria and Yugoslavia in this period revolved around the functioning of hydroelectric power plants on the Drava River, which formed part of the border (145km).[199] In order to broach some sort of peace, Yugoslav Chief of Mission in Austria, Colonel Vlado Vodopivec, wrote to Lt. Colonel Harold Pomeroy, Chief Secretary at the Allied Commission for Austria, that the hydropower plants downstream of the Drava River were

[198] Maximilian Graf and Petra Mayrhofer, "Austria and Yugoslavia in the Cold War, 1945–1991: From Postwar Cold War to Détente and Dissolution," in *Breaking Down Bipolarity: Yugoslavia's Foreign Relations during the Cold War* ed. Martin Previšić (De Gruyter: Berlin, 2023),151-170.

[199] "Postoji mogućnost da se naša elektroprivreda zaštiti od samovoljnih postupaka austrijske vlade na gornjem toku Drave," [There is a possibility that our electricity industry will be protected from the arbitrary actions of the Austrian government on the upper reaches of the Drava] *Borba* 14/174, 24.07.1949, 5.

greatly hampered in their task of supplying electric power for a considerable area in Yugoslavia. Because of this, the whole economic and cultural life of that area suffered great damage.[200] At the same time, experts from the Department of Energy urged Boris Kidrič and Edvard Kardelj that the situation with the Austrian government needed to improve as soon as possible because the distribution of electricity on the Drava River and the overall electric network in that part of Slovenia could not be improved without cooperation with the Austrian representatives.[201] Already in November 1946, Austrian representative Viktor Wiesinger wrote to the Ministry of Industry delegate in Ljubljana, Vjekoslav Korošec, that cooperation between Austria and Yugoslavia should be more present if the power plants on the Drava River (Dravograd and Fala, on the Yugoslav side, and Lawamünd and Schwabeck, on the Austrian side) were to function properly and to the benefit of both sides.[202] Furthermore, the cooperation between Yugoslav and Austrian engineers paved the way for the important projects that will be discussed in the subsequent chapters, Yougelexport and SUDEL.

The examples of Trieste and Carinthia illustrate Tito's desires for the expansion of Yugoslavia and, more importantly, his aspirations to establish Yugoslavia as the dominant force in the Balkans. However, these plans and aspirations are best illustrated in the case of Albania, where Tito used infrastructure as one of the key levers to establish his dominance.



**Eyeing Albania: Yugoslavia's Postwar Strategies and Regional Ambitions**

[200] AY, 850, 12-41. Hydropower plants on Drava River, 5.02.1946, 1.
[201] AY, 850, 12-33. Izveštaj o situaciji u Austriji [Report on the situation in Austria], 15.01.1946, 2-5.
[202] AY, 850, 12-44. Pogon vode kod hidrocentrala na reci Dravi [Water and hydropower plants on the Drava River], 23.10.1946, 1-2.

The history of Yugoslav (and Serbian) and Albanian relations before the Second World War was complicated and characterized by a mix of tensions, rivalry, and occasional cooperation. The disputes over contested territories, particularly over the region of Kosovo, where a significant Albanian population resided, fueled mutual distrust between Yugoslavia and Albania. Because of this, both countries sought alliances to increase their security and often found themselves on opposing sides of regional power dynamics. Despite these frictions, there were periods of diplomatic engagement as both Yugoslavia and Albania recognized the need for pragmatic relations in hopes of overcoming the dangers of the volatile Balkan landscape. This pragmatic approach sometimes led to temporary agreements and cooperation on specific issues, but underlying animosities and conflicting national interests persisted up to the eve of the Second World War.[203] Although the Yugoslav grip on Albania took many forms, I will focus on the development of the electric infrastructure as one of the most important aspects of establishing Yugoslav dominance in Albania.

The circumstances that arose during the Second World War changed relations between Yugoslavia and Albania. Already in 1940, the Communist Party of Yugoslavia reached out to make a connection with the Albanian communists. Because the Albanian communists were not organized as Yugoslav guerillas, the members of the Kosovo Committee, Miladin Popović and Dušan Mugoša, were tasked with establishing a more effective Albanian communist underground. In December 1942, during the conference of the Communist Party of Yugoslavia, it was reported that the organization and its relations with the Albanian communists were a success. During the war the Albanian communist party leadership was split between the rivalry of two fractions. On the one hand, Enver Hoxha and Koçi Xoxe represented the fraction that advocated aligning with the Soviet Union and Yugoslavia, and, on the other hand, Sejfulla

[203] Dragan Bakić, "The Italo–Yugoslav Conflict over Albania: A View from Belgrade, 1919–1939," *Diplomacy and Statecraft* 25/4 (2014): 592-612; Beytullah Destani ed., *Albania and Kosovo. Political and ethnic boundaries 1867-1946* (Slough, 1999).

Malëshova led the fraction that was more inclined towards the politics of the gentle balancing between the East and West.[204] In the end, the fraction led by Enver Hoxha took the lead and steered in which direction Albanian politics would lead after the war. In April 1945, the Yugoslav government was the first to officially recognize the Albanian state.[205] Yugoslav influence was further strengthened by the Soviet delay in recognizing Albania. Interestingly, the Soviet Union showed little interest in Albania during the Second World War and the period after and did not have a significant presence in Albania.[206] This situation only encouraged Yugoslavia to pursue dominance over the fragile new country. Immediately after Yugoslavia recognized Albania, Tito sent the Yugoslav representatives led by Milovan Đilas to Tirana to ensure further cooperation between the two states.[207] In many ways, postwar Albania was isolated, as not many countries recognized it, and it had to rely on Yugoslav help, especially regarding international relations. The only international organization Albania was cooperating with was the United Nations Relief and Rehabilitation Administration (UNRRA).[208] The Yugoslav influence grew stronger and soon Tito initiated more intense economic cooperation.

Already during the war, Tito had a clear plan for ways to strengthen his influence in Albania and sent the first instructors and experts to help the Communist Party of Albania (CPA) organize. In 1945, Yugoslavia and Albania signed two agreements on cooperation. The Treaty on Alliance and Mutual Assistance focused on providing military aid, and the Agreement on Economic Cooperation was meant to facilitate more intensive economic exchange between two



[204] DA MSPRS, PA, Albanija. 1. Izveštaj jugoslovenskog poslanstva u Tirani [Report of the Yugoslav embassy in Tirana], 30.11.1945, 30799.
[205] Branko Petranović and Momčilo Zečević eds., *Jugoslavija 1918-1988. Tematska zbirka dokumenata* [Yugoslavia 1918-1988. Thematic collection of documents] (Beograd, 1988), 790-791.
[206] Of course, the Soviets did not let Albania be without any supervision and had a number of secret agents there.
[207] DA MSPRS, PA, Albanija. 16. Dopis jugoslovenskog poslanstva iz Tirane [Report from the Yugoslav Embassy in Tirana], 13.11.1945, 6136.
[208] DA MSPRS, PA, Albanija. 11. Izveštaj jugoslovenskog poslanstva iz Tirane [Report from the Yugoslav Embassy in Tirana], 11.11.1945, 24535.

countries.[209] In June 1947, Enver Hoxha visited Belgrade and, on that occasion, signed a new economic agreement with Yugoslavia. The agreement provided the platform for the establishment of joint Albanian-Yugoslav companies. The implementation of joint companies was copied from joint companies set up by the Soviet Union in other Eastern European countries, including Yugoslavia.[210] These companies were established with the goal of developing railroads, mines, electric infrastructure, and import-export activities. Yugoslavia provided capital investment, equipment, and experts in exchange for half-interest in Albanian enterprises and rights for the exploitation of natural resources. Also, the agreements provided technical training for Albanian experts in Yugoslavia. Yugoslavia also agreed to send experts to provide assistance in developing agriculture, industry, and electrification in Albania.[211]

**Switching On: The Electrification of Post-War Albania**

The rapid electrification of the country was one of the major goals of postwar Albania. As in other less developed countries, the electrification efforts were deemed crucial in order to meet goals for industrial development. The electrical infrastructure of Albania before 1945 was modest and mostly scattered around big urban centers. Before 1945, the majority of modern infrastructure in Albania was in the hands of Italian enterprises or was built with the assistance



[209] Örjan Sjöberg and Michael Louis Wyzan eds., Economic *Change in the Balkan States: Albania, Bulgaria, Romania and Yugoslavia* (London: Pinter, 1991), 126-128.
[210] More on joint enterprises between Yugoslavia and the Soviet Union: Čedomir Krunić, "Jugoslovensko-sovjetsko akcionarsko društvo za civilno vazduhoplovstvo JUSTA," [Yugoslav-Soviet Joint Stock Company for Civil Aviation JUSTA] *Let* 2 (2000): 127-151; Momir Ninković, "Neuspešni pregovori o organizaciji jugoslovensko-sovjetskim mešovitih društava (1945-1947)," [Unsuccessful negotiations on the organization of Yugoslav-Soviet joint companies (1945-1947)] *Tokovi istorije* 2 (2015): 129-153.
[211] Momir Stojković ed., *Balkanski ugovorni odnosi: 1876-1996. Dvostrani i višestrani medjunarodni ugovori i drugi diplomatski akti o državnim granicama, političkoj i vojnoj saradnji, verskim i etničkim manjinama, tom 3, 1946-1996* [Balkan contractual relations: 1876-1996. Bilateral and multilateral international agreements and other diplomatic acts on state borders, political and military cooperation, religious and ethnic minorities, volume 3, 1946-1996] (Beograd, 1999), 4-6.

of Italian experts and loans.[212] Yugoslav experts that were sent to assess the situation reported back that the existing electric infrastructure was able to produce only around 60 000 kWh per year.[213] The majority of power plants in Albania were thermal or diesel-powered.[214] Since Albania also suffered significant infrastructural damage during the Second World War, most of these plants were unfunctional or had limited functioning power.[215] Yugoslav engineers reported that the power plants in Tirana were heavily damaged and only able to provide electricity for five hours per day. The initial conclusion of Yugoslav experts was that the current state of electricity production in Albania was expensive and unprofitable. In order to jump-start the industry, Yugoslav experts suggested that investment should be focused on the construction of hydropower plants because Albania has abundant water resources.[216]

In 1946, Yugoslavia sent several groups of experts from the Department of Energy in order to compose a comprehensive study on the exploitation of hydroelectric resources and determine possible locations for building profitable hydroelectric plants. The first suggestion was to build a hydropower plant at the mouth of the Valbona and Drini Rivers.[217] Relying on the information provided by the Ministry of Construction in Tirana, Yugoslav engineers used an existing plan made by Italian experts before 1945 to build a power plant on the Kiri River.[218] In cooperation with the Albanian engineers at the Ministry of Construction and the Ministry of Industry, Yugoslavs produced two variants for the utilization of the Drini River: the first plan



[212] Peter Tase, "Italy and Albania: The political and economic alliance and the Italian invasion of 1939," *Academicus International Scientific Journal* 3/6 (2012): 62-70.
[213] AY, 836, 1-3-23. Izveštaj o albanskoj industriji [Report on Albanian Industry], 1-2.
[214] Tirana had two thermal power plants, Korçë had two plants, diesel and thermal, Podgradec also had two thermal power plants. Furthermore, the places with one power plant were Shköder, Vlöre, Kavajë, Berat, Gjirokaster, Fier, Lezhë, Durrës, Elbasan, Korçë, Selenicë and Rubik.
[215] AY, 50, 48-105. Izveštaj o elektrifikaciji u Albaniji [Report on electrification situation in Albania], 14.08.1946, 1-4.
[216] AY, 11, 12-1. Referat stručnjaka o stanju električne mreže u Albaniji [Expert report on the state of the electricity network in Albania], 11.08.1946, 1-2.
[217] AY, 11, 12-2. Referat o planovima za podizanje hidroelektrana na albanskim rekama [Report on plans for the construction of hydropower plants on Albanian rivers], August 1946, 3.
[218] AY, 11, 12-2. Referat o planovima za podizanje hidroelektrana na albanskim rekama [Report on plans for the construction of hydropower plants on Albanian rivers], August 1946, 3.

projected the construction of two large power plants, while the second plan anticipated the construction of four medium power plants.[219] Next, there were suggestions on the possibilities of building a power plant on the Mati River that would be able to produce around 5000 kWh. In analyses conducted for the possibility of building hydropower plans in the capital Tirana, Yugoslav engineers suggested building only one power plant. In addition to that, Albanian experts contributed with their own plans for building the hydropower plant and water supply in Tirana.[220] The projected possibilities of these potential hydropower plants were around 50 million kW per year and would cover all the needs of industry, mining, and general consumption in Albania.[221]



[219] AY, 11, 12-3. Referat o planovima za hidroelektrane [Report on plans for hydropower plants], 1946, 3-4.
[220] AY, 11, 12-3. Referat o planovima za hidroelektrane [Report on plans for hydropower plants], 1946, 3-4.
[221] AY, 850, 12-1. Referat o planovima za podizanje hidroelektrana na albanskim rekama [Report on plans for the construction of hydropower plants on Albanian rivers], August 1946, 3.

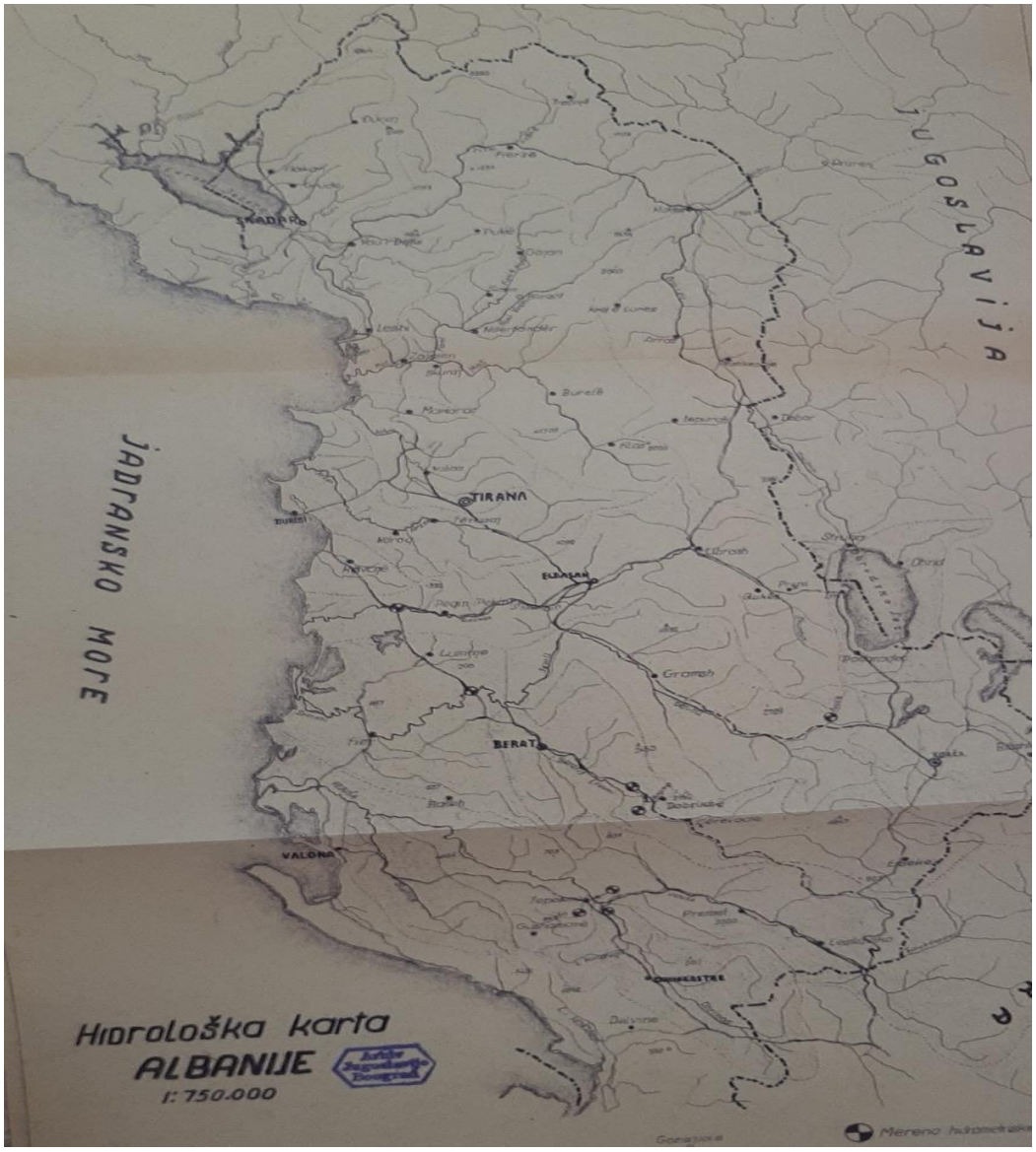


*Figure 5. Hydrological map of Albania (Source: Archives of Yugoslavia)*

The Yugoslav delegation also conducted a survey of available natural resources in Albania and projected calculations for the amounts of electric energy that would be needed if those resources were to be utilized. However, given that Yugoslavia itself lacked sufficient resources and experts to fully exploit those resources domestically, the focus in Albania remained only on what was immediately possible to utilize. Despite this setback, the report noted all possible resources that could be utilized in the future when both countries reach a more developed stage of electric infrastructure and industry. Yugoslavs noted that the bitumen location in Selenicë already demanded more electricity than the power plant there was able to

produce.[222] The report also noted that there were significant resources of chromium that were in the initial stage of exploitation and of high-quality iron, but the more serious exploitation of those can only be anticipated with the construction of the railway line Valorë-Elbasan-Struga.[223]

**Joint Albanian-Yugoslav Electronification Company**

One of the most prominent ways of Yugoslav-Albanian cooperation, and by extension, the Yugoslav way of establishing dominance in Albania, was the establishment of joint enterprises. These joint enterprises did not differ much from the joint companies that Yugoslavia had with the Soviet Union.[224] The enterprises in question were joint-stock companies with different amounts of investment. Each of the companies had an administrative board consisting of eight members and a supervisory board consisting of four members, which consisted of half Yugoslav and half Albanian representatives.[225] The joint companies were established for a period of thirty years, only after that deadline expires would the Albanian government be able to buy back its share from the Yugoslav government.[226]

The focus of this chapter is on the Joint Company for Electrification. According to the initial agreement, this company was supposed to have a complete consortium over the construction and development of electrical infrastructure in Albania. In the initial report, Yugoslav engineers noted that Albania had abundant hydro resources, which would be a more



[222] AY, 850, 12-5. Referat o prirodnim nalazištima u Albaniji [Report on natural sites in Albania]. 1946, 4-5.
[223] AY, 850, 12-5. Referat o prirodnim nalazištima u Albaniji [Report on natural sites in Albania]. 1946, 4-5.
[224] AY, 50, 48-106. Poseta privredne delegacije FNRJ Albaniji [Visit of the economic delegation of FNRJ to Albania], 1946, 1-3.
[225] AY, 50, 49-107. Zajednička privredna i industrijska preduzeća [Joint economic and industrial enterprises], 1946, 1.
[226] AY, 836, 1-3/23. Pravni aspekti mešovitih albansko-jugoslovenskih društava [Legal aspects of mixed Albanian-Yugoslav societies], 1946, 1-5.

than welcomed addition to the plans for the exploitation of Yugoslav hydro resources. Additionally, Yugoslavs pushed the idea that all power plants constructed on Albanian territory and linked to the Yugoslav system should permanently stay in Yugoslav ownership. Needless to say, Albanians were not thrilled with this idea. Due to these differences of opinion, the question of ownership remained open. Finally, the budget for potential projects would be financed by a joint Yugoslav-Albanian bank established in 1946 as part of the Agreement on Economic Cooperation.[227]

In February 1947, in Tirana, the Yugoslav representative, Rade Maksimović, and the Albanian representative, Shahin Ruka, signed the founding document of the Albanian-Yugoslav Joint-stock Electrification Company. Like other joint companies, this too was established for a thirty-year period, with headquarters in Tirana.[228] The main objective of the electric joint company was to conduct research on the natural resources of Albania that could be exploited for the production of electric energy and the construction of new power plants and transmission lines. The capital invested in the enterprise was split into two equal parts. However, the Yugoslav side had an upper hand in the financial decisions that could come up in the future.[229] The most important part of this contract was the clause that predicted that Yugoslavs would have the main say in which locations would be chosen for the construction of future hydropower plants and primacy in importing the produced electricity.[230] Yugoslavs clearly had a well-defined strategy for establishing dominance in this joint company and the main say in which ways Albanian electric infrastructure would develop.[231]



[227] AY, 836, 1-3-3/23. Opisi mešovitih društava [Detailed description of mixed companies], 1946, 4-5.
[228] AY, 850, 12-8. Osnivački akt Albansko-Jugoslovenskog akcionarskog električnog društva [Founding Act of the Albanian-Yugoslav Electric Joint Stock Company], 25.02.1947, 1.
[229] AY, 850, 12-9. Osnivački akt Albansko-Jugoslovenskog akcionarskog električnog društva [Founding Act of the Albanian-Yugoslav Electric Joint Stock Company], 25.02.1947, 1-2.
[230] AY, 850, 12-22. Statut Albansko-Jugoslovenskog akcionarskog električnog društva [Statute of the Albanian-Yugoslav Electric Joint Stock Company], 6-7.
[231] I would again remind the reader that there are methodological limitations here because I did not consult possible Albanian documents that may offer a different view of the matter and that my conclusions reflect the documents from the Yugoslav archives.

The first assignment facilitated by the joint company was a visit of Yugoslav experts, including geologists and hydropower specialists, to Tirana with the task of assessing the damages that electric infrastructure suffered during the war and drawing up plans for the rebuilding of existing power plants and the construction of new ones. The initial meeting in Tirana evolved around finding a permanent solution for the capital. The representative of Yugoslav Power Utilities, engineer Dragutin Obradović, indicated that the initial idea for joint construction of hydropower plant and water supply system in Tirana should be pursued further. After short deliberations with the representatives of the Ministry of Public Works, representatives of the joint company agreed to adopt the plan produced by the prewar company *Celpa*, following the suggestion of the Albanian engineers.[232]

The hydropower plant division of Yugoslav Power Utilities sent professors Milan Luković and Bogić Knežević, along with engineers Milan Pećinar and Vujica Jevđić, to study this plan further and determine the exact location for the future water supply system and the power plant in Tirana. The team reported back that the plan looked promising and that the project carried significant importance for the future of electrification in Albania. The group also decided that the Albanian-Yugoslav joint company should finance only the construction of the hydropower plant, while the water supply system should be financed by the Albanian Ministry of Public Works.[233]

The study group led by Vujica Jevđić remained in Tirana to see through the modifications of the *Celpa* plan reported back that the construction of the planned water supply system should be adopted into a more economically viable variant. Jevđić considered that in a planned economy, it would not be a good practice to base an important consumption area

[232] AY, 850, 12-26. Zapisnik stručne komisije za hidrocentrale o projektu gravitacionog vodovoda sa hidroelektričnim postrojenjem za grad Tiranu [Minutes of the expert commission for hydropower plants on the gravity water supply project with a hydroelectric plant for the city of Tirana], 19.03.1947, 1.
[233] AY, 850, 12-27. Zapisnik stručne komisije za hidrocentrale o projektu gravitacionog vodovoda sa hidroelektričnim postrojenjem za grad Tiranu [Minutes of the expert commission for hydropower plants on the gravity water supply project with a hydroelectric plant for the city of Tirana], 19.03.1947, 2.

around only one power plant. He pointed out that much cheaper hydropower plants will be built according to Albania's electrification plan and that the plan for Tirana's system should be additionally modified.[234]

With the modification of the *Celpa* plan done, the preparations for the construction of Selitë,[235] hydropower plant started in the summer of 1947. In the meeting held in Tirana in July 1946, it was decided that the Yugoslav engineers would develop a construction plan and a comprehensive study of the Selitë power plant, including all necessary elements needed for proper functioning. Also, the experts anticipated that the construction would be done by February 1948. Yugoslav representatives took on a lead in decision-making for this project as well. The Yugoslav Power Utilities Directorate made a decision that the procurement of materials necessary for the construction of the power plant would be carried out independently by Yugoslavs, and the Albanian-Yugoslav Electrification Company would only be involved at the consultation level.[236] In April 1947, in cooperation with the Albanian-Yugoslav Electrification Company, the engineers made a final decision on the exact location of the Selitë power plant, as they anticipated that it would provide electricity not only for Tirana but for Durrës as well. The construction started at the end of April 1947. Engineer Prodanović, who led the project of Selitë construction, positively assessed the start of the project and stated that he had hoped for the continuous and long cooperation between Yugoslavia and Albania and that "the start of this project would signal the coming of many more."[237]

In a short period of Yugoslav and Albanian cooperation, only the construction of the Selitë power plant materialized. However, that was not the only project the Albanian-Yugoslav Electrification Company planned. In a meeting held in March 1947, the Electrification



[234] AY, 850, 12-27. Obrazloženje inženjera Jevidjića u vezi projekta za Tiranu [Engineer Jevidjić's reasoning regarding the project for Tirana], 20.03.1947, 1.
[235] Selitë is a neighborhood in Tirana. Before 2015, Selitë belonged to municipality of Farkë.
[236] AY, 850, 12-29. Saradnja sa Albansko-Jugoslovenskim električnim društvom [Cooperation with the Albanian-Yugoslav Electric Company], 8.07.1947, 1.
[237] AY, 112, 817. Počela izgradnja Velike Selite [The beginning of Selitë construction], 12.08.1947.

Company projected the construction of power plants on the Mati, Devollit, Vjosa, Kukës, and Dukatit Rivers and the Ohrid Lake.[238]

The letter of the Yugoslav General Directorate for Electrification to the Albanian-Yugoslav Electrification Company from July 1947 reveals the manner in which the Yugoslavs communicated with the representatives of the Albanian electric power utilities sector. The Yugoslav representatives were informing the Albanian representatives about the decision that had already been made in a meeting held in Belgrade. In addition to decisions regarding the development of plans and acquisition of equipment for the hydroelectric power plant in Selitë, the Yugoslav General Directorate had already decided that all important decisions, tenders, and typification of plants in connection with the creation of an electric system that would eventually become a part of the Yugoslav system would be made exclusively by Yugoslavs. In the same report, Yugoslavs stated that the Albanian-Yugoslav Electrification Company would only be "timely notified" of decisions that were already made.[239]

**The Lesser of Two Evils**

The tone of correspondence between the Yugoslav and Albanian representatives in 1947 reveals not only that Yugoslavia already had an enormous influence on the course of development of the Albanian electrical infrastructure but that all decisions regarding the critical projects were made in Belgrade and not in Tirana. An examination of the reports, consultations, and deliberations made during 1947 reveals the obvious absence of Albanian participants in all important decision-making. This, of course, does not mean that there were no Albanian

[238] AY, 850, 12-31. Program rada Albansko-Jugoslovenskog električnog preduzeća za 1947. godinu [Work program of the Albanian-Yugoslav Electric Company for the year 1947], 1-2.
[239] AY, 850, 12-30. Dopis Albansko-Jugoslovenskom električnom društvu [Letter to the Albanian-Yugoslav Electric Company], 8.07.1947, 1-2.

engineers and politicians willing to participate, but that Yugoslavs were reluctant to include them in the deliberation and planning of the projects.[240]

*Figure 6. Photographs of Stalin, Enver Hoxha and Tito at a parade in Tirana in 1947 (Source: Fondacija Otvoreno opšestvo, North Macedonia)*

In political terms, in 1947, Albania found itself torn between the growing Yugoslav influence and newly acquired Soviet interests. During his visit to Moscow, Enver Hoxha expressed his concerns about the Yugoslav influence in Albania to Stalin.[241] However, the Soviet Union was not primarily concerned with that. Stalin considered that as long as Yugoslavia was one of the most devout followers of the Soviet Union, their influence in Albania was of little concern to the Soviets. The initial Soviet attitude did not discourage Albanians,

[240] Maryana Stamova, "Yugoslav-Albanian Relations and The Albanian Question During the Cold War," *Freedom-Journal for Peacebuilding and Transcultural Communication* 2/3-4 (2021): 28-35.
[241] Enver Hoxha, *Avec Staline: souvenirs* [With Stalin: memories] (Tirana, 1979), 61-76.

and the more intense interest in strengthening connections with the Soviet Union began in August 1947. At the same time, Albanians, for the first time, openly criticized Yugoslav attitudes. In 1947, Albanian politician Nako Spiru led a wide campaign to realign Albania with the Soviet Union. In April 1947, Spiru traveled to Moscow as head of the Albanian delegation for cultural cooperation between Albania and the Soviet Union. In reality, Spiru was trying to extend relations with the Soviet Union and insisted that the Soviets should send more of their experts and representatives to Albania to counter the Yugoslav influence. These visits did not escape Yugoslav attention. In August 1947, Yugoslav representative in Albania Sava Zlatić wrote that there were evidently two fractions in Albania and that both were dissatisfied with the Yugoslav attitude.[242]

In his report, Zlatić shared his opinion that one of the biggest reasons for dissatisfaction were the delays of Yugoslavia in providing the experts and equipment that were promised, and that because of this, many projects regarding critical infrastructure were delayed. This was also the case with the Joint Albanian-Yugoslav Electrification Company. The beginning of the construction of the Selitë power plant was significantly delayed, and Albanian protests about this were ignored. The delays were the result of poor planning on the Yugoslav side.[243] However, I would argue that even if Yugoslavs had been more successful in carrying out the projects, political relations would not improve significantly because the Albanian government became weary of growing Yugoslav dominance.



[242] AY, 507, 1-135. Izveštaj Save Zlatića o situaciji u Albaniji [Sava Zlatić's report on the situation in Albania], 12.08.1947, 1-3.
[243] Jurij Haladin, *Boj za Albanijo: propad jugoslovanske širitve na Balkan* [The fight for Albania: the failure of Yugoslav expansion into the Balkans] (Ljubljana, 2011), 152-153.

**The Balkan Federation: Political Ambitions and Practical Realities**

The political tensions between Albania, Yugoslavia, and the Soviet Union reveal a broader issue: both Yugoslavia and the Soviet Union were not interested in providing Albania with a solid foundation for autonomy and independence. Between 1944 and 1948, the idea of a Balkan federation significantly influenced the political landscape of the Balkans, and Albania played a crucial role in the Yugoslav vision of the federation.

Although the concept of a Balkan federation predates 1944, I will not delve into its historical background here.[244] Already during the war, Tito aspired to revive this idea. No surprise, from Tito's point of view, the dominant state in this federation would be Yugoslavia. Therefore, already in 1944, Tito and his closest allies started proposing the idea of a federation that would initially include Yugoslavia, Bulgaria, Albania, and potentially Greece. During Tito's visit to Moscow in September 1944, Stalin encouraged him to pursue this idea further.[245]

In the autumn of 1944, Yugoslavia and Bulgaria started more concrete negotiations regarding the establishment of the Balkan federation. In December 1944, Edvard Kardelj traveled to Sofia to meet with the Bulgarian representatives and to initiate working on the draft of the concept for the future federation. During his visit, Kardelj encountered different attitudes toward the idea of the Balkan federation. The previous history of relations between Yugoslavia and Bulgaria and their respective relations with the Soviet Union influenced the opinions. Not everybody shared the enthusiasm for joining the Balkan federation. The fact that Yugoslavia imposed itself as a leader from the start was not welcomed by Bulgarian representatives. However, the majority of disagreements revolved around the question concerning the nature of



[244] Selected publications: Stavros Stavrianos, "The Balkan Federation Movement A Neglected Aspect," *The American Historical Review* (1942): 30-51; Árpád Hornyák, "The Balkan Federation 1866-1948," *Bulgarian Historical Review/Revue Bulgare d'Histoire* 1-2 (2007): 217-232; Roumen Genov, "Federalism in the Balkans: Projects and realities," *Codrul Cosminului* 20, no. 2 (2014): 391-412.
[245] Branko Petranović, *Balkanska federacija 1943-1948* [Balkan Federation 1943-1948] (Beograd, 1991), 125-126.

the federation. Bulgarians considered that a Balkan alliance should be established on the principles of confederation. On the other hand, Yugoslavia expected that Bulgaria would become part of the Federal People's Republic of Yugoslavia with the same status as other federal republics. No surprise, Yugoslavia's expectations did not fare well among the Bulgarian representatives. The Soviet Union also did not approve of the idea of incorporating Bulgaria into the Yugoslav state and supported the idea of confederation.[246]

In the meantime, Yugoslavia turned its attention to Albania and voiced the idea of including Albania in the future Balkan federation. During the first meeting of the Antifascist Committee of Albania in Përmet, Albanian communists expressed a positive attitude towards the idea of "the unification of all Balkan peoples and realization of the Balkan confederation." While Tito was cautious to suggest the incorporation of Bulgaria into a Yugoslav state, this was not the case with his attitude towards Albania, where he expected this suggestion not to be even discussed. Tito already considered Albania part of the Yugoslav sphere without any significant agency. In addition to the already-mentioned economic agreements, Yugoslavia and Albania established cooperation on many different levels, including military, cultural, and financial. In the wake of growing Yugoslav influence in Albania, already in early 1946, Albania was taking a step back.[247]

The beginning of 1947 was marked by tensions between the Yugoslav and Albanian governments. At the same time, Moscow started paying closer attention to Yugoslav interests and influence in Albania. The newly acquired interest in Moscow did not slip the attention of Enver Hoxha, who voiced his dissatisfaction with Yugoslavia to the Soviet Union. Beyond his fears over Yugoslav influence in Albania, Hoxha was also concerned for his own position. He



[246] Hornyák, *The Balkan Federation*, 230-232.
[247] In addition to agreements of mutual friendship and cooperation, Yugoslavia was promising that the question of Kosovo and Metohija would be addressed. The Yugoslav idea of the solution was to give Kosovo and Metohija to Albania, but only when Albania becomes the federal republic inside Yugoslavia. Expectedly, the historiography in Serbia often uses this suggestion as a sign "of good will and cooperation" towards Albanians.

anticipated that he would not stay in power if Albania became part of Yugoslavia. The tensions and bickering between Albania and Yugoslavia continued during 1947. This prompted Stalin to invite a Yugoslav delegation to come to Moscow in order to discuss the matter of Albania. During the visit, Stalin scolded Kardelj, saying that Yugoslavia was at fault regarding the Albanian complaints. Also, Stalin warned the Yugoslav delegation to change the attitude and manner in which they were treating their Albanian counterparts in joint companies and generals in the Albanian army.[248]

**The Rocky Road to Moscow**

In 1947, Yugoslav financial aid played a crucial role in Albania's economy, making up 57% of the Albanian national budget. The construction of critical infrastructural projects was in full swing. Yugoslav military and economic advisers were the main carriers of almost all major projects in Albania. The Yugoslav grip on Albanian economic and political life was exceedingly strong. Most of the decisions concerning the major investments and projects were made in Belgrade, and the Albanian partners were merely informed about the final decisions. This was also the case with the joint Albanian-Yugoslav Electrification Company.[249] In the second half of 1947, the construction of the Selitë power plan started. Almost immediately, the director of the Albanian-Yugoslav Electrification Company, Shahin Ruka, complained that the Albanians felt excluded from the project. In his letter to the director of the Yugoslav company *Hidrogradnja*, in charge of the acquisition of equipment and machinery for the power plant, Ruka complained that the promised equipment was still not delivered and that his

[248] Zoran Janjetović, "An oppressive liberation: Yugoslavia 1944–1948" in *The Routledge Handbook of Balkan and Southeast European History* ed. John R. Lampe and Ulf Brunnbauer (London, 2020), 401-408.
[249] AY, 837, 1-3-b. Pitanje elektrifikacije Albanije [Electrification of Albania], 1947, 1-4.

previous plans were being ignored. Additionally, the construction deadlines were constantly being pushed without any explanation. Ruka insisted that there should be more frequent and detailed communication and that Albanian experts should also have more say in matters related to the construction of the power plant.[250]

Despite Albanian protests and complaints about the attitude of the Yugoslav government, as long as Moscow supported the Yugoslav ambitions, Hoxha had no alternative but to feel frustrated with Yugoslavia's growing dominance and fears of the annexation. In July 1947, during his trip to Moscow, Hoxha voiced his concerns and the growing dissatisfaction and resistance of Albanian communists towards Yugoslav ambitions. Hoxha noted that although the Soviets expressed interest in Albanian qualms, they still perceived Albania as a Yugoslav appendage. The Yugoslav government quickly picked up on Albanian protests and complaints in Moscow. Instead of calming the tensions, the Yugoslav government presented a memorandum to the Central Committee of the Albanian Communist Party, criticizing them for anti-Yugoslav policy and unrealistic expectations in Albania's first Five-Year Plan.[251]

In 1947, with Tito's growing influence, the Soviet attitude towards Albania was starting to change. In his memoirs, Dimitrii Chuvakhin, the Soviet representative in Tirana, noted that Stalin mostly agreed with criticisms of Enver Hoxha towards the Yugoslav policy in Albania.[252] However, Jeronim Perović states that the main reason that pushed Yugoslav-Soviet relations into a whirl was Yugoslav involvement in the Greek civil war.[253] In other instances, such as with Trieste and Carinthia, Stalin was able to contain Yugoslav ambitions and avoid clashes with the Allied forces. However, in the case of Greece, Yugoslavia had quite an autonomous



[250] AY, 850, 53-114. Dopis Shahin Ruke u vezi kašnjenja radova i neisporučivanja opreme [Shahin Ruka's letter regarding delays in works and non-delivery of equipment], 1-2.
[251] Branko Petranović ed., *Zapisnici sa sednica Politbiroa Centralnog komiteta KPJ (11. jun 1945 - 7. jul 1948)* (Beograd 1995), 240.
[252] Alksandr Gugnin and Yulia Lisnievska, "Enver Hoxha and Euroestalinism," *Grani* 25(4) (2022): 50-59.
[253] Jeronim Perović, "The Tito-Stalin split: a reassessment in light of new evidence," *Journal of Cold War Studies* 9/2 (2007): 32-63.

policy. The Soviet attention only continued to grow, especially after they found out that Tito was planning to engage in military actions in Greece.

By the end of 1947, it was becoming increasingly obvious that Stalin was dissatisfied with Tito's ambitions and attitude. Already in the summer of 1947, the Soviet Union started increasing its presence in Albania. The Soviets sent a set of their own experts to Albania to help the Albanian experts with oil refining and mining. The Soviet presence and influence in Albania continued to grow. Albanian communists welcomed this and started changing their attitude towards Yugoslav experts and instructors. Yugoslavia did not stay passive and tried to reassert influence in Albania, but this time more carefully, changing the tone in negotiations and paying attention to Soviet interests. Tito was not entirely convinced by Stalin's reassurances that the Soviet Union was not trying to take over the primacy in Albania.

In the background, Stalin was also dissatisfied with Yugoslav negotiations with Bulgaria. In 1945, the United States and the United Kingdom signaled to Stalin to stop Yugoslav-Bulgarian negotiations regarding the Balkan federation. The Allies considered that since Bulgaria was in the armistice phase, making any official treaties or agreements was out of the question. Stalin did not want to antagonize allies over this and informed Yugoslavs and Bulgarians that federation plans should be put on hold. Only in 1947 did the negotiations on the Balkan federation continue. During his visit to Belgrade in August 1947, Bulgarian President Georgi Dimitrov signed the Agreement of Mutual Friendship and Aid.[254] Bulgarian and Yugoslav delegations reopened the negotiations on Balkan federation during the conference on Lake Bled with the approval of Moscow. Stalin only warned them that the official declaration of federation was out of the question before the ratification of the peace treaty with Bulgaria. Again, Albanians were completely excluded from the negotiations, despite the fact that all plans for the future federation included Albania. The Albanian delegate in Sofia

[254] Stojković, *Balkanski ugovorni odnosi 1876-1996*, Tom 3, 143-145.

was only briefly informed that Tito and Dimitrov were talking about the details of the confederation and that the Albanian government would be informed of their decisions. Enver Hoxha did not oppose the notion of Albania being part of the Balkan federation but was deeply dissatisfied and frustrated that he was not consulted or directly informed about negotiations.[255]

The following year proved to be faithful for the relations between Yugoslavia, Albania, and the Soviet Union. In January 1948, Milovan Đilas traveled to Moscow, where Stalin criticized the arrogant attitudes of Yugoslav experts and instructors in Albania but ultimately approved that Yugoslavia should continue to have a presence there and the idea of including Albania in the Balkan federation.[256] After a positive signal from Moscow, Tito continued leading his policy in Albania as before. The Yugoslav agitprop painted the cooperation between Yugoslavia and Albania as successful and friendly, without any resentments or conflicts.[257] Once again, Yugoslavs tried to enforce their opinions on the Albanian Communist Party, strongly suggesting that the economic plan for 1948 should be amended according to instructions from Belgrade.[258] However, the Yugoslav government did not offer any tangible solutions to the problems about which Albanians complained. The problems in the operations of joint Albanian-Yugoslav companies not only remained but were getting increasingly worse, stalling any progress on projects. On the one hand, the Albanian government constantly complained that the Albanian experts were not included in the process of decision-making and that Yugoslav representatives and experts were not cooperating but commanding.[259] On the other hand, Yugoslav representatives denied such accusations and blamed all delays on the



[255] Ramet, *The Three Yugoslavias,*175-177.
[256] Milovan Đilas, *Conversations with Stalin* (Harcourt, 1961), 170-171.
[257] AY, 112, 829. Dobri odnosi i saradnja Jugoslavije i Albanije [Good relations and cooperation between Yugoslavia and Albania], 11.01.1948, 1-2.
[258] AY, 507, 9-1/1-153. Izveštaj Save Zlatića rukovodstvu KPJ [Sava Zlatić's report to the CPY leadership], 18.01.1948, 1-3.
[259] AY, 507, 9-1/1-197. Szabad Nep. "Miért tanácsolták el Albániából a jugoszláv szakembereket?" [Why were Yugoslav specialists advised away from Albania?], 29.07.1948. Available also on: Arcanum https://adt.arcanum.com/hu/view/Nepszabadsag_1948_07/?pg=222&layout=s last accesed on 31 May 2024.

Albanians. Additionally, Yugoslavs claimed that Yugoslav experts and instructors barely played any part in the functioning of the joint companies and that all decisions were made by Albanian ministries.[260]

The documents kept in Yugoslav archives regarding the Albanian-Yugoslav Electrification Company do not support Yugoslav claims. It was evident that Yugoslav experts did not consult many Albanian experts and that final decisions were made in Belgrade. The construction of the Selitë power plant was constantly late, and the complaints of Shahin Ruka were not taken seriously. Although there were great delays, the majority of construction on Selitë was finished by the end of February 1948.[261]

The relations between Yugoslavia and Albania continued to deteriorate during the first half of 1948. Encouraged by Stalin's attitude in January, Tito sent a telegram to Hoxha stating that Albania should continue cooperating with Yugoslavia, especially in economic and military projects.[262] It should be emphasized that Tito was not fully reassured that Stalin would continue supporting Yugoslav plans for Albania.

Things got worse in February 1948 when Yugoslav and Bulgarian leaders were summoned to appear in Moscow to discuss the open announcement of their plans for the future Balkan federation without previous consultation with Stalin. The continuous talks between Yugoslavia and Bulgaria on a Balkan federation that would include Albania and Greece were against the already-established deal Stalin had with Churchill.[263] Moreover, Stalin condemned Tito's plans for sending two divisions of the Yugoslav army into Albania without prior consultations with the Soviet Union. During the spring of 1948, Tito continued his policy in



[260] AY, 50, 48/693/4. Izveštaj o problemima u privrednoj saradnji Albanije i FNRJ u vezi mešovitih društava [Report on the problems in the economic cooperation between Albania and the FPRY regarding mixed companies], 1-5.
[261] "Avanturistički istupi albanske vlade protiv životnih interesa albanskog naroda" [Adventurous actions of the Albanian government against the vital interests of the Albanian people]. *Borba* 161/12, 6.07.1948, 1.
[262] Majstorović, "The Rise and Fall of the Yugoslav-Soviet Alliance, 1945-1948", 132-137.
[263] Moše Pijade, "O pitanju Balkanske federacije," [About Balkan Federation] *Borba*, 55/14, 6.03.1949, 2.

Albania, even though Yugoslavia criticized the already open anti-Yugoslav sentiments present in Albanian politics as well as the bigger influx of Soviet experts and instructors.[264] By the end of May, Albanian Minister of Industry Tuk Jakova officially announced that Albania would procure equipment for the factories and important infrastructural projects from the Soviet Union.[265] The atmosphere between Yugoslav instructors and representatives in Albania became more tense during June, and accusations because of the late procurements and arrogant behaviors between Albania and Yugoslavia continued.[266]

Only on June 7, 1948, did Yugoslavia recall ambassador Josip Đerđa. Before May 1948, Albanians did not come out openly against Yugoslav policy. The situation changed by the end of May, and the moves of Albanian politicians clearly signaled that the Soviets aided and supported their attitude. This signaled to Yugoslavia that the Soviet Union was taking over and, by extension, stopping Yugoslav expansion in the south.[267] After the Cominform resolution, Albania turned towards Bulgaria and the Soviet Union, and the remaining Yugoslav experts were officially banned from interfering in Albanian industry. One of the newly introduced measures was the establishment of zones forbidden for foreign citizens.[268] Selitë power plant was located in one of those zones, thus effectively preventing Yugoslav engineers and contractors from continuing to work there. Only in 1952, with the help of Soviet experts, did Selitë power plant start providing Tirana with electricity, and it was the only of nearly ten planned hydropower plants that were built.[269]



[264] "Šta je albanskom narodu donela avanturistička politika Envera Hodže," [What did Enver Hoxha's adventurous policy bring to the Albanian people] *Borba*, 264/14, 6.11.1949, 4.
[265] "Klevetnička kampanja albanskih rukovodilaca protiv Jugoslavije na kongresu KPA" [Slanderous campaign of Albanian leaders against Yugoslavia at the CPA congress]. *Borba*, 287/13, 27.11.1948, 4.
[266] AY, 50, 48/105. Izveštaj o ponašanju albanskih stručnjaka prema jugoslovenskim stručnjacima [Report on the behavior of Albanian experts towards Yugoslav experts], 19.06.1948, 1-3.
[267] Ljubodrag Dimić ed., *Jugoslovensko-sovjetski odnosi: 1945-1956. Zbornik dokumenata* [Yugoslav-Soviet relations: 1945-1956. Collection of documents] (Beograd, 2010), 364-366.
[268] DA MSPRS, PA, Albanija, 3. Telegram Ministarstvu spoljnih poslova FNRJ [Telegram to the Ministry of Foreign Affairs of the FPRY], 3.09.1948, 423475.
[269] Hadalin, *Boj za Albanijo,* 365.

**From Allies to Adversaries: The Political and Economic Ramifications of the Tito-Stalin Split**

In addition to political alignment with the Soviet Union, Yugoslavia was expecting their help in rebuilding the country. However, since the beginning of cooperation on industrial and infrastructural projects, the situation has been fraught with difficulties and uncertainties. The Soviets promised to provide the expertise and materials that Yugoslavia requested. In 1945, Yugoslavia and the Soviet Union signed an Agreement on Friendship and Mutual Aid, establishing the foundation for future cooperation.[270] A critical requirement for the development of industry in Yugoslavia was the lack of experts, which was one of the first demands Yugoslavia made to the Soviet Union.[271]

In May 1945, twelve experts from the Soviet Union were sent to aid and train Yugoslav experts in rebuilding the industry and infrastructure.[272] In a manner similar to the attitudes of Yugoslav experts towards Albanians, Yugoslav experts were treated by the Soviet government. The Soviets disregarded the detailed survey on what kind of expertise was needed. The decision on how many and what kind of experts were going to be sent to Yugoslavia was made in Moscow. The Yugoslav government was only informed of what should be provided for the Soviet experts during their stay in Yugoslavia.[273] Although Yugoslavia sent an extensive list of experts needed for the development of electric infrastructure and further electrification, only two experts were assigned to help the electricity utilities sector in Yugoslavia: Andrei Hodiko, who specialized in electrometallurgy, and Nikolai Abramov, an expert in hydropower plants.[274]



[270] "Ugovor o prijateljstvu i uzajamnoj pomoći FNRJ i SSSR," [Agreement on friendship and mutual assistance between the DFY and the USSR] *Službeni list DFJ* 40, 12.06.1945 (Beograd, 1945).
[271] "O sovjetskih strokovnih organizacijah," [About Soviet professional organizations] *Delavska Enotnost* 5/1, 16.06.1945, 3.
[272] DA MSPRS, PA, Sovjetski Savez, 30. Sovjetski stručnjaci upućeni na rad u Jugoslaviju [Soviet experts assigned to work in Yugoslavia], 21.11.1945, 7041.
[273] Dimić, *Jugoslovensko-sovjetski odnosi: 1945-1956*, 33-38.
[274] AY, 17, 9. Spisak stručnjaka iz Sovjetskog saveza [List of experts from the Soviet Union], 30.09.1946, 1.

The rocky start hinted at the direction at the direction in which Yugoslav-Soviet cooperation would develop. However, initially, the Yugoslav government was enthusiastic and believed in the Soviet promises. In 1946, Yugoslavia signed a new agreement on economic assistance with the Soviet Union. Again, the Soviet Union agreed to provide help in the development of the Yugoslav industrial complex by aiding in equipment and experts.[275] In conversations with Soviet representatives, Edvard Kardelj stressed that Yugoslavia desperately needed experts for electrification, chemistry, metal industry, and agronomy. The Soviets promised that they would provide experts that would help with technical training, project development, and other technical documentation. In addition, the agreement implied that Yugoslav experts and students would be provided with training and education at Soviet institutes and faculties.[276]

In July 1946, Yugoslavia signed yet another agreement with the Soviet Union concerning the procurement of industrial equipment and materials for the construction of complex projects.[277] Yugoslav engineers expected technical assistance in the production of the water turbines, transformers, and generators for the electrical facilities. With a focus on harnessing Yugoslav hydroelectric resources, the Five-Year Plan included anticipation that companies *Litostroj* and *Rade Končar* would be provided with technical assistance in order to increase their production of electrical equipment.[278]

It soon became clear that the Soviets were making many promises, but none of them were actually fulfilled. The promised help was nowhere to be found, and the case with the electric power sector was no different than that of other ministries. After making the initial



[275] DA MSPRS, PA, Sovjetski Savez, 107. Ugovor o uzajamnom pružanju tehničke pomoći izmedju FNRJ i SSSR [Agreement on mutual provision of technical assistance between the FPRY and the USSR], 27411.
[276] AY, 11, 12-44. Potrebe po Sporazumu o tehničkoj pomoći sa Sovjetskim savezom [Needs under the Technical Assistance Agreement with the Soviet Union], 1-2.
[277] Dimić, *Jugoslovensko-sovjetski odnosi: 1945-1956*, 135.
[278] AY, 16, 92-101. Potrebe elektromašinske industrije. Saradnja sa Sovjetskim savezom [The needs of the electromechanical industry. Cooperation with the Soviet Union], 17.11.1947, 1-4.

calculations on the extent of damages that Yugoslav electric infrastructure suffered during the war, Yugoslav engineers turned to the Soviet Union for help in procuring the needed equipment for the rebuilding.[279] In January 1946, a Yugoslav delegation led by engineer Bogdanović traveled to Austria to meet with the Soviet representatives and establish the possibilities of obtaining the needed electrical equipment from Austria. Namely, the Yugoslav delegation tried to negotiate the possibility of getting the turbines that were ordered during the war. Additionally, the Yugoslavian delegation agreed to buy six more turbines needed for the construction of new hydropower plants.[280] Upon the delegation's return to Yugoslavia, the representatives of the Department of Energy expressed concerns that they were not convinced that the Soviets would deliver the turbines in a timely manner. These suspicions proved justified. Although Yugoslavia was timely in paying the installments for the purchased turbines, the Soviets kept delaying the delivery.

In 1947, the General Directorate for Electrical Utilities wrote to the Soviet mission in Austria on several occasions that the promised equipment had not yet been delivered and that at least three turbines were already urgently needed.[281] In addition to the failure to fulfill promises of providing experts and equipment, the loan that the Soviet Union had pledged to Yugoslavia for industrial recovery remained undelivered, despite many protests and reminders sent by the Yugoslav government.[282] The electric utilities sector was deeply affected by these delays because all new hydropower plant facilities were constructed under the assumption that



[279] AY, 850, 12-243. Pro memoria ing. Barbariću u vezi nabavke opreme iz SSSR [Pro memoria ing. Barbarić regarding the procurement of equipment from the USSR], 24.04.1947, 1-2.
[280] AY, 850, 12-36. Izveštaj o putu u Austriju [Report on the trip to Austria], 15.01.1946, 1-5.
[281] AY, 850, 12-65. Koncept dopisa Vladi SSSR u Moskvi u vezi opreme i uplaćenih avansa [Draft letter to the Government of the USSR in Moscow regarding equipment and advance payments], 6.03.1947, 1-2.
[282] *Bela knjiga o agresivnim postupcima vlada SSSR, Poljske, Čehoslovačke, Mađarske, Rumunije, Bugarske i Albanije prema Jugoslaviji* [The Book on the aggressive actions of the governments of the USSR, Poland, Czechoslovakia, Hungary, Romania, Bulgaria and Albania towards Yugoslavia] (Beograd, 1951), 262-263.

the equipment would be provided by the Soviet Union or purchased with the Soviet loan.[283] During the meeting of the Yugoslav delegation in Moscow regarding Yugoslav policy in Albania, Soviet representatives remarked that the creation of joint Albanian-Yugoslav companies was not a good idea. It was also remarked that Yugoslavia should stop insisting on getting Soviet experts, as they clearly have enough experts of their own as they were sending them to Albania.[284]

By 1947, it was evident that the Soviet Union was dissatisfied with Tito's policy towards Albania and Greece and his ambitions for the Balkans. Also, Stalin was aware that by helping Yugoslavia rebuild infrastructure and develop industry, the Soviet Union could create a powerful rival. The reluctance to provide promised assistance and technical support, both in equipment and experts, shows that the Soviet Union was aware that if Yugoslavia continued to develop, it could be against Soviet interests.[285] The Soviet policy of giving as little as possible of the help they promised, especially concerning the needs of heavy industry, was one of the main reasons for the ultimate rift between Tito and Stalin. Dedijer's memoirs of negotiations with the Soviets serve as an illustration of this policy when he describes what Yatrov, one of the Soviet delegates for signing the Agreement on Mutual Economic Help, said to Yugoslav delegates: "What do you need heavy industry for? In the Urals, we have everything you need!"[286] Clearly, Tito did not want to end up like one of the Soviet satellites that would develop only one branch of industry or be a source of raw materials, and he wanted for Yugoslavia to take a more autonomous approach to developing its economy.[287]

[283] AY, 850, 12-252. Okvirni ugovor sa Sovjetskom upravom u istočnoj Austriji [Agreement with the Soviet Administration in Eastern Austria], 22.04.1947, 1-5.
[284] Đilas, *Conversations with Stalin*, 87-89.
[285] DA MSPS, PA, Sovjetski Savez, 99. Podaci o odnosu FNRJ i SSSR [Data on the relationship between the FPRY and the USSR], 23510.
[286] Vladimir Dedijer, *Tito Speaks. His Self Portrait and Struggle with Stalin* (London, 1953), 285-286.
[287] "Soviet-Yugoslav Economic Relations 1945—1955," *The World Today* 12/1 (1956): 38-46.

Ultimately, the combination of many factors led to the Yugoslav-Soviet clash. The new studies suggest that the idea of a Balkan federation was not as threatening as thought before. In 1947, it was far from close to implementation, although Yugoslavia and Bulgaria enthusiastically announced it. Also, Yugoslavia never had intentions of being an equal partner with both Bulgaria and Albania and was only interested in a Balkan federation in which they would be one of the Yugoslav federal republics.[288] Tito's ambitions in Albania, the unauthorized deployment of Yugoslav troops in southern Albania, and most importantly, Yugoslavia's involvement in the Greek civil war,[289] despite Stalin's strong disagreement, it only added more reasons for Stalin to be fearful of Yugoslavia, disrupting his vision of the monolithic Soviet Bloc.[290] At the same time, Tito's actions in 1947 testify to testing the boundaries with the Soviet Union. His nonchalant attitude towards Soviet constant delays and postponement of trade agreements, as well as his reopening of trade negotiations with the United States, signaled to the Soviet Union that Yugoslavia has no intentions of following the uniform Soviet policy.[291]

**Conclusion**

In many ways, Tito's leadership and Yugoslav attitudes in the period between 1945 and 1948 were arrogant and assertive. After the Second World War, Yugoslavia reemerged as a communist country and one of the most devout followers of the Soviet Union. However, unlike



[288] Svetozar Rajak, "The Cold War in the Balkans, 1945-1956" in *The Cambridge History of the Cold War* ed. Melvyn P. Leffler and Odd Arne Westad (Cambridge University Press, 2010), 198-220.
[289] Evanthis Hatzivassiliou, "From adversity to alliance: Greece, Yugoslavia and Balkan strategy, 1944-1959," *Balkan Studies* 45/1 (2004): 123-133.
[290] Svetozar Rajak. "From regional role to global undertakings: Yugoslavia in the early Cold War" in *The Balkans in the Cold War* ed. Svetozar Rajak, Konstantina Botsiou, Eirini Karamouzi and Evanthis Hatzivassiliou (Palgrave Macmillan, 2017), 65-86.
[291] Vladimir Unkovski-Korica, *Economic struggle for power in Tito's Yugoslavia: From World War II to Non-Alignment* (Bloomsbury Publishing, 2016), 22-71.

other countries in the Soviet sphere of influence, the Yugoslav revolution was autochthonous, and Tito enjoyed a great deal of autonomy. The initial enthusiasm after the war perhaps blurred the interest and differences that would soon reemerge in Yugoslav-Soviet relations.

Socialist Yugoslavia approached the rebuilding of the country in line with the Soviet mode of governance and embraced the model of central planning. Following the Soviet example, Yugoslavia placed great importance on rebuilding and developing the economy and industry. One of the main prerequisites for the successful building of an economy was well-developed electric infrastructure, and the Yugoslav planners focused much of their strength on rebuilding the post-war infrastructure. The Kingdom of Yugoslavia had a modest electric infrastructure, and, after the war, many of the power plants and transmission lines that existed were severely damaged. Yugoslav engineers were tasked with organizing the ministry dedicated to electric power utilities and industry and, more importantly, developing the first plan for the electrification of Yugoslavia as a whole. The electrification plan was envisioned to be a crucial part of the first Five-Year Plan. On how important electrification was for the plans of Yugoslav rebuilding, there were almost weekly columns with information on the importance of electrification and the construction that was happening in various parts of the country.[292] As a newly established communist state, it took two years for Yugoslavia to prepare to switch to the central planning model of the economy. Because of the new and uncharted terrain, the establishment of a permanent government body dedicated to electric infrastructure and electrification took little more than two years.

Simultaneously with the rebuilding of the country's infrastructure, Tito had already, during the war, set his eyes on expanding the Yugoslav territory and spreading his influence. After 1945, he would openly express and claim the territories of Trieste, Carinthia, and Albania.

[292] "Osnovna programska načela Narodnog fronta," [Basic program principles of the People's Front] *Borba* 191/10, 8.08.1945, 2; "Razgledi po bratski Sovjetski zvezi," [Views of the fraternal Soviet Union] *Slovenski poročevalec* 146/6, 7.10.1945, 5; "Gospodarska obnova," [Rebuilding the Economy] *Ljudska pravica* 37/6, 7.06.1945, 4; "O elektrifikaciji," [On electrification] *Borba* 17/12, 20.10.1947, 1.

Besides the obvious nuances of post-Second World War politics, which were already addressed numerous times in modern historiography, the aim of this chapter was to bring attention to the aspect of Yugoslavia using critical infrastructure, in this case electrical infrastructure, as a political tool to expand its influence in the Balkans. The importance of functioning electrical utilities and networks, especially after the devastating consequences of the war, was crucial for maintaining the contested territories. In the case of Carinthia, Tito was aware that incorporating a region that was rich in natural resources would help speed up the rebuilding of the economy. The fact that the Slovenian part of the electric network was vulnerable and subject to Austrian whims because of its control upstream of the Drava River only encouraged Yugoslavia to act quickly. Additionally, unlike the southern parts of Yugoslavia, the regions of Trieste and Carinthia already had developed infrastructure and played a significant role in the global economy and controlling them would benefit Yugoslavia. Despite Tito's ambitions towards both Trieste and Carinthia, the influence of emerging blocs would cut his desires short. Although significant efforts were made to provide or control the critical electric infrastructure, the contested areas of Trieste and Carinthia remained out of Yugoslavian reach. The Free Territory of Trieste left some space for a possible renewal of Tito's ambitions, but the clash with the Soviet Union in 1948 dispersed them completely. What's more, in the case of Trieste, the bickering's and Yugoslav control over part of Trieste's electric networks proved more troublesome than beneficial for Yugoslavia.

The unsuccessful claim on Trieste and Carinthia did not deter Tito's ambitions, which found full expression in Yugoslav policy towards Albania. Historiography, particularly in Serbia, approaches the issue of Yugoslav ambitions in Albania differently due to the ongoing conflicts and protests between the Republic of Serbia and the Republic of Kosovo. Tito's ambitions in Albania were analyzed from many angles, and this chapter adds to the existing literature from the point of view of electrical infrastructure. My claim also lies in the fact the

fact that Tito replicated the Soviet pattern of achieving economic autarky in his attitude towards Albania.

Yugoslav influence in Albania started early on, in 1943, with Yugoslav communists actively helping the Albanian communist fighters and being the first country post-1945 to recognize Albanian state. Furthermore, in 1945 and 1946, Yugoslavia actively represented Albanian interests internationally and insisted that the newly formed country be widely recognized and included in international bodies.[293] It soon proved that Yugoslavia had a different agenda. The Yugoslav influence in Albania was so strong that, by the end of 1946, Enver Hoxha was already afraid for his own position if the Yugoslav influence kept growing. Beside Yugoslav control over the Albanian army and political parties, control over the economy proved to be crucial. One of the ways of establishing dominance over Albania was through the establishment of joint companies, among them the Joint Albanian-Yugoslav Electrification Company. Despite the initial agreement that both parties would have equal footing and make decisions jointly, in realty, everything was in Yugoslav hands. The frustration of Albanian politicians and experts was only deepened by constant delays in projects such as the construction of the Selitë power plant.

In truth, Tito's ambitions for potential expansion were not limited to Albania. In the period between 1945 and 1948, the idea of establishing a Balkan federation consisting of Yugoslavia, Bulgaria, Albania, and potentially Greece was actively explored. However, this idea never moved from the negotiation table. The United States and the United Kingdom disapproved of this idea and influenced the Soviet Union to discourage Yugoslavia and



[293] "Albanski narod bi trebalo da učestvuje u radu Konferencije mira sa istim pravima kao i ostale pobedničke nacije" [The Albanian people should participate in the work of the Peace Conference with the same rights as other victorious nations] *Borba* 201/11, 22.08.1946, 1; "Nova Jugoslavija želi da Albanija bude slobodna i nezavisna zemlja" [New Yugoslavia wants Albania to be a free and independent country] *Borba* 191/11, 11.08.1946, 1; "Albanija je svojom borbom protiv fašizma zaslužila da učestvuje u pripremi ugovora o miru sa Nemačkom" [With its fight against fascism, Albania deserved to participate in the preparation of the peace treaty with Germany] *Borba* 74/12, 27.03.1947, 1.

Bulgaria from pursuing it any further. The new studies show that the idea of federation would never materialize, regardless of foreign influence on the negotiations, mostly because Yugoslavia never had intentions of being an equal partner and envisioned Bulgaria and Albania just as the federal republics of Yugoslavia. Additionally, Tito had bold ambitions in Greece and actively helped Greek communists during the civil war. Ultimately, Tito's ambitions, need for autonomy, and disobedience led to the clash with the Soviet Union.

In exploring the development of Yugoslav electric infrastructure, there is a clear timeline of the fractures in Yugoslav-Soviet relations. The hopes Yugoslavia had that the promised help from the Soviet Union would aid them in rebuilding and further developing their economy, industry, and critical infrastructure proved to be misplaced. The Soviet Union promised a lot but, in reality, delivered very little. The need for experts that would help Yugoslavia build an extensive network of profitable hydroelectric power plants was never met, and the Soviet Union sent just two experts that stayed in Yugoslavia for six months. Furthermore, the equipment that was promised never arrived, and what's more, the turbines, transformers, and generators that Yugoslavia fully paid for ultimately were never delivered.[294] Stalin's fears that with extensive help in rebuilding the Yugoslav economy and industry he would create a powerful rival, coupled with Tito's defiance and ambitions in Albania and Greece, led to the expulsion of Yugoslavia from the Cominform, a decision that would change the course of the Cold War. It is hard to determine whether Tito did plan to eventually clash with the Soviet Union or if he was just testing the limits of a possible autonomous role inside the Soviet Bloc. In terms of the plans for the electrical infrastructure and policies led in Albania and especially Greece, Tito's actions show that he was very much aware that Stalin would not



[294] "Ostvaruje se veliki plan elektrifikacije naše zemlje," [The big electrification plan of our country is being realized] *Borba* 195/14, 17.08.1949, 3.

tolerate his decisions. On the other hand, Yugoslavia's efforts to remain in the Soviet sphere immediately after the Communist expulsion paint a different story.

As always, the truth is somewhere in between. Yugoslavia's policy in the period between 1945 and 1948 made the country determined to expand its influence and impose itself as an undisputed leader in the Balkans. Tito understood how powerful a tool electric infrastructure was in the hands of political leaders. Its strategic use can influence domestic policies, international relations, and economic development. Understanding the political dimensions of electrical infrastructure highlights the critical intersection between energy policy and political strategy. The actions that Yugoslavia took in establishing its influence over electric infrastructure in Trieste, Carinthia, and Albania laid the foundations and proved to be crucial for the development of the electric grid in the Balkans and later connecting to the West European UCPTE grid.

# Chapter 3: Between East and West: Yugoslavia's Diplomatic Strategy and the Yougelexport Project in Opening to the West, 1950-1963

*"The bridge must be built, even if no one crosses it."*

*Gunnar Myrdal*[295]

The 1950s stand as the most decisive epoch, marked by many political turbulences that echoed globally. This period was marked by ideological confrontations and geopolitical shirts, all against the backdrop of post-war reconstruction and the growing threat of the Cold War. From decolonization movements in Africa and Asia to the rise of McCarthyism in the United States, the 1950s reflected a complex network of power struggles, movements, and ideological clashes that would reshape the geopolitical landscape of global governance.

The political turbulence did not circumvent Yugoslavia. On the contrary, Yugoslavia found itself in the middle of it. The geopolitical consequences of the 1948 clash between Yugoslavia and the Soviet Union resonated throughout the international arena. Shunned and isolated from the USSR and the countries of the Soviet Bloc, Yugoslavia was compelled to forge a different path. Yugoslavia diverged from the regional political dynamics and emerged from this backlash as one of the significant actors in the political divisions of the Cold War. In contrast to the locally oriented political ambitions that Tito had in the late 1940s, the new political course of Yugoslavia embraced after 1948 was characterized by broader perspectives and was open to exploring new possibilities. However, in 1948, Yugoslavia had to act quickly and devise a survival plan due to its geographically precarious position. At the same time, Tito took advantage of this unique position. The political solution to the issue of isolation and the



[295] Quoted in Anika de la Grandville to Václav Kostelecky, 28 April 1980. Arbertarrörelsens arkiv och bibliotek (ARBARK), Václav Kostoleckys arkiv, 3332/4/3/5.

threat of Stalin's retaliation was Yugoslavia's opening towards Western Europe and the United States.[296]

This chapter will focus on the tumultuous politics of the 1950s in Yugoslavia as reflected in the international project involving Yugoslavia, Austria, Italy, and FRG, under the auspices of the United Nations Economic Commission for Europe (UNECE). During the course of the 1950s, Yugoslavia implemented a series of ideological and strategic initiatives that deeply influenced not just Yugoslavia but also the Balkans, Europe, and the international community.[297]

The 1950s were an eventful decade for the entire European continent. While the Soviet Union was consolidating its power in the Eastern Bloc countries, the western region of the European continent embarked on a course of integration and consolidation. The process of European unification was reflected in multiple processes and initiatives and encountered numerous challenges along the way.[298] The position of Yugoslavia in relation to European unification was dependent upon various factors, primarily its relations with the United States and the NATO alliance.[299]

This chapter focuses on the project dedicated to interconnecting the electric grid between Yugoslavia and countries in Western Europe. The first part of the chapter will outline the unique processes that were happening in 1950s Europe and emphasize the role of the director general of the UNECE, Gunnar Myrdal, in creating the possibilities for negotiations



[296] Mark Kramer, "Stalin, the Split with Yugoslavia, and Soviet-East European Efforts to Reassert Control, 1948-53," in the *The Balkans in the Cold War* ed. Svetozar Rajak, Konstantina E. Botsiou, Eirini Karamouzi and Evantiz Hatzivassiliou (Palgrave McMillan: London, 2017), 29-63.
[297] Svetozar Rajak, *The Cold War in the Balkans, 1945-1956* (Cambridge University Press, 2010), 21-25.
[298] Selected publications: Wilfried Loth, *Building Europe: A history of European unification* (De Gruyter Oldenburg, 2015); Jacques Delors, "European unification and European security," *Adelphi Papers* 34, no. 284 (1994): 3-14; Richard Swedberg, "The idea of 'Europe' and the origin of the European Union–a sociological approach," *Zeitschrift für Soziologie* 23, no. 5 (1994): 378-387.
[299] Stevo Đurašković and Nikola Petrović, "Failure to build Yugoslav and European identity: comparison between the 1950s Yugo Prophecy and 1980s Euro Prophecy," *National identities* 25, no. 5 (2023): 441-462.

between the East and West. I also put an emphasis on the entanglements between European energy needs and the abundance of hydroelectric resources in Yugoslavia, as one of the major political tools Yugoslavia used to present itself as a trustworthy partner to the West European countries. This resulted in negotiations leading to the establishment of the Yougelexport project.

Despite the setback created by the conflict with the USSR, Tito did not abandon ambitions of Yugoslavia being a key player in the Balkans and once again reached to using the critical infrastructure as a political tool to strengthen Yugoslavia's position. The idea of building a smaller version of the USSR on the Balkans had to be abandoned, but the need for primacy in the region did not disappear. It took a different form and materialized in collaboration with Western Europe and the United States in the early 1950s. Through the example of the Yougelexport project, I aim to illustrate in what ways Yugoslavia established itself as a bridge between East and West. Additionally, by engaging in the international project with the Western European partners, Yugoslavia tried to present itself as a trustworthy partner due to the suspicions that Western Europe had because of its previous engagement with the Soviet Union. The chapter also emphasizes in what ways the ideological and political changes of 1950s Yugoslavia affected the project. The analysis of Yougelexport aims to address common criticisms of Hughes' LTS approach, which often focuses only on successful projects, by examining the project's ultimate failure.

Moreover, this chapter also introduces the technomanagers, a distinct class of engineers and managers that emerged in 1950s Yugoslavia. Following the expulsion from the Cominform, Yugoslavia changed not just the political alignment but also the internal organization of the state. The result of these changes was the introduction of the self-management system. Self-management was the polar opposite of central planning and consequently allowed for the rise of technomanagers. What made the technomanagers different from the managers, experts, and

engineers that Yugoslavia had in the late 1940s was the high level of autonomy in decision-making. The Yougelexport project illustrates this shift in decision-making. In contrast to the infrastructural projects from the central planning era, where decisions were made at the top levels and the experts were just informed about their duties, in the case of Yougelexport, the experts are those facilitating cooperation between Yugoslavia, the United Nations, and Western Europe.

Finally, the chapter closes with a reflection on the legacy of the project, which, despite its failure, paved the way for the realization of the SUDEL project, on which the next chapter will closely focus.

**The Vision of Gunnar Myrdal**

Yugoslavia successfully mitigated the initial isolation after the break from the Soviet Union by promptly establishing new alliances with the United States and the United Nations European Commission for Europe (UNECE).[300] However, the underlying motivations driving Western European countries and the United States to engage in Yugoslav politics were fundamentally distinct. In the context of Western Europe, the endorsement of Yugoslavia was motivated by the conceptualization of a cohesive European unity, wherein Yugoslavia was regarded as a potential conduit towards a harmonized and integrated European future.[301] Conversely, Yugoslavia held significant geopolitical values for the United States. The United States



[300] Ivo Banac, *With Stalin against Tito: cominformist splits in Yugoslav communism* (Cornell University Press, 1988), 19-23.
[301] Vincent Lagendijk, "The Structure of Power: The UNECE and East-West Electricity Connections, 1947-1975," *Komparativ: Zeitschirift für Globalgeschichte und vergleichende Gesellschaftsforschung* 24/1 (2014): 50-65.

envisioned that by supporting Yugoslavia, they would set an aspiring example for other communist countries within the Eastern Bloc to break away from Soviet dominance.[302]

The role of Gunnar Myrdal, the director general of the UNECE, who played a significant role in shaping European economic and infrastructural policies during the tumultuous 1950s, has to be emphasized. It would not be an exaggeration to claim that many projects facilitated by UNECE during his mandate would not have come to be without Myrdal's involvement and brilliant guidance. This was even more visible in the Yougelexport project, where his role as a negotiator was crucial.

Myrdal's tenure as director general of UNECE coincided with the formative moment of the Cold War. In many ways, Myrdal was a renegade and unapologetically pursued his conviction that there had to be a platform for cooperation between the two conflicting geopolitical blocks. Due to his mostly positive reputation, UNECE achieved much more than it was originally intended. The UNECE's establishment in 1945 was a significant milestone, as it became the inaugural and enduring international organization dedicated to fostering economic collaboration in Europe. However, the role of this organization assumed had even more significance in light of the formation of the Cold War divisions, as it became an institution for fostering cooperation among nations belonging to the opposing ideological blocks.[303]

Foreshadowed by pan-European ideas and ambitions of a united Europe, the UNECE devoted enormous efforts to overcome the frustrations of Cold War politics. On the one hand, the communist governments boycotted the work of the UNECE Technical Committees, and, on the other hand, the Western European countries established a number of rival venues.[304]



[302] Henry W. Brands, "Redefining the Cold War: American Policy toward Yugoslavia, 1948-60," *Diplomatic History* 11, no. 1 (1987): 41-53.
[303] Daniel Stinsky, "'Integration, Nobody Knows What It Means': European Cooperation and the United Nations Economic Commission for Europe (UNECE), 1947-56." in *European Integration Beyond Brussels: Unity in East and West Europe Since 1945* ed. Matthew Broad and Suvi Kansikas (Springer Nature, 2020), 25-48.
[304] Yves Berthelot and Paul Rayment, *Looking back and peering forward. Economic Commission for Europe. United Nations: UNECE* (Geneve, 2007), 15.

Myrdal's idea of a UNECE Secretariat as a particular organizational structure that would serve as a "bridge between the East and West" became a primary goal during his service between 1947 and 1957. His belief in this idea was indeed profound, and he refused to give up on the idea of "building a bridge, even if no one crosses it."[305]

During this time, UNECE materialized as an alternative form of European integration, one that indeed aimed to be an all-European, intergovernmental organization.[306] Myrdal placed significant emphasis on the promotion of technical collaboration among the participating nations within the UNECE forum. The concept of such collaboration may be traced back to Myrdal's earlier research on the advancement of modernization in his home country of Sweden during the 1930s. Despite Myrdal's initial criticism of the political aspects of the United Nations before his appointment, soon thereafter he recognized and acknowledged the technocratic capabilities that platform, as UNECE provided.[307] Overall, Myrdal gave little attention to following the strict rules and had a more hands-on approach to governing the UNECE. UNECE, spearheaded by Myrdal, prioritized technocratic interactionism practices.[308]

Myrdal played a pivotal role in shaping the UNECE as an international organization functioning within the broader framework of the United Nations and provided it with a significant degree of autonomy. This platform facilitated constructive dialogue and collaboration between the United Nations, the United States, and the Soviet Bloc (both the United States and the Soviet Union were also members of the UNECE).[309] The fundamental



[305] Daniel Stinsky, "A Bridge between East and West? Gunnar Myrdal and the UN Economic Commission for Europe, 1945-1957." in *Planning in Cold War Europe. Competition, Cooperation, Circulations (1950s-1970s)* ed. Michel Christian, Sandrine Kott and Ondrej Matejka (De Gruyter: Oldenburg, 2018), 45-69.
[306] Melvin M. Fagen, "Gunnar Myrdal and the Shaping of the United Nations Economic Commission for Europe," *Coexistence* 25 (1988): 427-435.
[307] Beatrice Charrier, "Gunnar Myrdal and the scientific way to social democracy, 1914–1968," *Journal of the history of economic thought* 31/1 (2009): 33-55.
[308] Wolfram Kaiser and Johan W. Schot, *Writing the Rules for Europe. Experts, Cartels, and International Organizations* (Palgrave Macmillan: London, 2014), 243-246.
[309] Gunnar Myrdal, "Twenty Years of the United Nations Economic Commission for Europe," *International Organization* 22/3 (1968): 617-628.

concept underlying the UNECE was predicated on fostering multilateral agreements of cooperation and trade among nations as opposed to engaging in transient bilateral arrangements.

The UNECE's Committee on Electric Energy played a crucial role in facilitating the establishment of opportunities for the stable and continuous transmission of electrical energy across the geopolitical barrier known as the Iron Curtain. Under Myrdal's leadership, the UNECE provided the neutral ground for negotiations within the Cold War. Notably, Myrdal insisted that, when it came to handling the integration and extension of electrical networks, the preferences and requests of smaller or less influential nations would not be lost and suffocated by more powerful member states. This was particularly evident in the case of Yugoslavia.[310]

**European Energy Needs**

The advent of the twentieth century witnessed a notable surge in technical progress, resulting in the overcoming of global distances and prompting continents to recognize the necessity of establishing a cohesive economic framework. The rapid expansion of industrialization resulted in the depletion of numerous natural resources that played a crucial role in the cultural and political advancements of several Western European nations. In numerous countries, the prospect of achieving future development was (and in many cases still is) contingent upon their dependence on raw material resources situated in foreign countries. As a result of these circumstances, the state economies recognized the necessity for broader and more robust economic collaboration, prompting the establishment of organizations aimed at fostering the



[310] Vincent Lagendijk and Frank Schipper, "East, West, Home's Best: The Material Links of Cold War Yugoslavia, 1948-1980," *Icon* 22 (2016): 28-54.

development of a united economic market.[311] The demand for more energy became evident in the aftermath of the Second World War, prompting a pressing need to address the consumption of electrical energy.[312] However, it could be hardly said that the electrical industry was made an object of international trade.[313] In the early 1950s, only 5%, on average, of the electricity produced in European countries crossed their borders.[314] Therefore, many countries that experienced an energy deficit prioritized fuel imports over the possibility of electricity imports.

The post-war era witnessed the emergence of political ideas that had a substantial impact on the economic structure of many nations. These conceptions often led to the development of economic strategies that were not consistent with the countries' own reserves of raw materials and energy production. The issue around the potential shortage of electricity supply in industrially developed countries in Western and Central Europe was already apparent in the late 1940s. Moreover, many of these countries faced problems arising from the scarcity of potential resources for energy production. The scale of international electricity exchange in Europe remained relatively limited, with notable advancements occurring only after 1945, coinciding with greater efforts in the construction of transmission lines that facilitated cross-border connectivity.[315]

Therefore, in order to address this problem, the UNECE established a Committee on Electric Power in 1947.[316] The most logical proposition for solving the issues of electricity



311 Per Högselius, Arne Kaijser, and Erik van der Vleuten, *Europe's infrastructure transition: Economy, war, nature* (Palgrave McMillan, 2016), 1-16.
312 Michel Alliert, "L'évolution probable de la production et de la distribution de l'électrique," *Bulletin de la Société Française des électriciens* 11(1948), 173-183.
313 Erik van der Vleuten, Irene Anastasiadou, Vincent Lagendijk, and Frank Schipper, "Europe's system builders: The contested shaping of transnational road, electricity and rail networks," *Contemporary European History* 16/3 (2007): 321-347.
314 UCPTE/UCTE, *The 50 Year Success Story. Evolution of a European Interconnected Grid* (Brussels, 2009),11-13.
315 Vincent Lagendijk, "From Liberalism to Liberalization: international electricity governance in the twentieth century," in *Linking Networks: The Formation of Common Standards and Visions for Infrastructure Development* ed. Hans-Liudger Dienel and Martin Schiefelbusch (Routledge, 2016), 137-150.
316 Lagendijk, "The Structure of Power", 50-65.

supply entailed investing in the development of all European grid infrastructure capable of providing ample electricity to the entirety of the European continent. Nevertheless, as previously pointed out, this idea, despite its demonstrated efficiency and cost-effectiveness in addressing the expanding requirements of the entire European continent, ultimately remained a purely theoretical proposal, hindered by the political circumstances of the Cold War era.[317]

The imperative of meeting energy demands could not be undermined by deliberate political actions, and therefore there were significant efforts to address this issue with innovative solutions. In order to discuss and implement possible solutions, the UNECE Committee on Electric Power took on the role of a mediator in facilitating the development and expansion of cross-border interconnections. Besides the political difficulties, it is important to bear in mind that the category of infrastructure also depends on concerns about the costs of investment, and because of this, business logic sometimes plays a major role in the decision-making of national economies.[318] Furthermore, it is imperative for the importing country to have confidence and reassurance that the exporting nation will allocate sufficient resources towards meeting the required energy demands. Failure to do so may result in an energy deficit, prompting the importing country to safeguard its interests and be reluctant to be dependent on the exporting country.[319]

The demand for building new individual facilities for electric energy production in order to establish cross-border exchange proved to be expensive and risky. Consequently, numerous countries were compelled to remain dependent on the pre-existing transmission networks. The insufficiency of those prompted European leaders to actively seek viable



[317] Per Högselius, Anique Hommels, Arne Kaijser, and Erik van der Vleuten, eds., *The making of Europe's critical infrastructure: Common connections and shared vulnerabilities* (Palgrave Macmillan: New York, 2013), 3-19.
[318] William Rankin, "Infrastructure and international governance of economic development, 1950-1965." in *Internationalization of Infrastructures: Proceedings of the 12th Annual Conference on the Economics of Infrastructures* ed. Jean-François Auger, Jan Jaap Bouma and Rolf Künneke (Delft, Netherlands: Delft University of Technology, 2009), 61–75.
[319] Erik van der Vleuten and Vincent Lagendijk, "Transnational infrastructure vulnerability: The historical shaping of the 2006 European 'Blackout'," *Energy Policy* 38/4 (2010): 2042-2052.

resolutions to address this issue. The Committee on Electric Energy directed its attention towards doing an economic analysis of the power sector in efforts to offer solutions for the energy shortages. Regardless, the primary objective of this committee remained to be centered around fostering international cooperation by providing a platform where concerned parties could debate problems and find solutions. The Committee provided recommendations to governments, took part in the organization of intergovernmental conventions, facilitated the trade of electric power between nations, and supported the establishment of study groups dedicated to the inquiry of harnessing untapped natural sources.[320] Most importantly, the Committee strived to create possibilities for resolving problems that would result in long-term contracts that would be otherwise impossible to carry out because those depended on building entirely new facilities.[321]

On the energy map of Europe, three characteristic sectors stretch along the entire geographical length of the continent in the west-east direction.[322]

In the first place, there is the North European energy belt, which includes Iceland, Scotland, Norway, Sweden, and Finland.[323] This region did not have any significant deposits of coal or natural gas but is rich in water resources (the oil and gas resources of Denmark and Norway were not known until the late 1960s).[324]

The second one is the South European hydroenergy belt, which includes countries with geologically young, folded mountains in Spain, southern France, Italy, Switzerland, Austria,



[320] Lagendijk, "The Structure of Power", 50-55.
[321] Luis Armand, *Some Aspects of the European Energy Problem: Suggestions for Collective Action* (OECE: Paris, 1955), 11-17.
[322] Astrid Ksander, Paolo Malainima, and Paul Warde, *Power to the people: energy in Europe over the five centuries* (Princeton University Press, 2014).
[323] Arne Kaijser and Marika Hedin, eds., *Nordic Energy Systems: Historical Perspectives and Current Issues* (Canton, MA: Science History Publications, 1995).
[324] According to the 2022 survey, Norway was the largest hydropower producing country in the Europe, with some 129 terawatt-hours generated (Statista Research Department, Hydropower generation in Europe 2022, by country, (23.04.2024), accessed April, 21, 2024, https://www.statista.com/statistics/690039/hydropower-generation-europe/#:~:text=In%202022%2C%20Norway%20was%20the,%2C%20with%2070%20terawatt%2Dhours.

and Yugoslavia. The region in question possesses a rather modest quantity of coal reserves, although it boasts a significant abundance of hydroelectric energy potential. To put things into perspective, this region accounts for almost 49% of the total hydroelectric resources found throughout Europe.[325]

Finally, there is a coal deposit zone that stretches from the United Kingdom over Belgium, France, Germany, Czechia, Poland, and the south of Russia.[326] After the Second World War, the dominance of coal as a fuel started decreasing, namely in favor of oil. The wartime efforts improved the infrastructure of the oil refining process. Coal production declined, but not electricity production. It was mostly phased out in areas such as heating and transport.[327]

In the period between 1948 and 1955, there was a notable surge in energy consumption in Western European countries, resulting in a 38% overall rise. The problem of providing the energy resources to satisfy growing energy needs only increased as time went on. The annual investments necessary to address the rise in consumption were equal to around 50-75% of the gross income generated from energy sales. As a result of this phenomenon, the electrical industry depended on long-term loans, namely those provided by state financial institutions. The power consumption was so high that, despite the rich coal belt, Western European countries resorted to importing coal from the United States.[328] The areas that relied on thermal production faced the dilemma of the use of non-commercial coal, as no coal should be thrown away.



[325] Hrvoje Požar, "Elektroenergetske prilike u Europi i izgledi za izvoz električne energije iz Jugoslavije," [Electricity opportunities in Europe and prospects for the export of electricity from Yugoslavia] *Ekonomski pregled* 5-6 (1953): 22-25.
[326] Patricia Ales Dias, K. Kanellopoulos, H. Medarac, Zoi Kapetaki, E. Miranda-Barbosa and V. Czako, "EU coal regions: opportunities and challenges ahead," *European Commission* (Joint Research Center: Petten, Netherlands, 2018), 20-32.
[327] James Bamberg, *British Petroleum and Global Oil 1950-1975: The Challenge of Nationalism*. Vol. 3. (Cambridge University Press, 2000).
[328] Karen J. Alter and David Steinberg, "The theory and reality of European Coal and Steel Community," in *Making history: European integration and institutional change at fifty*. Vol. 8. Ed. Sophie Meunier and Kathleen McNamara (Oxford University Press, 2007), 89-104.

However, this could not be a permanent solution, and the European coal industry had already expressed concerns about being burdened more and more by demand.

Consequently, these circumstances led to the exploration of potential possibilities for the transmission of electrical energy from the northern and southern energy belts. Therefore, the UNECE Committee for Electric Energy became an important platform where countries that experienced shortages and countries that had abundant resources could discuss the possibilities of cooperation and exchange. With Gunnar Myrdal as director general of UNECE, the role of experts in the negotiations and planning of the development of European electricity supply possibilities became crucial, especially in subcommittees on hydro and thermal power. Most importantly, this chapter will focus on the efforts of possible exploitation of hydroelectric resources in Yugoslavia and the recent renegade of the Eastern Bloc. Gunnar Myrdal recognized the possibilities, not only for exploiting the water resources in Yugoslavia but also for building a platform, “a bridge," on which the sharp ideological and political differences between the East and West could be put aside in order to find a common ground to identify solutions and overcome pressing problems.[329]

**The Rise of Hydropolitics**

The aforementioned energy requirements have paved the way for the development and construction of extensive hydraulic infrastructure, not only in Europe but on a global scale. The UNECE Committee for Electric Energy and its subcommittee for hydroelectric power recognized the opportunities for economic growth that could be facilitated by hydropower. In

[329] Vincent Lagendijk, “High voltages, low tensions: the interconnections of Eastern and Western European electricity networks in the 1970s and 1980s,” in *Milieux économiques et integration européenne au XX scècle: la crise des anné2s 1970 de la conféerence de La Haye à la veille de la relance des années 1980*. ed. E. Bussière, M. Dumoulin and S. Schrimann (Peter Lang: Brussels, 2006), 137-165.

the technopolitical framework, this approach made nature financially and economically productive. Swyngedouw pointed out the inevitability of hydropower as technopolitical, or more precisely, the state became the "socioenvironmental engineer."[330] The pressing need for more energy resources to fuel the growing industries of Western Europe resulted in a focus on finding solutions for providing the needs with hydropower. The 1950s were the decade of the "hydro rush," not only in Europe but globally, witnessing the extensive construction of hydropower facilities in Canada, the United States, the Soviet Union, or China.

The UNECE prioritized directing efforts toward conducting studies aimed at advancing the development of waterpower resources, particularly in enhancing the efficiency of long-distance power transmissions and establishing connections between existing hydroelectric power plants. These endeavors were driven by the notion that establishing thermal power plants in close proximity to hydroelectric power plants might establish a linkage in the electricity grid, enabling thermal power plants to run at maximum capacity during periods when hydropower facilities experience water scarcity. Conversely, in instances where hydroelectric power plants are functioning at maximum capacity during a time characterized by ample water availability, there exists the potential to conserve the coal required for the operation of thermal power plants.[331] However, the uneven classification of hydropower and coal deposits caused a double, territorially quite separate production of hydraulic and thermoelectric energy. Consequently, this led to a great need for the transmission of electricity from neighboring countries,[332] that is, across national borders.[333]



[330] Erik Swyngedouw, "The political economy and political ecology of the hydro-social cycle," *Journal of contemporary water research and education* 142/1 (2009): 56-60.
[331] Heinrich W. Oberlack, "The Importance of Electric Energy in the Future Supply of West Europe," *Elektroprivreda* 10/2 (1957): 95-99.
[332] Wilhelm Fleischer, "La coordination de la production et du transport de l'électricité en Europe occidentale: le role de l'UCPTE," *Elektroprivreda* 9/4 (1956): 71-72.
[333] Thomas Hughes dubbed this economic mix. In order to get the optimal system, you need to combine different loads and generation types.

It became apparent in the early 1950s that concerns regarding the depletion of fuel resources and the scarcity of possible energy sources compelled European politicians to prioritize the pursuit of remedies for intergovernmental energy collaboration. Based on the statistics aggregated by UNECE, the proportion of hydropower generation in 1950 amounted to 112 billion kWh. This figure represents the potential output that could have been achieved in a typical year if all the hydropower units considered economically viable had been constructed.[334] The differences in the degree of construction, the volume of available waterpower, and the need for energy between individual countries can have an impact on the countries whose water reserves will be exhausted sooner, and because of this, they might have a stronger interest in importing energy. Therefore, UNECE, under Myrdal's direction, encouraged the Committee on Electric Energy to provide the framework for the establishment of expert groups such as the Society for the Study of Alpine Waters (Interalpen),[335] Societe d l'Our that focused on cooperation between Benelux countries, and the study object of this chapter, Yougelexport.[336]

Regarding the utilization of hydraulic energy supply, it was already a well-known fact that, within 15 to 20 years, many countries in Western and Central Europe would fully exhaust the use of their reserves.[337] These circumstances posed significant challenges for nations that were accustomed to promoting demand growth through the construction of new hydroelectric facilities and already possessed a well-established industry for manufacturing equipment specific to such power plants. However, at the beginning of 1950, the situation with harnessing viable waterpower was still far from exhausted, and the UNECE advised the members to



334 Josip Ledvnika, "Evropska elektroprivredna saradnja," [European Electricity Industry Cooperation] *Elektroprivreda* 8/1 (1955): 112.
335 UNECE, Committee on Electric Power, "Brief Account of 'Interalpen' Activities during 1954". EP/77, 1955.
336 OEEC*, Europe's Growing Need of Energy: How Can They Can be Met? A Report Prepared by a Group of Experts* (Paris: OECE, 1956).
337 UNOG, UNECE, Committee on Electric Power. "Hydro-electric Potential on Europe, Its Gross, Technical and Economic Limits", E/ECE/EP/131, 1953.

promptly utilize the existing reserves, explaining that hydroelectric power generation under favorable conditions was far more cost-effective when compared to thermal power facilities.[338] The level of utilized resources and completed construction was at very different stages for individual countries, ranging from 61% in Italy to 0.1% in Turkey. Certain countries, such as Switzerland and France, had already achieved a fairly high level of power usage at the beginning of the 1950s. In these countries, further construction of facilities for the utilization of waterpower would come at a great cost. Therefore, UNECE focused its efforts on speeding up the process of utilizing large water reserves in countries that had abundant resources but could not use them due to a lack of funds or an insufficient level of industrialization.[339]
After the extensive studies, the UNECE experts brought the choice down to the most economically profitable options for the possibility of using water resources in Europe, and those were Norway, Austria, and Yugoslavia.

Norway possessed substantial water resource potential that could be harnessed not only to provide neighboring Sweden and Denmark, but with the construction of the connection, to other countries in Western and Central Europe. Nevertheless, Norway declined to entertain the notion of engaging in this possibility of energy exchange since its primary objective at the time revolved around utilizing this vast energy to augment the manufacturing of aluminum.[340]

Austria's energy potential for export faced significant constraints, in contrast to the Nordic countries' abundant water resources. Austria's limited capacity to export electricity was the primary concern, as projections indicated that this trend would exhaust its hydroelectric resources within twenty years. Consequently, this would lead Austria to pursue alternative



[338] Pierre Ailliert, "The Integrated Power System and the Possibilities for Development of European Power Grid," in *Fuel and Energy Resources of UN Department of Economic Affairs* (New York, 1955), 250-255.
[339] "Les pools el l'économie électrique européenne," *Votre Electricité* 5 (1955):11-15.
[340] Even Lange and Helge Pharo, "Planning and economic Policy in Norway, 1945-1960." *Scandinavian Journal of History* 16/3 (1991): 215-228. More on the choices made for the development of the electric networks of the Nordic countries: Arne Kaijser, "Trans-border integration of electricity and gas in the Nordic countries, 1915-1992," *Polhem* (1997)15: 13-14.

energy sources to sustain its hydroelectric potential. Furthermore, there was a notable decrease in the quantity of electricity available for export in the early 1950s, and the available amount was only a few billion kWh annually.[341]

This left Yugoslavia, which had abundant hydroelectric resources estimated at 60 billion kWh per year. More importantly, Yugoslavia was a willing partner for the export of electricity.[342]

The situation regarding the exchange of electrical energy among European countries at the beginning of the 1950s painted a picture of finding solutions for utilizing the possible hydroelectric resources in order to meet the growing needs of consumers and, more importantly, the industrial sector. As already mentioned, even though the coal reserves in Western and Central Europe were abundant, the proponents of using hydro energy for the production of electricity argued for low costs, long-term sustainability, and finally, the first serious steps in arguing for the environmental benefits of using hydroelectric power.[343] In search of a country with abundant hydroelectric resources, the recently shunned Yugoslavia became an attractive possibility, not only because of its rich natural resources but also because of its particularly unique political situation. The risk of importing electricity was still present, but it appeared to be less significant in Yugoslavia's case. This was due to the country's complete isolation from its former Soviet Bloc allies, which posed a threat to its already fragile economy. Certain assurances suggested that Tito would be more cautious about risking a



[341] Franz Hyntermayer, "Uloga Austrije u medjunarodnoj elektroprivredi s naročitim osvrtom na Jugoslaviju," [The role of Austria in the international electricity industry with special reference to Yugoslavia] *Elektroprivreda* 14/10 (1961): 12.
[342] Miloš Brelih, "Jugoslavija kao mogućan izvoznik električne energije," [Yugoslavia as a possible exporter of electricity] *Elektroprivreda* 10/5-6 (1958): 8-14.
[343] Ortwin Renn and Jonathan Paul Marshall, "Coal, nuclear and renewable energy policies in Germany: From the 1950s to the 'Energiewende'" *Energy Policy* 99 (2016): 224-232; Andre Maisseu and Antoine Delanoe, "Energy in Europe and in the world," *International Journal of Global Energy Issues* 8/1-3 (1995): 6-30.

disruption in cooperation. From Yugoslavia's point of view, the engagement with UNECE opened the possibility for Yugoslavia to put a foot in the door of Western Europe.

The fact that Yugoslavia was one of the most dedicated supporters of the USSR and had an aggressive campaign against Western European and US aid programs did not help in efforts to change the opinions of countries that were the targets of that criticism. As a result, the platform and atmosphere that Gunnar Myrdal maintained at UNECE created the opportunity for Yugoslav diplomats and technical experts to explore ways of cooperating. That ultimately led to discussing Yugoslavia as the most promising candidate for providing hydroelectric resources for the supply of power-hungry Western and Central Europe. Tito latched on to this opportunity out of fear that Yugoslavia might lose its leading role in the Balkans. With new political partners in Western Europe and the United States, Tito reshaped his political approach and embraced the idea of Yugoslavia, and him by extension, as an unavoidable "bridge between the East and West."

**Water as a Strategic Asset: Water Resources of Yugoslavia**

Before I turn my attention to the Yougelexport project, I feel it is necessary to give a more detailed survey of the hydrological resources of socialist Yugoslavia, as they were the foundation for the consideration of engaging in the Yougelexport project in the first place. Yugoslavia had a relief topography with changes and significant variations in precipitation levels, which progressively increased from the low-laying regions in the north to the elevated regions in the south to facilitate the use of water resources in comparatively favorable economic circumstances.[344]

[344] Aleksandar Bognar, "Reljef i geomorfološke osobine Jugoslavije," [Relief and geomorphological features of Yugoslavia] in *Veliki geografski atlas Jugoslavije* [Geographical Altlas of Yugoslavia] (Zagreb: SNL, 1987), 11-17.

Studies on Yugoslav water resources before 1945 were scarce and incomplete. The earliest studies were conducted in Croatia and Slovenia, which at the time were part of the Austro-Hungarian Empire.[345] Between the two wars, engineer Nikola Bernicki conducted the research and gathered the data on the waterpower resources of the Kingdom of Yugoslavia, which he published in two studies in 1921,[346] and 1922.[347] A short time after the end of the Second World War, in 1945, professor Milan Pećinar conducted a survey of water power resources. This survey did not cover the entire Yugoslav territory, but only certain rivers in central Serbia that Pećinar considered potentially exploitable for the purposes of the first Five-Year Plan.[348]

Only in 1949 did the Institute for Hydraulic Engineering conduct a systematic analysis of the waterpower of all major rivers in Yugoslavia. The Institute for Hydraulic Engineering carried out this task in two stages: the first stage solely concentrated on waterpower resources, while the second stage explored the potential for exploitation of the best-evaluated candidates.[349] The timing of this survey is not accidental; post-1948 Yugoslavia was economically isolated and in search of new viable partners to maintain the goals set by the FYP in 1947. The discussions on finding the potential partner for hydropower exploitation at meetings of the UNECE Committee on Electric Power presented Yugoslav delegates with the possibility of presenting Yugoslavia as that partner and pulling the Yugoslav economy and development of infrastructure from certain deterioration.

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[345] *Wasserkraft-Katastar Beschreibung und tabellarische Übersicht*, "Hydrographisches Zentalbureau," (K.K. Ministerium für öffentliche Arbeiten, 1913).
[346] Nikola Bernicki, *Prethodni proračun hidrauličke energije u Kraljevini SHS* [Preliminary Estimate of Hydraulic Energy in the Kingdom of Serbs, Croats and Slovenes] (Beograd, 1921).
[347] Nikola Bernicki, *Privremeni popis vodnih snaga SHS* [Temporary Survey of Waterpower Resources in the Kingdom of Serbs, Croats and Slovenes] (Beograd, Generalna direkcija voda, 1922).
[348] Milan Pećinar, *Katastri vodnih snaga Zapadne Morave, Južne Morave, Ibra, Velike Morave, i drugi* [Waterpower Survey of rivers Zapadna Morava, Južna Morava, Ibar, Velika Morava and others] (Beograd, 1945).
[349] Marko Jevđić and Aleksandar Marijanović, "Hidroenergetski potencijal Jugoslavije," [Hydropower potential of Yugoslavia] *Elektroprivreda* 2/1 (1958): 43-45.

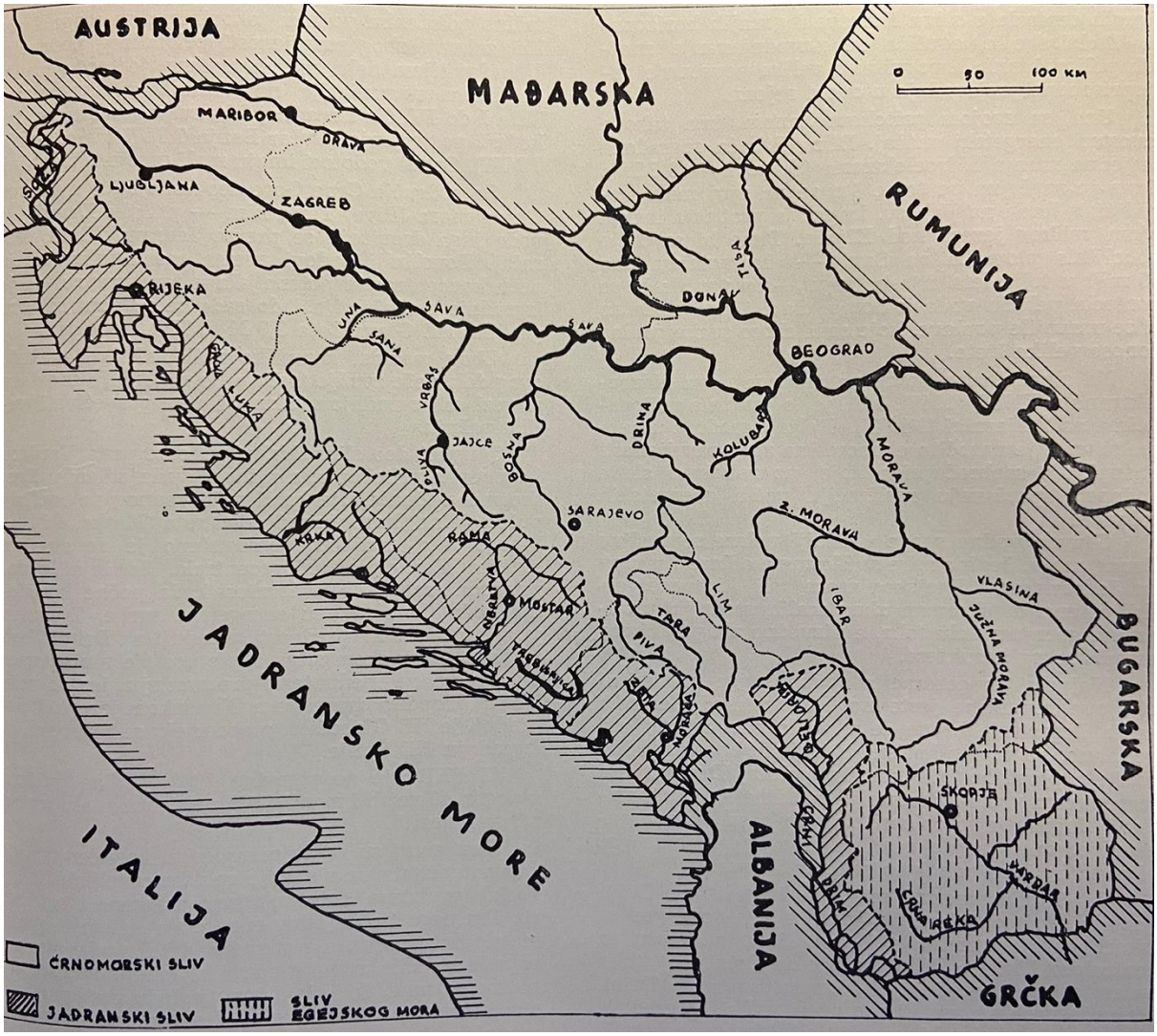


*Figure 7. The main river basins of Yugoslavia (Source: Zdravko Milanović ed., Elektroprivreda Jugoslavije (Beograd, 1962.))*

The western border of Yugoslavia, situated along the Adriatic Sea, became the most attractive area for the construction of profitable hydroelectric facilities. This area was characterized by a well-developed coastline with significant elevation, deep inlets, and islands sheltered from strong winds. The 1949 survey covered all potential hydrological areas of Yugoslavia, and there are three areas with distinguishable drainage patterns, characterized by their respective orientations toward the Black Sea in the east, the Adriatic Sea in the west, and the Aegean Sea in the south.[350]

[350] Milan Pećinar, Sergije Olujić and Mirko Milentijević, *Vodne snage Jugoslavije* [The Waterpower of Yugoslavia] (Beograd: Srpska akademija nauka i umetnosti, 1968).

The majority of Yugoslav waters, specifically 69%, are oriented towards the Black Sea. This region includes the Pannonian Plain, the eastern segment of the calcareous Alps, and the Dinar Mountains. The section of the Danube River that covered Yugoslavia received the majority of its water from the Sava, Drava, Tisza, and Morava Rivers, which collectively drain the entire catchment basin of the Black Sea. The conducted surveys revealed favorable geomorphological and geological features in this region, indicating potential for the development and utilization of waterpower resources.[351] However, the exploitation of Danube River potential demanded cooperation with the countries of the Soviet Bloc, mainly Romania, and at the beginning of 1950, this was a far from reachable goal. The 1960s would bring the possibility of the construction of hydropower plants on the Danube, and this is going to be described in detail in the chapter dedicated to the Iron Gates Project.

The drainage basin of the Adriatic Sea had 21.5% of Yugoslav water resources. The northern part of the area spanned the Julian Alps over the western ridges of the Dinar Mountains and the entire Adriatic littoral, including islands.[352] The main characteristic of this region is its karst rivers. The southern part of the region included the stretch of the Šar-Pind Mountain system and Metohija valley. The Adriatic catchment basin is discharged by the Neretva, Cetina, Soča, Morača, Crni Drim, and Beli Drim Rivers.

Even though the area has exceedingly poor geological conditions caused by karst[353] phenomena, but on the other hand, the area is favorable in geomorphological conditions. This area would become the subject of more detailed research after establishing Yougelexport Project group.

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[351] Vujica Jevđić, "Geografski položaj Jugoslavije" [Geographical Position of Yugoslavia] in *Vodne snage Jugoslavije. Drugi deo.* [The Waterpower of Yugoslavia. Part Two] ed. Vujica Jevđić (Beograd, 1956), 219-223.
[352] Jevđić, *Geografiski položaj Jugoslavije*, 223-225.
[353] Karst is a topography formed from the dissolution of soluble carbonate rocks such as limestone, dolomite, and gypsum. It is characterized by features like drainage systems with sinkholes and caves underground.

Finally, the area of the Aegean Sea covered the smallest part of the Yugoslav territory, about 9.5%. The waters of this region belong to the Vardar and Struma Rivers, and the area is geologically and geomorphologically similar to the Black Sea basin.[354]

This brief summary suggests that postwar Yugoslavia had significant unexplored water resources. The highest precipitation levels were observed during the spring, autumn, and early winter seasons, particularly in the Alps and Dinar Mountains. The presence of karst topography enabled the formation of subterranean waterways that have significant hydroelectric potential. Consequently, Yugoslavia had most of the hydroelectric facilities situated on the Drava and Sava Rivers in the north, the karst region along the southwest coast of the Adriatic Sea, the Drina River in central Yugoslavia, and on the Danube in the east.[355]

The hydroelectric potential of the Alpine, Dinar, and Rhodope regions is characterized by a significant abundance of precipitation. The northwest Alpine region experiences its lowest levels of productivity during the winter season, whereas the karst region exhibits its lowest levels during the summer season. The Alpine-Dinaric system has a substantial stone sieve that effectively filtered around 25% of the total precipitation within Yugoslavia.[356]

Undoubtedly, Yugoslavia's extensive water energy resources served as the primary foundation for the energy sector's design and exploitation in the region. The untapped water resources of Yugoslavia remained largely unexploited in the post-war period, mostly due to a lack of funds and technical experts.[357] The distribution of hydroelectric plants in Yugoslavia was uneven, with approximately 70% of them being located in Slovenia and Dalmatia. This was a result of failed integration in the period of the Kingdom of Yugoslavia. Most of these



[354] Jevđić, *Geografski položaj Jugoslavije*, 225.
[355] Branko Baranović, Hrvoje Požar and Jerko Jerić, "Planiranje elektroenergetskih objekata u Jugoslaviji," [Planning of electric power facilities in Yugoslavia] *Elektroprivreda* 10/5-6 (1957):122-125.
[356] Vujica Jevđić, "Neke osobine posleratne izgradnje hidroelekrtana u Jugoslaviji," [Some features of the post-war construction of hydroelectric power plants in Yugoslavia] *Elektroprivreda* 10/5-6 (1957): 151-152.
[357] Darko Radinja, "Hidroenergetski viri Jugoslavije," [Hydro-energetic springs of Yugoslavia] *Geografski Obzornik* 21/3 (1958): 5-13.

plants were medium-sized and built in the period when these regions were part of the Austro-Hungarian Empire, and only a few were built during the interwar period of the Kingdom of Yugoslavia.[358] In 1947, during the implementation of the first Five-Year Plan, Yugoslavia utilized only 3% of its potential hydropotential.[359]

Yugoslav delegates at UNECE recognized the importance of having untapped water resources. Furthermore, with the Soviet economic blockade and threat looming over Yugoslavia, Tito embraced the possibility that Yugoslavia would provide the resources, while the UNECE Committees would provide technical expertise and financial means for the construction of much-needed electrical infrastructure. Thus, in 1951, the UNECE Committee on Electric Power decided to conduct a detailed study of Yugoslav hydropower resources and export possibilities.[360] The Secretariat acted as an intermediary between Yugoslavia and interested importers, embodying the very idea Myrdal envisioned for the UNECE.

During the Committee's seventh session in 1951, after short deliberations, members agreed on establishing a panel of experts that would collaborate with the Secretariat of UNECE in conducting this survey.[361] The question of hydroelectric resources in Yugoslavia received a positive initiative evaluation during the following year's nineth session of UNECE, indicating a need for more intensive pursuit. Moreover, the technical experts from the Secretariat and Yugoslavia emphasized that further examination should be considered an imperative undertaking.[362]



[358] This does not mean that other parts of Yugoslavia were not abundant in hydro resources, but it was a result of the northern parts (Slovenia, Croatia, and Serbia) having primacy in considerations of where the critical infrastructural investments would be placed.
[359] Velimir Korošec, "Visokonapetostno omrežje Jugoslavije v desetih letih svobode," [The high-voltage network of Yugoslavia in the ten years since liberation] *Elektrotehniški vestnik* 11 (1955): 10-12.
[360] UNECE, *Annual Report 1951/1952*. "Transfers of electric power across European frontiers: Study by the Electric Power Section", Geneve, 5-6.
[361] UNECE, *Annual Report 1951/1952*. "Transfers of electric power across European frontiers: Study by the Electric Power Section", Geneve, 5-6.
[362] UNECE, *Annual Report 1952/1953*. "Transfers of electric power across European frontiers: Study by the Electric Power Section", Geneve, 4-5.

In the initial survey conducted to determine which region in Yugoslavia would be the best option for possible exploitation of hydro resources and interconnection, technical experts concentrated on the Adriatic-Dalmatian, Danube, and Slovenian-Alpine sectors.[363] All three regions were rich in water reserves and possessed a great deal of potential for exportation, but the choice landed on the Adriatic-Dalmatian region. The Dalmatian coast had much better conditions for the construction of large hydroelectric facilities, unlike Slovenian rivers that were traversing less accessible terrain and where building larger hydropower plans would cost much more than the options in Dalmatia.[364]

Subsequently, a series of completed studies on Yugoslavia's hydroelectric resources resulted in an estimate that technically exploitable waterpower totals around 66 billion kWh annually. Furthermore, the measurements concluded that, from that total, a minimum of 50 billion kWh can be utilized in an economically viable manner. It is noteworthy to mention that the yearly consumption of electricity in Yugoslavia in 1951 amounted to a mere 5 billion kWh.[365] The survey projected that Yugoslavia would fully utilize this capacity within the upcoming 35-year period, based on preliminary estimates and the promise of double consumption every decade. Finally, the survey results confirmed that Yugoslavia had the capacity to allocate a substantial portion of its untapped energy potential to European countries that needed additional energy.[366] Finally, given that other viable candidates for the potential exploitation and export of electricity were either not interested in the possibility of exporting, as in the case of Norway, or faced the problem that the expected growth of consumption would quickly lead to the exhaustion of available sources, as was the case with Austria, Yugoslavia



363 "Studija i planiranje elektroenergetskih sistema u Jugoslaviji," [Study and planning of electric power systems in Yugoslavia] *Elektroprivreda*, 11/4-5 (1956): 175-177.
364 Miloš Brelih, "Jugoslavija kao mogućan izvoznik električne energije," [Yugoslavia as a possible exporter of electricity] Elektroprivreda 10/5-6 (1957): 249-251.
365 Borivoje Baranović, "Studija o izvozu električne energije iz Jugoslavije," [A study on the export of electricity from Yugoslavia] *Elektroprivreda* 6/4 (1953):137-139.
366 Borivoje Baranović, "Studija o izvozu električne energije iz Jugoslavije," [A study on the export of electricity from Yugoslavia] *Elektroprivreda* 6/4 (1953):137-139.

was the best option. Since European countries, especially those that were dependent on Alpine rivers, experienced a shortfall in electrical supply during the winter season, the Yugoslav surplus would make up for this deficit.[367]

This brings us to the central objective of this chapter: The Yougelexport Study facilitated cooperation between Yugoslavia, Austria, Italy, and West Germany in efforts to construct hydropower facilities in Dalmatia in order to meet the growing needs for the power surplus.[368]

**Yougelexport Project**

Despite the rising obstacles on the global political stage, the UNECE, led by Gunnar Myrdal, successfully established itself as a conduit for building a bridge between the East and West. On the other hand, Yugoslavia, which faced expulsion from the Soviet Bloc, needed new allies. The economic, financial, and military support of the United States and Western Europe proved to be crucial for Yugoslavia's survival.[369] Rapid electrification was a crucial component of the Yugoslav Five-Year Plan. In most semi-developed countries that embraced communism, the construction of expansive electric networks played a central role in the progression of industry, and this was no exception in Yugoslavia. The Soviet threat already posed challenges to Yugoslav plans. Tito already demonstrated a keen understanding of the crucial role of the

[367] Martin Dörfler, "Neki momenti evropske privredne saradnje," [Some moments of European economic cooperation] *Elektroprivreda* 6/1 (1953): 221-222.
[368] At the same time that the Yougelexport study group was established, the UNECE also facilitated the negotiations between Yugoslavia and Austria concerning the exploitation of the Drava River. In a meeting in February 1952, under the auspices of UNECE and Pierre Sevette, the two nations agreed to establish a permanent mixed commission to address these concerns. In 1954, the governments of Yugoslavia and Austria agreed on water management issues, coordinating their operations and agreeing on the provision of electricity. The Drava Commission maintained regular meetings to discuss matters related to the Drava River, including water drainage and water management. In addition to Yougelexport, the Drava Commission was a crucial step in fostering cooperation between Yugoslavia and Austria.
[369] Alfred Augustus Levi Caesar, "Yugoslavia: geography and post-war planning," *Institute of British Geographers* 30 (1962): 34-35.

infrastructure, not only for the progress of Yugoslavia but also for its possible expansion and establishment of a leading role in the Balkans. This became even more important with the Soviet conflict, as Yugoslavia relied on assistance from Western nations in both financial and technical capacities.[370]

In early 1950, the UNECE Committee on Electric Energy conducted a survey of Yugoslavia's hydro reserves. With the initial results of the survey being positive, the Committee focused on studying the potential prospects of transmitting electrical power from Yugoslavia to Italy and thereafter through Austria to West Germany. The study was conducted with a comprehensive approach, encompassing technical, economic, financial, legal, and organizational perspectives. According to its authors, the study unequivocally substantiated the profitability of exporting large quantities of electricity from hydropower plants that are intended to be constructed specifically for this purpose.[371]

In 1951, two French experts embarked on a three-week study trip in Yugoslavia under the auspices of the United Nations Technical Assistance Administration (UNTAA). Their primary objective was to provide assistance and guidance to Yugoslav experts with questions and problems in the development of hydropower resources and transmission lines. The following year, another pair of specialists embarked on a similar journey to Yugoslavia to provide consultation and guidance for similar problems. Both groups studied the potential sectors rich in waterpower and potential places that would be the most profitable for building hydroelectric facilities.[372] Finally, a group of experts arriving from the United States produced a comprehensive analysis regarding the potential for exporting hydroelectric energy to Austria,



[370] Nikola Dragićević, "Energetika" [Energetics] in *Razvoj privrede FNRJ* [Economic development of FNRJ] ed. Vladimir Cerić (Beograd, 1956), 129-147.
[371] "Export of Electric Power from Yugoslavia," *The Economic Weekly*, Vol. 7, Issue 34, 20. Avg. 1955: 1001-1005.
[372] UNECE, Technical Assistance Committee, Economic and Social Council, Yugoslavia – UNTAA: "Hydroelectric Power", 1954/55: 3-4.

Italy, and West Germany during the winter season. Their findings concluded that such an endeavor would be very advantageous and entirely viable.[373]

In light of the promising outcomes obtained from the aforementioned studies and surveys, representatives of the four concerned national electrical industries established a research consortium with the objective of expanding the initial studies. This consortium was tasked with formulating the requisite obligations and guarantees essential for the effective operation of this intricate international body. And so, at the meeting of the UNECE Committee for Electric Energy in February 1953, the delegates of Austria, Italy, West Germany, and Yugoslavia established a special coordination committee, which they dubbed *Yougelexport*. The primary objective of this study group was to do a detailed analysis of the potential of exporting electric energy from Yugoslavia and to determine exactly where the hydroelectric facilities for this purpose would be built.[374] Furthermore, the coordination committee board established four distinct subcommittees: the technical, economic, financial, and legal committees. Each committee was headed by one of the participating countries: West Germany was overseeing the economy committee, Italy led the legal committee, Austria was in charge of the financial committee, and Yugoslavia presided over the technical committee.[375]

The Economic Committee addressed many challenges pertaining to energy exports, including considerations related to geographical placement and market demands, costs associated with production and transmission, as well as the market evaluation of energy resources. Therefore, the economic committee was assigned the task of examining the trajectory of consumption expansion in the participating countries, the progression of electricity tariffs, and the expenses associated with the production and transmission of electricity. The main task of this committee was to conduct a comprehensive analysis of the



[373] Ibid, 5.
[374] "Osnivanje odbora Yougelexport pri Ekonomskoj komisiji OUN u Ženevi," [Establishment of the Yougelexport Board at the UN Economic Commission in Geneva] *Elektroprivreda* 6/3 (1953): 125-126.
[375] Stjepan Han, "Yougelexport: Istorijat," [History of Yougelexport] *Elektroprivreda* 7/2 (1954): 43-47.

electric power market in four participating nations, with the aim of assessing the feasibility of establishing long-term supply arrangements and facilitating seasonal exchanges.[376]

The Technical Committee's primary goal was to address the technical challenges associated with assessing Yugoslavia's overall energy resources. Additionally, the group aimed to gather and analyze technical information pertaining to energy production and transmission facilities.[377]

The Financial Committee focused its endeavors on addressing the theoretical and practical aspects of all possible financial issues a project like this could face. This committee examined potential financing and repayment methods for the proposed infrastructure projects, exploring the possibility of funding from participating nations or international financial institutions.[378]

Finally, the Legal Committee faced the challenges of finding solutions to the legal quarries of steering and managing the international body with completely different legal and ideological backgrounds. Also, the committee tackled the legal questions related to power plants that would export electricity, including matters related to their status and operational framework. The committee also had the responsibility of devising solutions for the establishment of dispatch services and the application of judicial arbitration.[379] Participating countries agreed at the first meeting of the Yougelexport Group in Venice in April 1953 on how each committee would address the prospects of exporting electric power from Yugoslavia. In order to avoid duplication of work, participants agreed that committees should regularly



[376] Borivoje Baranović, "Studija o izvozu električne energije iz Jugoslavije," [A study on the export of electricity from Yugoslavia] *Elektroprivreda* 6/4 (1953): 137-139.
[377] Slobodan Despotović, "O Tehničkom komitetu za izvoz električne energije iz Jugoslavije," [About the Technical Committee for the Export of Electricity from Yugoslavia] *Elektroprivreda* 7/1 (1954): 29.
[378] Stjepan Han, "Yougelexport: Istorijat," [History of Yougelexport] *Elektroprivreda* 7/2 (1954): 43-47.
[379] UNOG, G.X/19/6/1, "Yougelexport". Project Proposal. GX 19/6/1/12, 14883/4.

exchange updates.[380] This was even more important for the Economic and Technical Committee, especially if the participants were involved with Interalpen's work.[381]

Finally, all participating countries agreed on the necessity of establishing an additional subcommittee, the Co-ordination Committee, that would coordinate information and reports among the other subcommittees. Furthermore, the Co-ordination Committee would engage in communication with specialists from other European nations who demonstrated interest in Yougelexport's activities, particularly with experts who could alleviate issues raised by the Technical Committee.[382]

**The Economic Dimensions of the Yougelexport Project**

In May 1953, Munich hosted the first meeting of the Economic Committee. Pierre Sevette, the president of the UNECE Committee on Electric Power, opened the meeting by highlighting the growing energy demands in Europe and the significant export potential of Yugoslavia's water resources. At the onset of the committee's proceedings, Wilhelm Fleischer, the president of the Economic Committee, emphasized the need for cooperation with Interaplen, an international organization that had analogous objectives with Yougelexport.[383]



[380] "Osnivanje odbora 'Yougelexport' pri Ekonomskoj komisiji u Ženevi," [Establishment of the 'Yougelexport' committee at the Economic Commission in Geneva] *Elektroprivreda* 6/3 (1953): 125.
[381] Austria and Italy were part of the Interalpen study group which studied possibilities of improving exploitation of Alpine rivers (UNECE, Committee on Electric Power, EP/77, "Brief Account of 'Interalpen' Activities During 1954" (Geneva, 1954): 5.)
[382] UNOG, G.X/19/6/1, "Yougelexport". Summary of the first meeting in Venice, 20.04.1953.
[383] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee, Summary of Proceedings at the Meeting held in Munich, 5.05.1953.


*Figure 8. Yougelexport Plan (Source: UNOG, GX/19/6/1/12)*

The primary objective put in front of the experts of the Economic Committee was to generate estimates of power amounts for the first timeframe, spanning from 1953 to 1960. Miloš Brelih, Yugoslav expert representative, and Stjepan Han, president of the Technical Committee, reported that, based on preconceived estimates and the assessment of the existing electric power stations (as well as those that are nearing completion), it would be feasible to anticipate the completion of long-distance transmission lines that would be operational for use by 1955.[384]

However, the Economic Committee encountered its most formidable challenge in determining the market value for the exported electric power. For this reason, the Committee

[384] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee, Summary of Proceedings at the Meeting held in Munich, 5.05.1953.

agreed that all participating countries should fix their minimum and maximum electric power imports for the period from 1953 to 1960.[385]

The Economic Committee established a tight collaboration with the Technical Committee in relation to the procurement and transmission of power intended for export from Yugoslavia. Both committees reached the consensus that the current 110 kV network was unable to accommodate the intended exports. The experts agreed that the distances and loads needed the transmission grid to have a minimum voltage rating of 220 kV. Wilhelm Fleischer proposed that implementing a 380 kV system could be a more viable long-term solution. After heated debate on whether they should pursue 220 kV or 380 kV, representatives of the Economic and Technical Committees rejected Fleischer's idea because it was deemed too expensive. On the other hand, experts unanimously agreed that the integrated system should channel the exportation of supplies rather than the individual links.[386]

The Munich meeting touched on the question of projected load requirements, but the next meeting of the Economic Committee in Lienz in September 1953 delved deeper into it. The Committee on a Lienz meeting agreed to allocate an approximate total of 600 MW for projected load requirements from 1953 to 1960, with 100 MW allocated to Austria, 100 MW to Italy, and 400 MW to West Germany. The disagreements among the representatives concerning this question arose concerning the allocated numbers because the Italian representative felt entitled to more. Stjepan Han pointed out that, with the data gathered from the Technical Committee, the load could be easily increased to 800 MW. This was particularly welcomed by the Italian representative, Marin, who hoped that with the increase to 800 MW, the Italian quota could be 300 MW.



[385] "Export of Electric Power from Yugoslavia". *The Economic Weekly*, Vol. 7, Issue 34, 20 Aug 1955, 1004.
[386] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee, Summary of Proceedings at the Meeting held in Munich, 5.05.1953.

The discussion continued regarding the question of whether the above load and power output should be provided by particular power plants or covered by agreements, in which case Yugoslavia would be obliged to compensate for any variations in the flow from its own reserves. Stejpan Han strongly supported the idea of agreements, pointing out that Yugoslavia has substantial resources in both hydro and thermal power, and additionally emphasized that Yugoslavia would be capable of covering eventual variations not only with its own resources but also with power that would be obtained through exchange with neighboring Greece.[387]

Miloš Brelih proposed that there was potential for increased load capacity. However, the other experts were not willing to support this idea before Yugoslav power plant systems would be better equipped to accommodate more than the already established maximum of 800 MW. Austrian representative Bauer and West German representative von Keller emphasized to Yugoslav representatives that it was imperative that Yugoslavia undertook the necessary preparations for Brelih's proposed increase in load capacity by investing in better power plant systems and transmission lines.[388]

In the debate on power transmission costs, the representatives of the Economic Committee, in collaboration with the Technical Committee, decided to implement the building of power transmission and its associated expenses in a phased manner, consisting of three stages. The initial phase included addressing potential bottlenecks and implementing supplementary installations to enhance the operational efficiency of the 220 kV network. During the second phase, the Yougelexport consortium should prioritize the development of 380 kV network infrastructure in Austria and Yugoslavia, with the goal of facilitating power transmission to Western Germany. However, the possibilities of designing the transmission line connection to Italy should not be completely off the table and should be considered if there is

[387] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee. Summary of Proceedings at the meeting held in Lienz, 29.09.1953.
[388] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee. Summary of Proceedings at the meeting held in Lienz, 29.09.1953.

a possibility to do so. Lastly, the third phase aimed to fully concentrate on the development of 380 kV transmission lines.[389]

However, the initial planning was challenged with a drafted calculation of the costs involved in building the transmission line, which was suggested by the Technical Committee.[390] In his report, von Keller informed other members of the Committee that proposed plans for constructing transmission lines would incur expenditures not only in Yugoslavia but also in countries importing power. The debate about this issue occupied all meetings of the Economic Committee in 1954, and this was not surprising. Transmission costs played a significant role in decision-making, alongside the production costs of power plants. Factors such as the timing and sequence of constructing power plants and transmission lines significantly impacted the overall determination of costs, and for this reason, all experts had different interests and outputs on the issue. Yugoslav representatives Brelih and Han kept pushing the initial plan and costs for building the transmission lines, arguing that if they skimp on stage "A," there cannot be better results in stage "B.". However, Austrian and German representatives Bauer and von Keller continued to point out that the costs of this plan were too steep, and that Austria and West Germany were not interested in investing that much money.[391]

The main topic of the next Economic Committee meeting in Opatija in September 1954 was the discussion on finding an agreement on which study on possible areas for the building of plants, done in coordination with the Technical Committee, should be put in the final draft. At this stage, the Technical Committee only pursued two alternative construction programs: the development of the Sava River valley and the development of the Adriatic coast rivers.



[389] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee. Summary of Proceedings at the meeting held in Munich, 2.04.1954; "Zasedanje Ekonomskog komiteta Yougelexporta," [Session of the Economic Committee of Yougelexport] *Elektroprivreda* 7/6: 338.
[390] UNOG., G.X/19/6/1, "Yougelexport". Economic Committee. Summary of Proceedings at the meeting held in Munich, 27.07.1954.
[391] "Zasedanje stručnih komiteta Yougelexport-a" [Session of Yougelexport's expert committees]. *Eletroprivreda* 7/6 (1954): 339.

Stjepan Han insisted that the plan of developing the Adriatic coast should be put into a final version, not only because of the potentially greater waterpower but also because the construction plan for this was significantly more economical than the Sava Valley suggestion.

Furthermore, Han coordinated this decision with the Financial Committee as well, which agreed that the Adriatic plan should be the one adopted by all committees. The representatives from Italy, Marin, and West Germany, von Keller, ultimately agreed that the Adriatic suggestion should be adopted. Thus, the Economic Committee reached a consensus on the construction program centered around the rivers along the Adriatic coast, deeming it the most economically feasible option. The implementation of the proposed hydroelectric facilities would yield an annual mean output capacity of 6.4 billion kWh, with approximately 4.7 kWh generated specifically during the winter season. The research conducted by the Economic Committee determined that, after accounting for a portion of Yugoslavia's energy requirements and transmission inefficiencies, there would still be a surplus of 4.3 billion kWh of winter output available for export that would provide a guaranteed power capacity exceeding 1400 MW.[392]

**The Rise of Yugoslav Technomanagers**

The leadership over the Technical Committee was appointed to Yugoslav representative Stjepan Han, one of the most prominent Yugoslav professors and engineers.[393] The importance of

[392] UNOG, G.X/19/6/1, "Yougelexport". Economic Committee. Summary of Proceedings at the meeting held in Opatija, 23.09.1954.

[393] Stjepan Han (1907–1996), an electrical engineer and engineer of cybernetics, was born in Vukovar, where he finished elementary and high school. After that, he enrolled in the Technical University and Music Academy in Zagreb, which he successfully completed in 1930. During the Second World War, he took on an active role in the Communist Party and the resistance, where he worked as an electrical industry expert. After 1945, he accepted the role of advisor for the electrical industry and actively participated in the development of the electrification plan. Han's output was truly rich and versatile. In addition to his important role in the Yougelexport project, Stjepan Han was tasked with creating a project to shorten the working week from six to five working days. He did it so expertly that, thanks to his project, not a single economic indicator (productivity, economy, etc.) has decreased.

Stjepan Han for the Yugoslav side of the project was not only in his technical expertise but also in his political influence. Han was a Second World War veteran and a distinguished member of the Communist Party, which had already had many leading roles in Yugoslav politics and industry. In many ways, Han was considered in Yugoslavia a creator of the idea that critical electric infrastructure would increase Yugoslavia's role in Europe and, more importantly, in the Balkans.[394]

At the time of the establishment of the Yougelexport Group, Yugoslavia was going through the reinvention of its mode of governance, introducing to the world socialist self-government. The main idea behind the introduction of self-management was to put the management of companies in the hands of workers and thus separate it from the management of the state. The self-management system was a form of government unique to Yugoslavia, as it was not planned socialism like that of the Soviet Union, and, on the other hand, it was not genuine market economy either; it was something in between, another form of Tito's "third way."[395] After the official introduction of the Law of Enterprise Management, self-management became an official state doctrine and, in 1953, became part of the Yugoslav constitution. Most importantly, self-management proved to be a fertile environment for the development of so-called technomanagers.[396] The self-management, in accordance with Marxist ideas, transferred power to the managers and allowed the takeover of the entire work collective. In this way, the traditional hierarchical relations in the enterprises were abandoned, and with the self-management model, capable engineers and scientists with a deep understanding of technology and its applications, coupled with the capacity to manage projects, resources, and people,



394 Miloš Macura, "Stjepan Han: (1907-1996)," *Stanovnštvo* 35(3-4) (1997): 7–9.
395 Saul Estrin, "Yugoslavia: The Case of Self-Managing Market Socialism," *The Journal of Economic Perspectives* 5/4 (1991): 187–94.
396 Giovanni Dosi, "Technological paradigms and technological trajectories," *Research Policy*, Vol. 11 (1982): 147-62.

became the driving force behind the Yugoslav economy and infrastructure.[397] In the 1950s and 1960s, many Yugoslav enterprises, institutes, and important government positions were occupied by people with critical knowledge in technology management. The techno-managers who came on to the economic and political stage of 1950s Yugoslavia were able to make independent economic and administrative decisions such as decisions on production, sales, finances, financial transactions with foreign countries, capital investments, the appointment of managerial bodies, and internal organization.[398] This proved to be even more important for the development of the Yougelexport project, especially its Technical Committee. Beside Stjepan Han, more active participation in Yougelexport had engineers Borivoje Baranović, head of the Electric Power Institute in Zagreb, and Miloš Brelih, head of the ELES (Slovenian Power System). However, since the location for the construction of the hydropower facilities was in Yugoslavia, a plethora of Yugoslav engineers and other experts took part in developing the solutions for Yougelexport.

Unlike projects prior to 1948 in Albania or in Trieste, the role of engineers in the Yougelexport project was more active and independent. The central difference was the engineer's role in decision-making, which the self-management system enabled. In this way, people who had knowledge of the management of technology, the planning and introduction of novel processes, as well as an inclination toward innovation management, were put in places where they could make autonomous decisions related to their expertise without the interreference of the state. Therefore, the decisions made by the Technical Committee (and the rest of the Yougelexport Committees) were made by the engineers that took part in the development of the project. The consultation with the top government representatives only took



[397] Rudi Supek, "Sociology of Worker's Self-management" in *Self-governing socialism Vol. 2*. Ed. Branko Horvat, Mihailo Marković and Rudi Supek (New York: White Plains, 1975), 3-13.
[398] Vladimir Unkovski-Korica, "Samoupravljanje, razvoj I dug: uspon i pad 'jugoslovenskog eksperimenta'" [Self-governance, development and debt: the rise and fall of the 'Yugoslav experiment'] in *Dobrodošli u pustinju socijalizma* [Welcome to the desert of socialism] ed. Srećko Horvat and Igor Štiks (Fraktura, 2015), 45-74.

place after the decisions were made regarding the technicalities of the project, and throughout the entire negotiation process, for all means and purposes, the main driving force behind Yougelexport in Yugoslavia was Stjepan Han, president of the Technical Committee, who took an active role in the work of other committees as well, namely the Economic and Financial Committees.

**Engineering Diplomacy**

The importance of the Technical Committee was greater than that of other committees for the reason that the most important decisions regarding the progress of the Yougelexport Project were made within the Technical Committee. Only after the decisions were finalized inside the technical group were the other committees able to discuss and make their own decisions.[399]

One of the initial crucial considerations put in front of the Technical Committee was determining the approach for evaluating Yugoslav power supplies, encompassing not only hydro resources but also potential thermal reserves. Even though Yugoslav experts have already conducted studies on tracing and evaluating these resources, it is important to note that the territorial scope and data collection methods employed in these studies varied significantly. Because of this, experts Presser from West Germany and Tonini from Italy insisted that it was necessary to conduct a new assessment.[400]

Since Yugoslavia was the host country for the future hydroelectric facilities, the Yugoslav experts facilitated the arrangements of inspection tours for the other Technical Committee experts, enabling them to view potential sites suitable for the development of hydroelectric facilities. Han and engineer Borivoje Baranović suggested that the experts should

[399] Han, "Yougelexport: Istorijat,"43-47.
[400] UNOG, G.X/19/6/1, "Yougelexport". Technical Committee. Summary of Proceeding at the meeting held in Zagreb, 21.05.1953.

focus on two possible areas for the construction of future facilities: the Adriatic Coast and the Sava Valley. Stjepan Han strongly suggested that the Adriatic coast should be favored. The reason for this was that, behind the scenes of the Technical Committee, the decision of which area should be pursued for potential exploitation revealed inner Yugoslav arguments and competitions. The disagreement between the Croatian and Slovenian representatives revealed animosities between the two federal republics.[401]

*Figure 9. Meeting of Yougelexport in Zagreb 1953 (Source: Museum of Science and Technology Belgrade, Serbia)*

Both republics already had a strong sense of belonging to the West European part of the continent, and the opportunity to be connected to the infrastructure was important, as the electric grid revealed that engineers used this framework to push their own political agendas. That is why, for the first round of locations that should be studied in more detail, both Croatian

[401] Krsto Cviić, "Dinamika političke promjene unutar komunističke vlasti: primjer SFRJ," [Dynamics of political change within the communist government: the example of SFRY] in Zbornik radova sa Skupa *Disidentstvo u suvremenoj povijesti* [Proceedings of the Meeting *Dissent in Contemporary History*] ed. Nada Kisić Kolanović, Zdenko Radelić and Katarina Spehknjak (Zagreb: Hrvatski institut za povijest, 2010), 23-40.

and Slovenian locations found themselves on the list. The locations suggested in the first round of considerations include Idrijca, Planina, Kobarid, Bohinj (located in Slovenia), Split, Poljica, Bisko, Peruća, and Jablanica (located in Croatia).[402]

In order to narrow down the potential construction spots, the Technical Committee determined that the estimation of gross hydro potential should be derived from the arithmetic mean flow, beginning at the lowest point of the catchment basin. After the deliberations of Han and Baranović, the Technical Committee agreed with the Yugoslav suggestion that the spots for a more comprehensive examination of water flows should be Idrijca, Lika-Gacka, Cetina, and Trebišnjica.[403] With these places as final choices, the upper hand of the Croatian engineer group is evident, with only Idrijca remaining at the table of potential Slovenian locations.

The coordination and cooperation between the technical experts across the various bodies of the United Nations, participating countries, and individual experts had significant importance for the successful work of the Technical Committee. In 1953, the committee established a team of specialists who formulated a comprehensive strategy for the purpose of facilitating an exchange program for Yugoslav engineers. The primary objective of this program was to address and overcome all possible technical challenges that involved constructing the hydroelectric facilities and transmission network. Carlo Samenza and Mario Mainardis, directors of *Societá Adriatica di Elettricita,* were tasked with collaborating with Yugoslav engineers and carrying out an in-depth examination of the Lika-Gacka, Cetina, and Trebišnjica Rivers. The most challenging factors that the Technical Committee encountered in managing these sites included the precise assessment of flow parameters, the installed capacity of generating facilities, and the number of generators needed for the installation. Firstly, Samenza and Mainardis, with the help of experts from Yugoslavia, gathered the needed

[402] UNOG, G.X/19/6/1, "Yougelexport". Technical Committee. Summary of Proceeding at the meeting held in Ljubljana, 13.07.1953.
[403] "Sastanak Tehničkog komiteta Yougelexport-a," [Yougelexport Technical Committee Meeting] *Elektroprivreda* 7/1 (1954): 122.

hydrological data. Yugoslav engineers subsequently conducted an analysis of the power production projection and concluded that there is a discrepancy of 30% between the estimated and actual achievable power production of the studied rivers. With this new set of data, Samenza and Mainardis drafted a report stating that costs for the Trebišnjica power plant would be significantly lower than originally projected. However, in contrast, the project for the Idrijca River demonstrated a substantial increase in construction expenses due to the relief of the site.[404]

Furthermore, Josef Stini[405] was assigned the task of conducting an in-depth investigation of the geological challenges that emerged in relation to the installation of equipment in the aforementioned rivers. Stini conducted evaluations related to the buoyancy of water, soil stability, foundation considerations for barrages, and the selection of suitable barrage locations.[406]

Finally, Rudolf von Miller, president of the International Committee on Large Dams, conducted an extensive study related to the obstacles encountered in the construction of high-voltage transmission lines. The key aspects of von Miller's study considered included the selection of voltage, the specific design of pylons, the equipment and conductors needed for the construction, the capacity and quantity of transformers and distribution stations, and finally, the concerns related to transmission stability and compensation.[407]

During the meetings in 1954 in Zagreb and Belgrade, the Technical Committee focused on the questions of the construction of the transmission network and its integration. The reports presented by the Technical Committee experts encompassed an analysis of consumption



[404] UNOG, G.X/19/6/1, "Yougelexport". Technical Committee. Summary of Proceeding at the meeting held in Geneva, 8.12.1953.
[405] Josef Stini (1880-1958) was an Austrian geologist. With his fundamental geological investigations in connection with dam and tunnel projects, he is one of the co-founders of civil or "engineering geology."
[406] UNOG, G.X/19/6/1, "Yougelexport". Technical Committee. Summary of Proceeding at the meeting held in Bled, 3.05.1954.
[407] UNOG, G.X/19/6/1, "Yougelexport". Technical Committee. Summary of Proceeding at the meeting held in Geneva, 8.12.1953.

growth, the chronological order of power plant construction, and various challenges associated with the design and implementation of the transmission network. In 1955, the Institute for Electric Power in Zagreb and the Nikola Tesla Institute in Belgrade collaboratively formulated a plan for the transmission network, which was then presented to the Technical Committee.[408] In the end, as already mentioned in the Economic Committee section, the decision was made to pursue a 220 kV network.

The finalized decision of the Technical Committee proposed that future power plants would utilize water resources from the Idrijca (Slovenia), Lika-Gacka, Cetina, and Trebišnjica Rivers (Croatia), honoring requests from both Slovenian and Croatian representatives. Yugoslav experts took a strong stance against the isolation of these power plants from the rest of the Yugoslav electric grid. Therefore, the entity that would be responsible for exporting electricity would encompass the entirety of Yugoslavia's power system, rather than being limited to a single power plant owned by a distinct corporation.[409] In relation to linking the Yougelexport transmission lines to the Yugoslav grid, the Yugoslav experts presented to the Technical Committee multiple alternatives, with two of them being particularly significant. The first option entailed linking the power plants from Dalmatia and Herzegovina (the Adriatic Coast rivers) by establishing a connection between them and the Drina and Sava plants, subsequently extending the connection to Zagreb, and ultimately reaching the borders of Austria and Italy. The second option suggested the integration of the Drina and Herzegovina plants with the Dalmatian junction in close proximity to the city of Senj. This integration would



[408] Božidar Stefanini, Dušan Čučković, and Nebojša Ivošević, "Studija i planiranje elektroenergetskih sistema u Jugoslaviji i nekim evropskim zemljama," [Study and planning of electric power systems in Yugoslavia and some European countries] *Elektroprivreda* 9/4-5 (1956): 175-178.
[409] UNOG, G.X/19/6/1 "Yougelxport". Technical Committee. Summary of Proceeding at the meeting held in Belgrade, 8-9.03.1954.

occur along a parallel route that extends from the Adriatic coast to Zagreb and afterwards traverses Slovenia until reaching the border with Austria and Italy.[410]

**Legal Challenges of Inter-Governmental Cooperation**

On legal grounds, managing a project such as Yougelexport proved to be a very challenging task. For this reason, the Legal Committee had an extremely important assignment at hand, as the legal issues quickly emerged as the foremost focus for deliberation soon after the technical issues were resolved. In 1953, the Legal Committee formulated a range of potential legal foundations for contractual agreements that would be established between enterprises. The initial legal goal was to strive for the non-involvement of the respective governments of the Yougelexport Group.

The second alternative, which the experts of the Legal Committee presented, implied the possibility of a contractual agreement on the provision of power supply, accompanied by an annex that guarantees the commitment of the supplying government to fulfill the agreed-upon volumes of supply. The third proposal suggested the potential establishment of a company dedicated to the exportation of electric energy that would be formed either in accordance with the host country's domestic legislation or in accordance with international legal frameworks. Finally, the members of the Legal Committee proposed the possibility of the formation of a supranational entity that would be recognized by an ad hoc law in each participating country.[411]

The challenges put before the legal experts were many. In the first place, there were obvious differences in the polity of each participating member. On the one hand, Italy, Austria,

[410] Velimir Žepić, ed., *Jedinstvena mreža najvišeg napona Jugoslavije* [The network of the highest voltage of Yugoslavia] (Beograd, 1970), 22-31.
[411] UNOG, G.X/19/6/1, "Yougelexport". Legal Committee. Summary of Proceeding at the meeting held in Venice, 21.04.1953.

and West Germany had different governmental organizations, but Yugoslavia was the only communist member. Therefore, the question of ownership and management of the future electricity export company became increasingly complicated. At the same time, as was already mentioned, Yugoslavia was going through its own change of governmental reinvention. After 1948 and its expulsion from Cominform, Yugoslavia rejected previous forms of communism, especially all aspects of Stalinism. In search of a new form of government, Yugoslavia introduced socialist self-management in 1950.[412] The Yugoslav self-management system attempted to balance the advantages of planning with its openness to market forces, both in domestic and foreign trade. This so-called "market socialism" was demonstrated in a dynamic private sector consisting of private farms and small businesses. The remaining labor force was employed in the socialized sector. Even though the Yugoslav government promoted the idea that many economic decisions should be made at the enterprise level, the fact remained that large enterprises were still in the ownership of the state.[413]

President of the Legal Committee, Marco Vinsentini, emphasized that because of the differences in polity between Yugoslavia and the rest of the members of Yougelexport and, more importantly, the novelty of self-management, Italian, Austrian, and West German representatives should get more acquainted with Yugoslav law. The focus should be kept on legal frameworks for the utilization of water resources, the organization of electric power production and transmission, the formation of industrial enterprises, especially those with



[412] The break with the USSR created an atmosphere where there were ideas for the implementation of democratic development. According to Jože Pirjevec, one of the creators of self-management, Edvard Kardelj, found inspiration and exchanged ideas with Swedish social democrats. Due to the political atmosphere after 1948, Yugoslavia's isolation from the Soviet Union due to conflict, and Western Europe and the US's suspicion of Tito's true intentions, it is not surprising that only Scandinavian social Democrats found interest in and expressed belief in Yugoslavia's breakup with the USSR. In correspondence between Tage Erlander, Swedish Prime Minister from 1949 to 1969, and Edvard Kardelj, there is an obvious incentive for Yugoslavia to free itself from the Soviet model and to create a new, more liberal system of governance. ("Relations between Yugoslavia and Sweden" (1969). *Yugoslav Survey. A Record of Facts and Information 1*: 137-148.).

[413] Patricia A. Taylor, Burke D. Grandjean and Niko Toš, "Work satisfaction under Yugoslav self-management: On participation, authority, and ownership," *Social Forces* 65/4 (1987): 1020-1034.

foreign capital and foreign interests, and, finally, the laws concerning the regulation of the power market and sales.[414]

During the second meeting of the Legal Committee, the experts reached the conclusion that the current situation in Yugoslavia did not allow for the possibility of considering the establishment of a private company.[415] In 1954, the Legal Committee dedicated its efforts to finding a solution for drafting suitable contracts. Members of the Legal Committee agreed that, under the present circumstances, the best course of action for the export of electric power from Yugoslavia was for all participating countries to establish bilateral contracts in order to secure the provision of the required electric power. Regarding the bilateral agreements, the Legal Committee strongly advised that participating countries pay special attention to clauses dedicated to stability of supply, possibilities of price revisions, and arbitrations. Furthermore, experts agreed that all contracts should guarantee the continuity of supply, freedom in executing payments, invariability of the form in which payments should be made (whether in money or another form of supply), and, finally, invariability of the taxes and charges levied on imported or exported electric power.[416]

During the subsequent meeting in Verona, the Austrian expert, Ernst Urban, insisted that one of the most relevant questions that the Legal Committee needs to resolve is in what form Yugoslavia could provide guarantees for the foreign capital that would be invested in the construction of hydroelectric facilities on Yugoslav territory. On the other hand, the Italian representative in the Technical Committee, Dino Tonini, was more concerned with brushing up on the form and the outcomes of the bilateral agreements. Tonini suggested establishing a company that could be named "Yougelexport" under Yugoslav law. This company would then



414 UNOG, G.X/19/6/1, "Yougelexport". Legal Committee. Summary of Proceeding at the meeting held in Venice, 21.04.1953.
415 UNOG G.X/19/6/1, "Yougelexport". Legal Committee. Summary of Proceeding at the meeting held in Venice, 20.07.1953.
416 UNOG, G.X/19/6/1, "Yougelexport". Legal Committee. Summary of Proceeding at the meeting held in Venice, 1.04.1954.

take charge of the construction of hydroelectric installations and be in charge of selling the produced electric power. Furthermore, the importing countries could form, under their own law, companies dedicated to importing electric energy, and those could be designated as "Yougelimport." Then the "Yougelexport" and the various "Yougelimport" companies would sign bilateral agreements. Tonini considered this suggestion to be an elegant solution, and, more importantly, the international banking institutions would be more inclined to invest in this scheme. German experts Ernst Rehm and Urban agreed that Tonini's suggestion was the most appropriate, but Yugoslav representative Ribić insisted that the Legal Committee should also consider the Yugoslav financing proposal.[417]

Yugoslav experts Karapanđa and Pertot drafted several ideas for addressing the legal challenges of Yougelexport. In a manner akin to Tonini's suggestion, Pertot suggested that participating countries should establish an intergovernmental body that would be named "Electro-Union," and Yugoslavia would establish a company named "Yougelexport" that would collaborate with "Electro-Union." In this context, "Electro-Union" would extend financial resources to "Yougelexport" through loan arrangements. Moreover, Yugoslavia would fulfill its financial obligations to importing countries by exporting electric energy generated from the power sources that were financed with these loans. However, Rehm remarked that, in comparison with Tonini's suggestion, the Yugoslav solution for financing the construction of hydroelectric facilities by importing countries would be legally complex and burdensome, and it was rejected.[418]

**Navigating Economic Diplomacy**



[417] UNOG, G.X/19/6/1, "Yougelexport". Legal Committee. Summary of Proceeding at the meeting held in Verona, 5.11.1954.
[418] UNOG, G.X/19/6/1, "Yougelexport". Legal Committee. Proposal submitted by Yugoslav delegation. Annex of Proceeding at the meeting held in Verona, 5.11.1954.

The Financial Committee was responsible for determining the appropriate methods of financing the projected investments. Italian expert Francesco Cartesegna mentioned that the possibility of obtaining finances through the International Bank for Reconstruction and Development (IRBD) should not be off the table and be discussed in more detail in upcoming meetings. Furthermore, other experts also suggested that the possibility of a private entity financing the project could also be an option. Also, Yugoslav representative Flere suggested that the Financial Committee consider the possibility of Yugoslavia paying the loans through exported products. On the note of getting the necessary finances, the experts agreed that there could be a possibility of resorting to Americans for help in financing the project. In order to answer all these questions, the experts on the Financial Committee needed some starting points. Yugoslav representatives Flere and Leon Rip presented to the Committee the following hypothesis: the amount of capital requirements will be adapted to the needs of the construction on the Cetina River project and will be calculated, considering the network to reach the Yugoslav border with Italy and Austria, to be around 100 million US dollars. It was estimated that this power plant would produce around 2 billion kWh, of which 2/3 would be winter energy.[419]

After the consultations with the experts from the Legal Committee, president of the Financial Committee Ernst Paurnfeind strongly suggested to the experts that it should be determined to rely exclusively on loans and not on capital investments.[420] This came as no surprise.

The participating countries, more precisely West Germany, had little faith in Yugoslav reassurances that they would respect the agreements if capital investments were involved. During the second meeting, Paurnfeind reported that, after further consultations, the

[419] UNOG, G.X/19/6/1, "Yougelexport". Comite Financier. Compte rendu de la première reunion renue à Venise, 22-23.04.1953.
[420] UNOG, G.X/19/6/1, "Yougelexport". Financial Committee. Summary of Proceeding at the meeting held in Graz, 5.08, 1953.

International Bank of Reconstruction and Development was willing to grant a loan of approximately 33% of total financial requirements. On his suggestion, all experts agreed that this loan should be made in West European currencies, as the repayment would be much easier in the same currency. The chairman also drew attention to the possibilities of obtaining private capital from Italy, Austria, and West Germany. Moreover, Paurnfeind proposed that non-Yugoslav exporters should provide commodity credits to Yugoslavia, but only if the Yugoslav government would guarantee commitment to timely repayments, either in goods or money.[421] The Financial Committee agreed to provide guidance in drafting the contracts and agreements between the Yugoslav government and the electric power companies of the recipient nations that would be involved in the import of electric power. The final report of the Financial Committee to the UN ECE Committee on Electric Energy planned four construction projects with costs that amounted to 309 million US dollars and an additional 70 million US dollars that would be invested in the construction of transmission lines. These estimates were based on the assumption that the necessary means could be secured by long-term loans granted by the International Bank and supplemented by private loans from the participating countries.[422]

The Financial Committee proposed a three-phase plan for the development of electricity facilities in Yugoslavia. The first phase would involve exporting surplus electricity, subject to the completion of power plant projects, the construction of a high-voltage grid, and the approval of an international bank loan. The second phase would focus on exporting electricity from completed power plants with a total capacity of 800 MW, supported by international banking institutions. The third phase would include the exportation of electricity, assuming the construction of additional hydroelectric facilities funded by the International Bank. These



[421] UNOG, G.X/19/6/1, "Yougelexport". Financial Committee. Annex 1. International Bank for Reconstruction and Development. List of loans for electric power development as of March 3, 1953.
[422] UNOG, G.X/19/6/1, "Yougelexport". Financial Committee. Summary of Proceeding at the meeting held in Klagenfurt, 8.04.1954.

facilities, along with the power plants from the second phase, were expected to have a combined capacity of approximately 1400 MW.[423]

**Putting Things Into Motion**

The efforts of all committees were finally presented in 1956 during the first meeting of the Coordinating Committee. The president of the committee, Pierre Sevette, informed all present members that after the informal meetings between representatives of countries participating in the Yougelexport project in Geneva in 1955 and Vienna in 1956, things were finally ready to be put into motion. The newly formed Yugoslav Electricity Union (JUGEL) officially started the negotiations with the representatives of the other three countries concerned in order to draft the agreement and statute for Yougelexport on the basis of the reports submitted by the Economic, Technical, Legal, and Financial Committees.[424]



[423] Rade Šikarica, "O konstruktivnom izvođenju električne mreže u Jugoslaviji," [On the constructive implementation of the electrical network in Yugoslavia] *Elektroprivreda* 9/5 (1956): 238.
[424] UNOG, G.X/19/6/1, "Yougelexport". Co-ordination Committee. Summary of Proceeding at the meeting held Geneva, 21.09.1956.

*Figure 10. Yougelexport expert group attending the Conference on Rural Electrification in Geneva, 27.11.1953 (From left to right: Han (YU), Neville (USA), Denzel (FRG), Sazonov (USSR), Martinov (USSR), Cameron-Brown (UK)) (Source: Archives of Yugoslavia)*

Representatives from all committees agreed that the Yougelexport study should continue in the intergovernmental framework, as the Legal Committee suggested in its report. Moreover, the Co-ordination Committee established that the primary objective of Yougelexort should be to identify resolutions and strategies for implementing recommendations outlined in the research report titled "Prospect of Exporting Electric Power from Yugoslavia." Additionally, the Co-ordination Committee reminded the representatives that the imperative is to assure respectful collaboration in the development of contracts that are going to be specifically designed for the purpose of exporting electric power. Sevette outlined that, given the expertise of the representatives of respective electric industry organizations, it was expected that the representatives would provide guidance to each other on many aspects, including the optimal quantity of electrical energy that was going to be exported from Yugoslavia, potential load diagrams associated with such exports, pricing considerations, and appropriate methods of payment. It was imperative that the contracts have comprehensive provisions pertaining to

the agreed-upon technical support and labor involved in the building of power plants and transmission infrastructure.

Finally, on February 11, 1957, during the meeting in Ljubljana, the Yougelexport study group was officially established. The newly established international body was comprised by representatives of the official electricity companies of participating countries: Marco Vinsentini represented Italian Societá Energia Elettrica (SENEL), Wilhelm Fleischer represented West German Deutsche Verbundgesellschaft (DVG), Miloš Brelih represented Yugoslav Zajednica jugoslovenske elektroprivrede (JUGEL), and finally, Oskar Vas represented Austrian Österrechische Elektrizitätswirtschafst A.G. (ÖEVD).[425] According to Article 2. of the Yougelexport Agreement, the main aim of the study group was to identify the possibilities of exporting electrical energy from Yugoslavia and to take all necessary measures to make these possibilities a reality. Furthermore, it was decided that each participating country would delegate a representative to a Board of Directors. The Board of Directors would be the only body capable of making decisions, and all decisions should be passed by all members unanimously. Beside the Board of Directors, the Yougelexport consisted of the Secretariat. The Secretariat handled day-to-day business, ensured that the resolutions of the board of directors would be implemented, and prepared the documents for the meetings of the board of directors. The non-Yugoslav members agreed that the Secretariat of Yougelexport should be in Yugoslavia and the secretary should be appointed by the Yugoslav representative.[426]

During the meeting in Ljubljana, Miloš Brelih highlighted the overview of the technical, economic, financial, and legal problems that could arise in connection with the realization of the Yougelexport project, as it was outlined by special committees. Furthermore,



[425] AY, 850, 393, Elektroprivredna saradnja sa Austrijom. Osnivački ugovor Yougelexport [Electricity industry cooperation with Austria. Founding agreement of Yougelexport], 1957, 1.
[426] AY, 850, 393, Elektroprivredna saradnja sa Austrijom. Osnivački ugovor Yougelexport [Electricity industry cooperation with Austria. Founding agreement of Yougelexport], 1957, 2-7; "Studisko društvo Jugelexport," [Yougelexport study group] *Elektroprivreda* 10/3 (1957): 173-174.

Brelih repeated that Yougelexport will focus on building hydroelectric facilities on the rivers Cetina, Lika-Gacka, Idrijca, and Trebišnjica. The other members repeated that if Yugoslavia would pursue the use of one or more of these power plants for aluminum production, the Yougelexport Board of Directors should be noted immediately.[427] However, Brelih presented the members of the board with a detailed study of the benefits and suitability of aluminum production, and the rest of the board agreed that the power plant on Lika-Gacka should be used as a model for further study of aluminum production.[428]

In July 1957, Miloš Brelih informed other members that the preparatory works for the construction of the Senj power plant on Lika-Gacka were already in full swing and suggested that the technical experts should discuss in more detail all the technical problems that the builders encountered. Furthermore, Marco Vinsentini suggested and the rest of the Yougelexport members agreed that Miloš Brelih should be entrusted with further technical issues to gather them and, if the need arises, address them to the Board of Directors in one of the future meetings of the Yougelexport group.[429]

In subsequent years, 1958 and 1959, the Yougelexport group carried on the work and meetings, however, in a smaller capacity. In reality, the planned projects for four power plants started becoming more and more difficult to carry out. In the background of the construction, the political turmoil of late 1950s Yugoslavia complicated things even further, with West Germany completely dropping all diplomatic, political, and economic exchanges with Yugoslavia due to the Yugoslav recognition of East Germany. The West German representatives boycotted several Yougelexport meetings but ultimately found a way to participate, mostly due



[427] Yugoslav representatives in the Co-ordination Committee raised the possibility of using the hydroelectric facilities for the production of aluminum, but the rest of the participating countries remained inexplicit concerning this question, stating that it could be reconsidered once the facilities are built.
[428] AY, 850, 393, Protokoll abgehaltene errate Sitzung des Verwaltungsrates des „Studiesnsyndikat Jugelexport". 11-12.02.1957, 2-3.
[429] AY, 850, 393, Protokol in Beograd stattgefundenen II. Sitzung des Verwaltungsrates der Studiensyndikats Jugelexport, 6.07.1957, 1-4.

to Fleischer's insistence. However, Yougelexport continued their work, focusing on the Lika-Gacka power plant project. The construction of the Senj power plant was progressing, and the members of the group had already started discussions on the amounts of energy that would be exported once the power plant became operational. During the meeting of the Board of Directors in Milan in October 1959, the delegations expressed their considerations on the energy exports from HPP Senj. Italy was ready to carry out the energy exchange with the maximum possible performance indicated. The Austrian delegation supported the Italian suggestion and expressed its willingness to carry out the maximum amount of energy exchange. The West German representatives expressed the opinion that, due to the distances, an exchange with German utilities is unlikely to come to fruition. However, if the exchange does come, the German representatives were interested in taking on heavy winter loads.[430]

**Reception of the Yougelexport Project in Yugoslavia**

The establishment of the Yougelexport project was prominently featured in the Yugoslav media landscape.[431] The Yugoslav enthusiasm revolved around the fact that Yugoslavia had one of the largest hydroelectric reserves in Europe and that the success of this project would put it on the energetic map of Western Europe. This was particularly significant considering that the electricity output of neighboring countries was insufficient to meet their continuously growing energy demands. Yugoslav engineers extensively emphasized the importance and potential economic benefits of Yugoslav water resources in various articles that were published in both



[430] AY, 850, 393, Summary of the Yougelexport meeting in Milan, 11.10.1959, 1-7.
[431] "Ustanovljen Jugeleksport" [Yougelexport Established], *Slovenski poročavalac*, 14/167, 18.07.1953, 1; "La collaborazione italo-jugoslava nel campo dell' economia idroelecttrica" [Collaboration between Italy and Yugoslavia in hydroelectric projects], *Gospodarstvo*, 9/202, 19.06.1955, 8; "U Ljubljani će se 11 februara osnovati Jugeleksport" [Yougelexport will be established in Ljubljana on February, 11], *Borba* 22/37, 8.02.1957, 2; "Vedno bolj smo povezani s sosedi" [We are better connected with our neighbors], *Slovenski poročevalac* 19/65, 18.03.1958, 4; "Izvoz električne energije iz Jugoslavije," [Export of electricity from Yugoslavia] *Gospodarstvo,* 15/370, 3.03.1961, 1.

daily newspapers and scholarly journals. The meetings of the Technical Committee of the Yougelexport Study Group that were held in Yugoslavia and visits by foreign experts for electric energy in 1954 garnered significant interest in the Yugoslav public.[432]

Furthermore, in 1957, Yugoslavia hosted the XI World Energy Conference. The significance of this event was evidenced by the involvement of President Tito, Yugoslav government dignitaries, and Yugoslav engineers involved in various projects concerning energy development. The XI World Energy Conference was officially opened on June 5, 1957, in Belgrade. The conference was ceremonially opened by the Yugoslav vice president of the Federal Council, Edvard Kardelj, who stated:

"I am convinced that this conference will not only yield fruitful results in the form of solving various problems in the field of energy studies but also contribute to rapprochement and understanding between the world's countries. At this moment, humanity needs such cooperation the most. It is necessary and important because the modern results of science and technology cause such economic, political, and social problems that inevitably become international problems."[433]

However, the particular interest was in the presence of Gunnar Myrdal, who delivered the speech, and his observations related to the role of electricity in economic development and the possibility of cooperation between nations in that field. Among other things, Myrdal noted that the unexpectedly fast growth of energy needs in the whole world meant that underdeveloped countries would face a special problem when planning the development of electrical networks. For those countries that possess abundant natural resources, there would be an opportunity to export to markets whose demands are constantly growing. Myrdal



[432] "Posebno izdanje Jugelexport projekta," [Yougelexport Project Special Edition] *Elektroprivreda* 7/2 (1954).
[433] "XI posebno zasedanje Svetske konferencije za energiju" [XI Special Session of the World Energy Conference] *Elektroprivreda* 10/7 (1957): 315-316.

emphasized that the importance of the national investment plan in underdeveloped countries lies in the fact that investments are made where they might not seem to be profitable because the final result will be an increase in national income. In those stages of development, international help is very desirable, primarily for the purpose of studying the possibilities of development and elaborating technical plans, and secondly, for the actual implementation of projects related to financing the program. He also mentioned that one of the most interesting examples of this was the Yougelexport program, which was created under the auspices of UNECE. The significant hydropower resources of Yugoslavia, which were underutilized, provided the opportunity for neighboring countries, Italy and Austria, and further West Germany, to use these hydropower sources:

> "In a period of two years, very extensive studies were made regarding this problem, which were supplemented by the examination of experts from the UN Technical Assistance Administration. Right now, a consortium has been formed that deals with energy issues in the interested countries"[434]

Myrdal concluded that the UNECE platform facilitated the completion of extensive studies. Yougelexport was praised as a noteworthy illustration of global collaboration in endeavors to construct interlinked infrastructure.

Even though the enthusiasm for the Yougelexport project was present in all spheres of the Yugoslav public, not everyone accepted it so vigorously. One of the biggest critics of Yougelexport was Professor Milan Vidmar and other representatives of the Institute for Electrotechnics from Slovenia.[435] The Institute for Electrotechnics mostly voiced criticism towards the central government for the exclusion of their involvement in the creation of the Yougelexport program while simultaneously involving institutes from Zagreb and Belgrade.

[434] "XI posebno zasedanje Svetske konferencije za energiju," 315-316.
[435] Milan Vidmar (1885-1962) was Yugoslav electrical engineer, chess master and theorist, and writer.

Vidmar's dissatisfaction was not surprising; he was one of the leading electrical engineers in Yugoslavia, and giving the lead to the representatives of Institute *Nikola Tesla* from Belgrade and Institute *Dalekovod* from Zagreb was not only offensive towards Vidmar himself but also indicative that Slovenia would be excluded from the project in favor of Croatian and Serbian interests.[436]

This animosity and light competition could already be noticed in the choice of locations for the construction of hydroelectric facilities at Yougelexport, where Slovenia succeeded in keeping only the Idrijca option on the table. The rest of Yugoslav experts justified this decision by stating that Slovenian experts were already involved in Drina River negotiations and that this would only put additional burden on them, but Slovenian engineers did not share this sentiment.

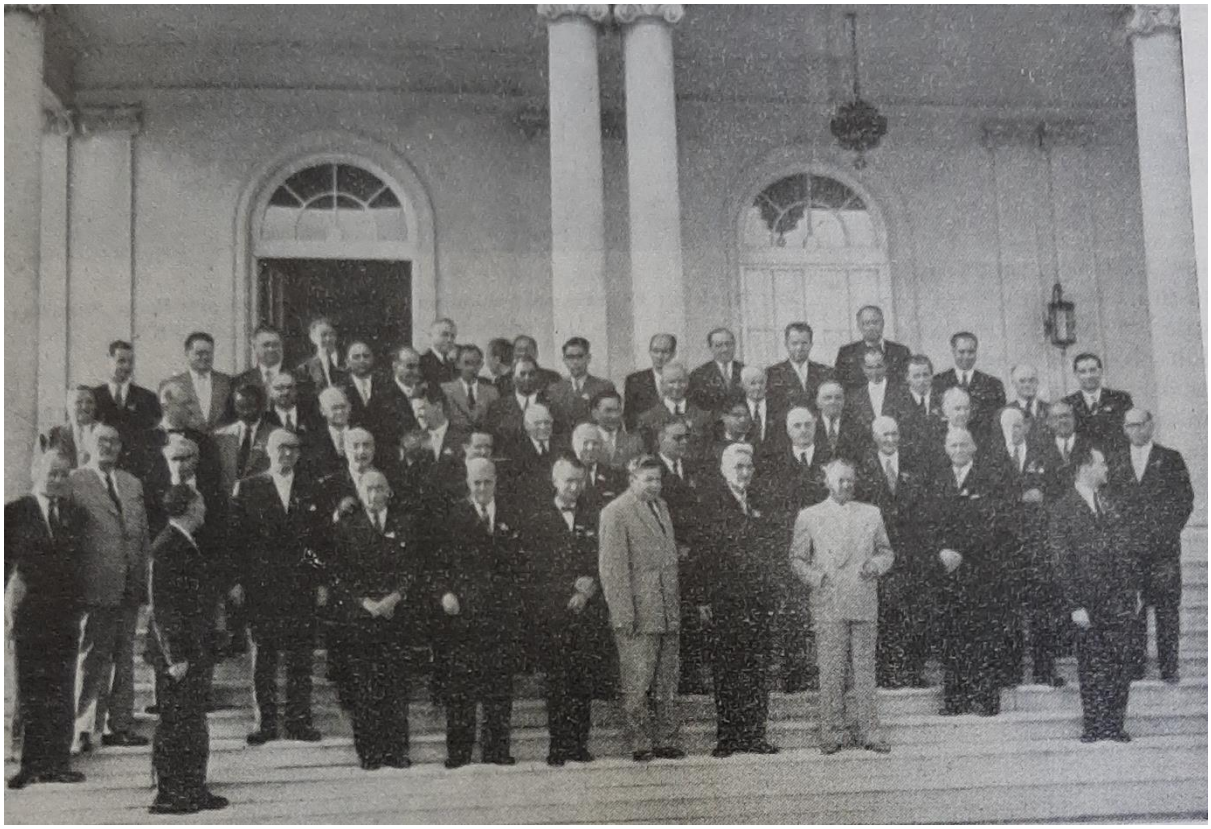

*Figure 11. XI session of the World Energy Conference in Belgrade 1957 (Source: Elektroprivreda 10/7 (1953))*

[436] Milan Vidmar, "O elektrifikacijskih problemih Jugoslavije," [About the electrification problems of Yugoslavia] *Elektrotehniški vestnik* 9 (1953): 10.

Vidmar expressed strong disapproval of Stjepan Han, the chairman of the Technical Committee, for his excessive focus on resolving technical matters and making many compromises to accommodate the desires of other Yougelexport members. These Han's actions, Vidmar considered sycophant and disadvantageous for Yugoslav interests. Vidmar highlighted that the interconnectedness between the export of power from Yugoslavia and the overall economy should be considered beyond a purely technical perspective. He also noted that Yugoslav delegates in the special committees of Yougelexport demonstrated a passive approach and that all efforts and engagement of Yugoslav representatives were focused on the activities of the Technical Committee.[437] Vidmar vehemently dismissed the critique put forth by foreign experts that were visiting Yugoslavia and reported that the quality of life experienced by Yugoslav citizens was subpar. He argued that such criticism demonstrated a lack of understanding regarding the historical context of Yugoslav industrialization and electrification, as well as the consistent perils and potential threats posed by the Soviet Bloc. Nevertheless, he concurred that Yugoslavia did really lag behind other participating members of Yougelexport in terms of industrial development. Consequently, Vidmar argued that Yugoslavia should refrain from squandering its natural resources on supporting the economies of other nations. He stated that it would be prudent for Yugoslavia to allocate those resources towards expediting their own industrialization endeavors.[438]

Furthermore, Vidmar commended the case of Norway when they were invited by the UN ECE to engage in the exportation of electric power from their rich hydroelectric resources. As already mentioned, Norway expressed reluctance to engage in further discussions about the UNECE's proposition, asserting its intention to allocate energy resources towards the extraction of aluminum. The majority of Vidmar's criticism was directed towards the concept

[437] Milan Vidmar, *Politični, gospodarski in tehnični problem Yougelexporta* [The political, economic and technical problem of Yougelexport] (Ljubljana, 1954), 9-22.
[438] Milan Vidmar, "Yougelexport ne sme biti država v državi," [Yougelexport must not be a state within a state] *Življenje in Tehnika* 19 (1954): 333.

of constructing two parallel transmission lines, specifically one connecting Zagreb to Austria and another running along the Adriatic coast through Rijeka to Trieste. Firstly, Vidmar was concerned that with two separate transmission lines, Yugoslavia might come out short on the electric energy that will be produced in planned power plants. Secondly, a project of this magnitude was anticipated to cost over 400 million US dollars. He also criticized the Yugoslav representatives in the Financial and Economic Committee for showing a lack of knowledge, intentionally or unintentionally, about the political challenges that would be associated with securing such a loan.[439]

It is worth mentioning that Vidmar was not completely antagonistic towards the entire Yougelexport project. Although many Slovenian river options fell off the table, Vidmar agreed that the waterpower of rivers Lika-Gacka, Trebišnjica, Idrijca, and Cetina were excellent choices for building hydropower plants and that they would indeed produce even more than projected quantities of power.[440] The fears and concerns that Vidmar loudly voiced in his articles were only an example of a number of concerns expressed by engineers and politicians who were starting to fear that the Yougelexport group was getting too much agency. Towards the end of 1950, many factors and problems that participants in the Yougelexport project were ignoring were starting to emerge.

**A Failed Project?**

From this overview, it is evident that the Yougelexport project encountered numerous hurdles from its inception. The idea of Gunnar Myrdal that Yugoslavia could be a possible bridge towards the east and his deep belief that the world must come together to overcome the

[439] Vidmar, "Yougelexport ne sme biti država v državi," 334.
[440] Vidmar. "Yougelexport ne sme biti država v državi," 335.

differences and cooperate for mutual benefit were the main drivers behind the Yougelexport plan. In the end, it proved that no matter the enthusiasm and economic and infrastructural benefits for all involved, political attitudes determine the success of such projects. The challenges in the construction of power plants on Yugoslav territory gave rise to various challenges, such as lengthy disputes over financing the project, the extent of international participation and arbitration, the ways in which supra-national bodies such as Yougelexport should be governed, and, finally, the Yugoslav government's hesitancy to provide assurances regarding the implementation and financing of construction.

The Yougelexport project, I argue, was doomed to fail from the very beginning, mostly due to Tito's uncertain position on the international scene and refusal to commit to either bloc. In the end, Yugoslavia failed to prove itself as a trustworthy partner, especially for such a risky project where West European participating countries would depend on the electricity exports of Yugoslavia. The Yugoslavs active participation in the work of the UNECE and the Committee on Electric Power came only after Tito was certain that the dispute with the Soviet Union was irreversible and that Yugoslavia must find new allies quickly. Tito's previous plans to build a mini-Soviet Union on the Balkans were disregarded after 1948, but the idea of fortifying his influence over the infrastructure was not abandoned. Moreover, Yugoslavia's Five-Year Plan demanded a developed electric grid, and Tito had to find a way to keep Yugoslavia's industrial development steady. Therefore, the possibility to cooperate with the West European countries and develop electric infrastructure with their financial and expert help seemed like the only possible option for Yugoslavia in the early 1950s. After 1948, Yugoslavia also started reapproaching the United States. Unlike the Western European countries and Gunnar Myrdal, who considered Yugoslavia a possible candidate to build a bridge towards the East and overcome the tensions of the early Cold War, the US saw Yugoslavia as an example of how other Soviet satellites could also deflect from the grip of the Kremlin. Thus, during the

1950s and early 1960s, the US engaged in military, financial, technical, and educational support of Yugoslavia, hoping that when other countries see that Yugoslavia not only survived but strived after the breakup with the USSR, they will also follow the example.

The Yougelexport project brought Italy, Austria, and West Germany together to cooperate with Yugoslavia. In order for the Yougelexport project to be successful, the political tensions that these countries had with Yugoslavia had to be put aside. Although Yugoslavia had many animosities towards the participating countries of Yougelexport, it showed a willingness to prioritize pragmatic development imperatives and economic objectives over political squabbles. It was not just Yugoslavia that was adapting. In 1948, the government of West Germany demonstrated a notable level of adaptability in its approach towards Yugoslavia by providing them with much-needed loans. Moreover, based on statistical data, it is evident that in 1951, West Germany had the foremost position in Yugoslav trade with foreign nations, accounting for around 20% of the overall Yugoslav international commerce.[441]

Yugoslavia also had animosities with Italy regarding the question of Trieste. For a long time, Tito was reluctant to let go of the idea of incorporating Trieste into Yugoslavia, but after 1948, the Yugoslav stance started to change. Consequently, Italy emerged as a significant economic partner for Yugoslavia.[442] In the same manner, in the immediate aftermath of the war, bilateral relations between Yugoslavia and Austria experienced tensions, chiefly due to territorial disputes. Yugoslavia was asserting its claims over the contested region of Carinthia, once again citing the presence of the Slovenian minority as the basis for its territorial claims.[443] Therefore, all countries involved had to make compromises in order to cooperate with



[441] Sabrina Ramet, "Yugoslavia and the two Germanys," in *The Germans and Their Neighbors* ed. Dirk Verheyen and Christian Soe (Routledge, 2019), 317-337.
[442] Dragan Bogetić, "Odnosi Jugoslavije sa Zapadom i Tršćansko pitanje," [Yugoslavia's relations with the West and the Trieste issue] *Istorija 20. veka* 1 (1994): 123-138.
[443] Carinthia has been a contested area between Yugoslavia and Austria ever since the end of World War I: Robert Knight, "Ethnicity and Identity in the Cold War: The Carinthian Border Dispute, 1945–1949," *The International History Review* 22/2 (2000): 274-303.

Yougelexport. These compromises were not entirely connected to electricity, but it undoubtedly played a significant role. Yugoslavia was trying to find new partners in fear of losing momentum in economic and industrial development, and the West European countries hoped to find a trustworthy partner that would satisfy their electric energy needs.

Moreover, during the 1950s, Yugoslavia was reinventing itself. The introduction of the self-management system of government brought about changes that were favorable for the development of international cooperation in all sectors of life. The rise of so-called techno-managers in Yugoslavia had a positive impact on the development of the economy and industry of Yugoslavia. The decentralization of the economy from the strong grip of the state that was previously present in the Soviet planning economy model gave enterprise managers the possibility of independent decision-making. This led to the rise of very capable managers in factories and study groups that prioritized technical and educational advancements over immediate profits. Technomanagers that infiltrated both the economic and political spheres of Yugoslav life terminated the outdated notion of economic autarchy, abandoning the pursuit of swift industrialization and excessively ambitious investments and aiming to find long-term solutions for establishing a self-sufficient economy.

The Yougelexport project gave them the platform to engage and exercise autonomy in the international arena. The emergence of the non-alignment doctrine paved the way for a favorable climate in Yugoslavia for fostering international and cross-border technical cooperation. Moreover, Tito found in the non-alignment movement another avenue in which he could emerge as an undisputed leader and bring Yugoslavia fourth as a leader towards progress. Therefore, the economic and infrastructural might of Yugoslavia were again prioritized over domestic political disputes.

**Yougelexport Legacy**

The initial plans for Yougelexport failed to materialize. However, it was far from a complete failure. To remind, in the final draft submitted by the Technical Committee, Stjepan Han proposed that the hydroelectric power plants should be constructed on the Lika-Gacka, Idrijca, Trebišnjica, and Cetina Rivers.

The first project to be put into motion was the power plant on Lika-Gacka near Senj. The International Bank for Reconstruction and Development approved the loan to finance the HPP Senj and the 220 kV transmission network, and from 1954 to 1958, the Yugoslav and UNECE experts conducted extensive investigative work. Encompassing the results of all research conducted by the experts at Yougelexport, in 1957, Elektrorpojekt from Zagreb prepared an investment program for HPP Senj. Finally, on February 26, 1959, the Federal Executive Council passed the decision on the construction of HPP Senj, with an installed capacity of 216 MW and an annual production of 1080 GWh. The base project for HPP Senj intended to capture the water of the river Lika, which had an exceptionally torrential character, and to dimension the overflow bodies accordingly. The construction of a dam demanded the creation of a reservoir lake, and the water thus collected would be used in HPP Sklope. The builders would construct the tunnel that would connect the Lika with the Gacka. However, the construction of the HPP Senj took a longer time, and the plant was put into use only in 1965, several years after the Yougelexport group was disbanded.[444] The construction of the HPP Senj transmission line played a crucial role in the advancement of the Yugoslav 220 kV network.[445]



[444] Đurđa Sušec, ed., *40 godina Hidroelektrane Senj* [40 years of Senj Hydropower Plant] (Zagreb: HEP, 2006): 49-71.
[445] Fedor Jelušić, "Hidroenergetsko korišćenje reka Like i Gacke" [Hydropower use of the Lika and Gacka rivers] in *Elektroprivreda Jugoslavije* [Electro industry of Yugoslavia] ed. Zdravko Milanović (Beograd, 1962), 97-103.

The second project planned by the Yougelexport study group was a power plant on the Cetina River. The idea of building another plant on Cetina existed since 1945, and the opportunity presented by Yougelexport enabled this plan to come to fruition. With the help of Yougelexport experts, Yugoslav engineers conducted extensive research and preparation work for building the power plant. After extensive studies, in 1956, HPP Split power plant construction started. Already at the beginning of construction, builders faced intricate challenges stemming from unique construction conditions. The most challenging issues they encountered pertained to the resolution of difficulties related to subterranean water and hazardous caverns.[446] At the time of its construction, HPP Split was the largest structure of its type being built on the territory of Yugoslavia. The construction was carried out in two phases, of which Yougelexport Group was concerned only with the first phase. In the first phase of construction, the facility was equipped with two Francis turbines of 110 MW and a generator of 108 MW.[447]

Furthermore, HPP Split was financed by the United States and Yugoslavia, and with this decision, it was evident that Yugoslavia could not agree to the financing conditions imposed by other members of Yougelexport. However, the experience and knowledge that the builders of HPP Split acquired during the preparatory and construction works were invaluable for the construction of HPP Senj, HPP Dubrovnik, and HPP Bajina Bašta. Finally, in 1961, HPP Split was ceremonially opened in the presence of President Tito and other government dignitaries.[448]

Finally, the last plant from the Yougelexport study plan to be constructed was HPP Dubrovnik on the Trebišnjica River. The construction of the Dubrovnik power plant lasted from



[446] Stjepan Reštarović, "Hidroenergetsko rješenje područja Cetine i kraških polja," [Hydropower solution for the area of Cetina and karst fields] *Građevinar* 8 (1956): 12-25.
[447] Stjepan Reštarović, "Hidroelektrana Split na Cetini," [Hydropower plant Split on Cetina River] *Građevinar* 6 (1957): 133-140.
[448] Ante Busatto, ed., *Hidroelektrana Split* [Hydropower Plant Split] (Split, 1962), 44-47.

1960 to 1965, and beside the Yugoslav experts, the construction of this plan was helped by Italian experts from the company *Imes* in Bergamo. The construction of this power plant was, again, financed by the loan acquired from the United States.[449] In 1956 HPP Dubrovnik was put into operation with an installed capacity of 216 MW.[450]

The plans for the construction of the power plant on the Idrijca River were subsequently abandoned, and the construction of this project by the Yougelexport Group never took place. Idrijica had two power plants prior to Yougelexport plans: HPP Mesto built in 1909 and HPP Marof built in 1932, and only in 1989 did HPP Mrzla Rupa on Idrijca go into operation.[451]

In the end, many administrative, legal, and economic challenges encountered by the Yougelexport group hindered the timely execution of its objectives. In the face of the turbulent political and ideological changes Yugoslavia was going through, the experts did the best they could to materialize some of the plans and projections made by the study group. However, the political situation at the end of the 1950s was not the only reason for the gradual dissolution of the initial popularity and excitement surrounding the project. The Yugoslav engineers, mostly representatives from Slovenia and Serbia, voiced criticism that putting so much emphasis on projects oriented toward exporting electric energy to Western neighbors resulted in the neglect of integrating domestic electric infrastructure.[452] However, beside the three power plants, the most important legacy of the Yougelexport project was the foundation for the establishment of the SUDEL link between Yugoslavia, Italy, and Austria, on which the next chapter will closely focus.



[449] Paul Underwood, "Yugoslavs begin power project: U.S. Loan Will Help Build Big Hydroelectric Project in Valley Near Dubrovnik," *New York Times*, 22.05.1960, 2.
[450] Sava Mićić, "Hidroelektrane na Trebišnjici," in *Elektroprivreda Jugoslavije* [Electro industry of Yugoslavia] ed. Zdravko Milanović (Beograd 1962),123-129.
[451] Rudolf Rajar, "Hydrology of the Idrijca and Soca Rivers and the Gulf of Trieste," *Materials and Environment* 48/1 (2001): 49-55.
[452] Daniel Feöeze, "Ekonomski odnosi elektroprivrede," [Economic relations of the electric industry] *Elektroprivreda* 14/9 (1961): 428-446.

## Conclusion

The decade of the 1950s was characterized by significant turbulence and unpredictability, not just in Yugoslavia but also on a global scale. The emergence of Cold War politics and the resulting hostilities stemming from the collision of two opposing blocs significantly impacted world politics. However, in this atmosphere, Europe found a way to solidify the process of integration.

Following the Tito-Stalin split, Yugoslavia emerged as an early casualty of the Cold War dynamic, finding itself caught in the midst of the competing interests of two major power blocs and their respective allies. The hopes of Tito that Yugoslavia would build a powerful Balkan federation were dispersed after 1948, but the aspirations toward being the major driving force in the Balkans did not. Therefore, Tito had to compromise and find new allies in order to keep his position of power. Beside the open military threat by the Soviet Union, the integrity of the initial Five-Year Plan, implemented in 1947, faced many challenges with the economic isolation that Yugoslavia experienced from the Soviet Bloc. Yugoslavia recognized the importance of extensive electrification for industrial development. So, beside the military and economic help that Tito was seeking in the West, assistance for the development of the electricity infrastructure was on top of the list as well.

Simultaneously, Gunnar Myrdal, the newly appointed director of UNECE, identified a favorable opportunity to establish a link that might facilitate broader interactions between the East and West. Myrdal recognized that Yugoslavia could be an ideal partner in facilitating the building of the "bridge between East and West," and what is more, with its abundant hydroelectric resources, it could satisfy the growing power demands of Western and Central Europe. Thus, the collaborative endeavors between UNECE and Yugoslavia led to the establishment of the Yougelexport research group. In the political atmosphere of the early

1950s, Yugoslavia wholeheartedly embraced the idea of Yougelexport and actively promoted the notion of Yugoslavia as a prosperous energy hub in Europe and as a significant partner for the further advancement of European industry and the economy. Additionally, the Yougelexport project offered an opportunity for Yugoslavia to prove itself as a trustworthy partner to the suspicious West.

With the introduction of self-management governance, Yugoslavia paved the way for the rise of capable technologists who took on a leading role in the Technical Committee of Yougelexport, chaired by engineer Stjepan Han. Technomanagers took on the role of system builders of Yugoslav electric infrastructure in the 1950s and 1960s and had a strong grip on the Yugoslav economy and politics until the 1970s, when the Yugoslav secret service (UDBA) dealt with them.

The Yougelexport project also revealed the tensions between Yugoslav republics that were already present in the late 1940s. The experts, engineers, and managers from Slovenia expressed strong dissatisfaction with the attitudes of Serbian and Croatian representatives at Yougelexport. Furthermore, some of the managers also expressed concern that such devotion to the project that would mostly benefit foreign countries was allocating resources and expertise away from the integration of the Yugoslav electric grid.

The mid-1950s proved to be a period of crucial transition for Yugoslavia. The Tito and Yugoslav leadership recognized the importance of integration efforts taking place in Western Europe. The fact that Tito did not willingly leave Cominform influenced his reluctance to engage in these processes with more enthusiasm. Furthermore, Yugoslavia did contemplate the benefits and potentials of participating in these processes by joining the Balkan Pact alongside Greece and Turkey.[453] Nevertheless, these contemplations encountered discord with the current

[453] Peter Vukman, "The Balkan Pact, 1953-1958: An analysis of Yugoslav-Greek-Turkish Relations based on British Archival Sources," *Éstudes sur la Région Méditerranéene* 22 (2013): 25-35.

economic circumstances prevailing in Yugoslavia. Yugoslavia was burdened with substantial debts to Western nations and was facing the frustration of being unable to fulfill these obligations through export revenues while simultaneously fulfilling its import requirements.[454] Conversely, after Stalin's death in 1953, Yugoslavia tried to renew diplomatic ties with the Soviet Union. Yugoslav expectations for the new collaboration were not met, resulting in amicable yet distant relations with the USSR. Again, as in 1948, the Soviet Union could not tolerate the autonomy that Tito exercised, which led again to the ideological clash that instigated yet another anti-Yugoslav campaign in the Soviet Bloc.[455]

With the cold relations with the Soviet Union and the growing dissatisfaction of the Yugoslav leadership that Yugoslavia would not be considered an equal partner in West European integration and would not only be politically and economically inferior but would also serve as a mere supplier of raw materials, Tito had to find a different solution for the foreign policy of Yugoslavia. Henceforth, Yugoslavia concentrated on finding a different, "third" option. This new approach in Yugoslav foreign relations was found in turning towards the developing countries of the Global South.[456] Through its engagement with the nations of Africa, Asia, and South America, Yugoslavia expanded its potential to assume a position of leadership. The aspiration that Tito had for the Balkans, which was dispersed by the conflict with the Soviet Union and conflicting interests with Western Europe and the United States, now found a new platform for fulfilling the idea of being a leader in a non-alignment



[454] Dragan Bogetić, "Jugoslovensko begstvo iz Evrope: novi ekonomski prioriteti nesvrstane Jugoslavije sredinom 50-ih godina," [Yugoslav flight from Europe: new economic priorities of non-aligned Yugoslavia in the mid-1950s] *Istorija 20. veka* 1 (2012): 163-178.
[455] Dragan Bogetić, "Drugi jugoslovensko-sovjetski sukob," [The Second Yugoslav-Soviet Conflict] in *Spoljna politika Jugoslavije 1950-1961* [The foreign policy of Yugoslavia 1950-1961] ed. Momčilo Mitrović (Beograd: Institut za noviju istoriju Srbije, 2008), 49-65.
[456] Dragan Bogetić, *Koreni jugoslovenskog opredeljenja za nesvrstanost* [The roots of the Yugoslav commitment to non-alignmentt] (Beograd, 1990), 11-25.

framework. Moreover, Yugoslavia discovered a substantial and notably less burdensome market for its fledgling economy.[457]

The emergence of Yugoslav non-alignment politics reflected on the course of Yugoslav engagement in projects that were carried out with West European countries and organizations. Therefore, the endeavors undertaken by the UNECE yielded significant outcomes and had significant geopolitical influence in Yugoslavia and the Balkans. With the Yougelexport project, the UNECE successfully established a framework that facilitated the negotiations on constructing electrical connections by enabling the countries that were previously engaged in conflicts and animosities to engage in dialogue and resolve disagreements for mutual benefit. Hence, it can be contended that Yougelexport, despite not fully achieving all of the intended objectives, nevertheless played a crucial role in shaping not only the subsequent advancement of the electric infrastructure in Yugoslavia but also served as a fundamental framework for interconnecting disparate systems in the Balkans. Moreover, the Yugoslav leadership gained invaluable experience in collaborating on an international platform. The lessons from the technocratic approach within international organizations served as a source of inspiration for Yugoslavia when it established a framework for future cooperation endeavors with the members of the non-alignment movement.

Although Yugoslavia reoriented towards the Global South, the engagement in projects that took place in the 1960s demonstrates that Tito did not reject the idea of Yugoslavia being a bridge between the West and the East. After the initial fears and uncertainties following the 1948 split, positions in between proved an attractive place for negotiations. In the next chapters, I will focus on two case studies that exploited this position in different ways. The SUDEL



[457] Milan Igrutinović, "On understanding the non-alignment in Yugoslav theorization of international relations," *Međunarodni problemi* 70/2 (2018): 125-146.

project was oriented towards the West, and the Iron Gates project sought engagement with the East, and in both cases, Yugoslavia tried to insert itself as a bridge.

# Chapter 4: The SUDEL Ring: Forging Yugoslavia's Path to Electric Interconnection

In the 1960s, Europe was characterized by a new transformative project forging the path to European unity. Connecting the electric systems was one of the crucial turning points in the continent's post-war reconstruction and economic integration. Throughout the beginning of the 1960s, European nations were still striving towards enhancing energy security, efficiency, and cohesive regional cooperation by developing interconnected electric power grids. The development of industrialization and the rush of urbanization made an abundant and steady electricity supply necessary for further development.

By the end of the 1950s, national electricity networks began linking up together, and in the 1960s, this trend continued. The establishment of transnational grids continued to optimize energy distribution across borders. At the outset, this integration was facilitated by electrical engineering development and achievements, most importantly the development of high-voltage direct current (HVDC) transmissions that enabled more efficient long-distance power distribution. It is noteworthy to mention that the interconnected systems not only ensured more stability in electricity distribution but also were part of the "hidden integration" of economic, infrastructural, and social efforts in the Central European region,[458] and building bridges over the Iron Curtain. This period of electric infrastructure interconnections emphasized the importance of cooperation and technological innovation in relation to the continent's energy needs and challenges.

In the 1960s and 1970s, Yugoslavia's foreign policy underwent a dynamic transformation. The result of the new approaches and changes was the positioning of Yugoslavia as a significant player on the global stage amid the Cold War's geopolitical tensions.

[458] Misa and Schot, "Introduction: Inventing Europe", 1-19.

After the pressures from the United States and the 1958 tensions with the Soviet Union, Yugoslavia decided to forge a new path, an alternative "third way" among the clashing Cold War actors. This new political path materialized through the establishment of the Non-Aligned Movement in 1961. This new path allowed Yugoslavia to avoid allegiances to both East and West and present itself as an advocate for the interests of newly independent and developing nations in the Global South. The hallmark of Yugoslav foreign policy in the 1960s was diplomacy of "peaceful and active coexistence."[459] This entailed close economic cooperation between the non-aligned nations and the active exchange of experts. Cultural and economic cooperation between Yugoslavia and countries in Africa, Asia, and South America strengthened Yugoslav global influence and economic ties. Domestically, this policy fostered pride and international prestige and was crucial for reinforcing Yugoslav sovereignty and independence. During this period, Yugoslav efforts to be a "bridge between the East and West" continued, and more so were reinforced by investing in large electric infrastructure projects. Even though Yugoslavia's insistence on always choosing "the third way," or just to keep the options open, could not be exercised in the case of interconnecting its electrical network with the organized interconnected power pools in Europe, Thus, at the beginning of the 1960s, the initiative came from Slovenian electrical engineers and the federal electric utility company to develop a more stable connection with Western Europe and the UCPTE system.

This chapter will focus on the development of the SUDEL ring project. The Yougelexport Project featured in the previous chapter did not produce the originally desired results, mostly due to the ambivalent political attitudes of Yugoslavia, but nevertheless, it laid the foundations for the continuation of efforts in regional interconnection between Yugoslavia, Austria, and Italy. Out of four planned hydropower plants, only three were built, and only one

[459] Ljubodrag Dimić, "Josip Broz Tito and the Beginnings of the Non-Aligned Movement," in *The 60th Anniversary of the Non-Aligned Movement* ed. Jovan Čavoški (Beograd, 2021), 51-74.

was financed by the Yougelexport group.[460] Already in the meetings in 1961 and 1962, it was clear that Yougelexport would not survive and that its goals would soon be abandoned. In this "failure," Slovenian electric engineers saw an opportunity to elevate the Slovenian electric power system and, more importantly, establish a stronger and more permanent link that would tie Yugoslavia to Western Europe. The 1960s were the time when techno-managers took on a decisive role in the development of the socio-technical structures of Yugoslavia, thus allowing Slovenian managers to make independent political decisions under the guise of technical expertise. The self-management system allowed more autonomy and decentralization that provided the experts to pursue international projects with more freedom, unlike the period under the central planning.[461] Similarly to the Yougelexport project experts, the experts working on the SUDEL project had more say in decision-making.

The chapter will first address the major European energy systems in 1960s and 1970s Europe and their respective efforts to unify the regional networks into one interconnected power grid. It is important to understand the context in which Yugoslavia was delaying the interlinking for a long time, hoping that the "third way" approach could be applied in this case as well. This proved impossible, and Yugoslavia had to make a choice or risk falling behind. The hesitancy to make a final choice reveals that connecting to the existing power systems was less of a technical issue and more of a political move. The primacy of the Slovenian engineers finally tipped the scales towards the West European UCPTE connection, revealing the domestic tensions and political ambitions of Yugoslav federal republics. Their undisputed autonomy in decision-making related to the SUDEL ring project shows not just the extent of the influence of the technomanagers but also where the main attention of the federal government was. It is important to keep in mind that at the same time the SUDEL project was taking place,

[460] Lagendijk and Schipper, "East, West, Home's Best," 28-54.
[461] Michał Jerzy Zacharias, "Decentralization Tendencies in the Political System of Yugoslavia in the 1960s." *Acta Poloniae Historica* 84 (2001): 137-166.

Yugoslavia was engaged in the construction of the Iron Gates project, which occupied most of the attention of not just the media but also high-ranking political officials and President Tito himself. Finally, the chapter addresses the significance of the SUDEL ring project, not just for the political ambitions of Yugoslavia to present itself as the bridge and link between Eastern and Western electric power systems but also for the present-day electric infrastructure of Europe and the Western Balkans.

**Europe's Energy Systems**

In previous chapters, the existing energy systems in Cold War Europe were briefly mentioned, and while Yugoslavia tried to maintain the status quo of not choosing either of the possible connections, with the SUDEL connection, the decision had to be made as Yugoslavia started sensing the consequences of its isolated position on Europe's energy map.

Although in the beginning, interconnection production and electricity supply in Europe were sporadic and insignificant, they paved the way for national and international cooperation in the production of electricity. International cooperation in the field of electric power had made it possible in some countries to build power plants whose production was not needed for domestic consumption but was exported to an interested neighboring country, as was the case with the Brusio power plant.[462] One of the foundations for the development of international cooperation in the production of electricity was the possibility of assistance in the event of operating disturbances and plant outages.

After the Second World War, the European continent developed four distinctive power systems. The Western European Interconnection (UCPTE) (Union for the Coordination of

[462] Kraftwerke Brusio AG, *Die ersten fünfzig Jahre Kraftwerke Brusio, 1904-1954* (Brusio AG: Poschiavo, 1954).

Production and Transmission of Electricity) was founded in 1951 in Paris on the recommendation of the Organization for European Economic Cooperation (OEEC) ministers and included Austria, Belgium, France, Italy, the Netherlands, Luxembourg, Switzerland, and West Germany. UCPTE's aim was to research the best use of existing means for the production and transmission of electricity, as well as their further development.[463] Additionally, UCPTE dealt with the study of the possibilities of better use of hydropower, observed the electricity situation in the member countries, and tried to facilitate and expand the international exchange of electricity.[464] First of all, UCPTE was founded as an association of persons, not companies and cooperations, so its work was very elastic and efficient because no administrative apparatus with newly formed positions was needed for it to function.[465] Therefore, UCPTE was organized on the principle of a personal union as a group of professional representatives of the largest electrical utility companies and representatives of their state administrations.[466]

The task of UCPTE was to constantly and systematically monitor and improve the mutual exchange of electricity between the member states. Moreover, UCPTE actively worked on creating the technical basis for expanding and improving the parallel production of power plants on an international scale, e.g., coordinating the planning of the transmission network, the study of frequency and volage regulation issues, and the selection of the voltage of individual networks and the method of connecting them. Through its expert groups, UCPTE aimed to monitor the production of hydropower and thermal power plants as well as the construction of power facilities in the territory of the member countries.[467] Furthermore, UCPTE compiled short-term power balances so that they could timely determine periodic



[463] Erik van der Vleuten and Vincent Lagendijk, "Transnational infrastructure vulnerability: The historical shaping of the 2006 European 'Blackout'," *Energy Policy* 38, no. 4 (2010): 2042-2052.
[464] Daniel Feöcze, "Udruženje za koordinaciju proizvodnje i prenosa električne energije zapadne Evrope UCPTE," [Association for the Coordination of Electricity Production and Transmission of Western Europe UCPTE] *Energija*, 5-6 (1962): 125.
[465] Per Högselius et al., *Europe's infrastructure transition*, 72-75.
[466] UCPTE, *50 Year Success Story – Evolution of a European Interconnected Grid* (Brussels, 2009), 5-11.
[467] Sekretariat der UCPTE, *Wesen, Aufgaben und Erfolge der UCPTE* (Heidelberg, 1961), 11-13.

surpluses and deficits in certain areas and agree on their equalization. Most importantly, UCPTE steered to improve the existing transmission network as well as the technical concepts for its further connection into a single network in Western Europe and for a more permanent improvement of its parallel operations. Additionally, UCPTE aimed to adapt the capacity of this network to future needs in order to utilize all capacities and put the existing power plants into operation in such a way that, for all associated members, it would increase operational safety and reduce joint reserves.[468] The turnover of electricity between the UCPTE member countries took place on the basis of the contracts of the associated electrical utility companies in three ways: as guaranteed long-term deliveries that were carried out according to the established long-term agreements; as an exchange of electricity that was contracted mainly for a shorter period of time; and as an unforeseen opportune supply of electricity, which was mainly carried out by hydropower regions during extraordinary water inflows.[469]

Based on the recommendation of the Council of Ministers of the OEEC, in 1956 Denmark and Sweden (as well as all member countries of the UCPTE) implemented the liberalization of seasonal and auxiliary supplies of electricity.[470] Although the other Nordic countries have already exchanged electricity in previous years, it was necessary to establish an association of the Nordic countries for the coordination of electricity production and transmission due to the greater increase in production, differences in precipitation, unequal possibilities of water accumulation, and differences in peak load. Therefore, the Scandinavian association for interconnection of electricity production was created in 1963 in Copenhagen under the name NORDEL and consisted of Denmark, Norway, Sweden, Finland, and



[468] *Wesen, Aufgaben und Erfolge der UCPTE*, 15.
[469] Wilhelm Fleischer and Georg Boll, "Der Beitrag der UCPTE zur Vervollkommnung des Verbundbetriebes," *Elektrizitätswirtschaft* 2 (1961): 16-21.
[470] Lars Thue, "Electricity rules: the formation and development of the Nordic electricity regimes" in *Nordic Energy Systems: Historical Perspectives and Current Issues* ed. Arne Kaijser and Marika Hedin (Canton, MA: Science History Publications, 1995).

Iceland.[471] The production of electricity in the Nordic countries was based mainly (except for Jutland) on hydropower, so immediately after the establishment of NORDEL, the desire to expand interconnection to new areas became one of the main aims of the group. For this purpose, as suggested by Sweden, the KONTI-SKAN Study Committee was established in 1960 with the task of investigating the possibility of an energy connection between Scandinavia and continental Europe.[472]



[471] Arne Kaijser, "Trans-Border Integration of Electricity and Gas in the Nordic Countries", 40-43.
[472] Ludvig Bauer, "NORDEL und KONTI-SKAN," *ÖZE Wien* 1 (1964): 21-23.

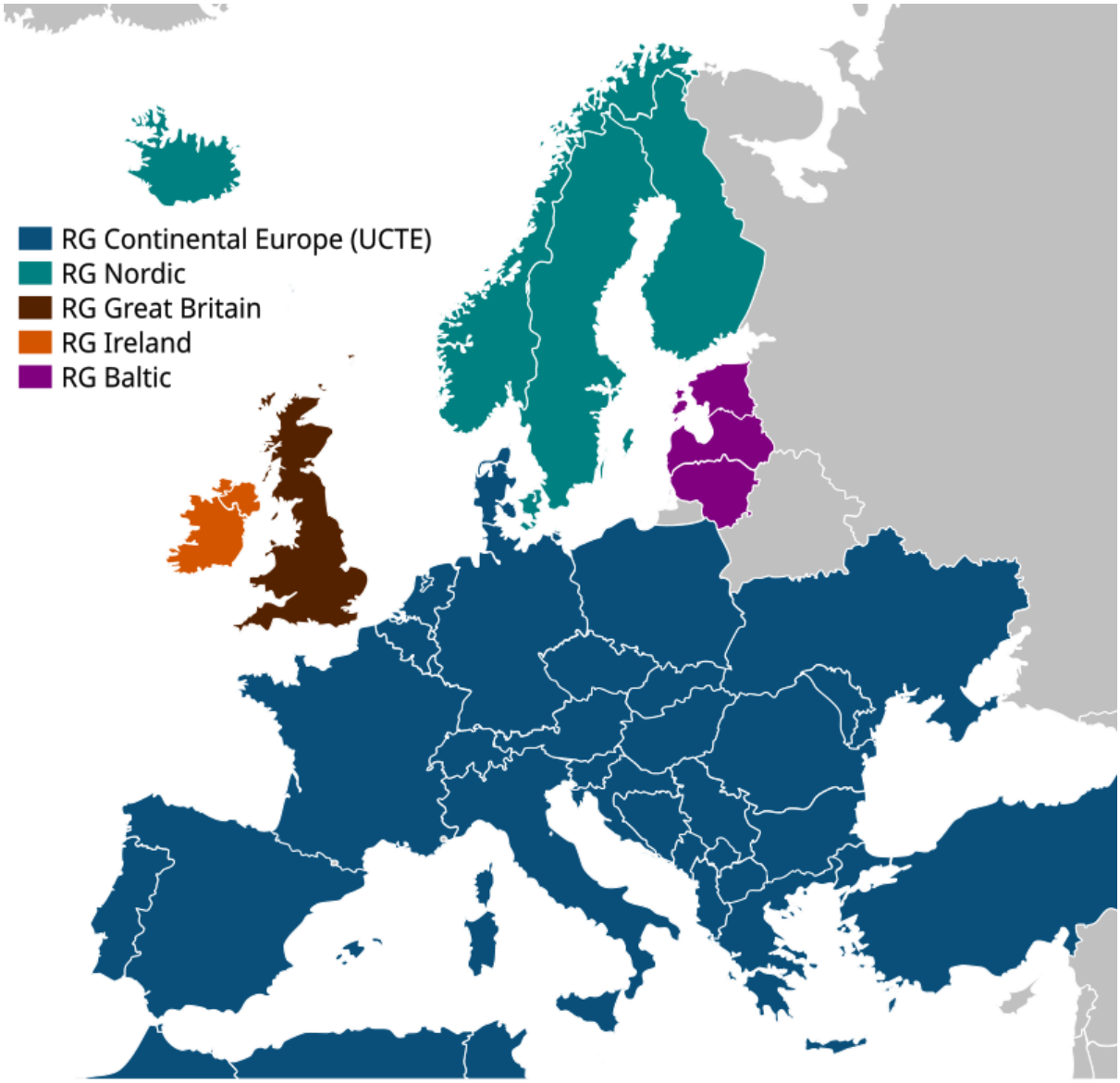


*Figure 12. Map of European Transmission System Operators Organizations (Regional Groups) Continental Europe, Nordic, Baltic, Great Britain and Ireland/Northern Ireland (former UCTE, UKTSOA, NORDEL, ATSOI, IPS/APS) (Source: ENTSO-E)*

The Eastern European Association for coordination and electricity production and transmission operated within the CMEA. The interconnection of electricity production between individual Eastern European countries began to develop only in 1959, after the 9th CMEA session in Bucharest, when decisions were made on the coordination of medium-term economic development plans, especially regarding investments for the construction of electric facilities. The joint investments of East Germany, Czechoslovakia, Hungary, and Poland in the

construction of a super-voltage network enabled the development of the interconnection of electricity production in that area. The Central Dispatching Organization was established in 1962 in Prague, and the association further continued working on interconnecting East European countries within the Soviet bloc. The member countries included Bulgaria, Romania, Czechoslovakia, Hungary, East Germany, Poland, and the southwestern part of the unified electric system of the USSR (Moldova and Ukraine).[473] In the framework of CMEA, the Standing Commission for Electric Energy was tasked with enabling the further development of energy ties between CMEA member countries as well as coordinating multilateral economic and technical cooperation in the field of energy. The Commission also coordinated the perspective energy development plans of the CMEA member countries and dealt with the rationalization of the production and application of electricity.[474]

Finally, there was the Unified Electric Power System of the USSR, which was developed during the 1960s and 1970s and consisted of nine unified power systems (from a total of eleven with almost one hundred regional compositions). The core system was created in the 1950s in the European part of the USSR, and only in 1978 was it linked with the Joint Power System of Siberia.[475]

This short overview represents the situation in the integration of power systems in Cold War Europe at the beginning of the 1960s. However, Yugoslavia still did not align with either of the two neighboring systems: UCPTE or Central Dispatch Organization/Interconnected Power Systems (CDO/IPS). At the same time, calls for finding solutions for interconnections inside existing power pools and ideas for bridging the differences between those pulls became



[473] Ljubica Marošan-Katić, "Proizvodnja energije Istočne Evrope i Sovjetskog Saveza u poslijeratnom period," [Energy production of Eastern Europe and the Soviet Union in the post-war period] *Ekonomski pregled* 9 (1963): 55-61.
[474] Falk Flade, "Regional integration in the eastern bloc: energy cooperation between CMEA countries, c. 1950s–80s," in *European Integration Beyond Brussels: Unity in East and West Europe Since 1945* ed. Matthew Broad and Suvi Kansikas (Springer Nature, 2020),169-190.
[475] United States. Congress. Office of Technology Assessment, *Technology And Soviet Energy Availability* (Routledge, 2020), 145-163.

more frequent. In 1964, UNIPEDE (Union Internationale des Producteurs et Distributeurs d'Énergie Électrique) published a report with the opinion that the possibilities for interconnections could occur through linking via submarine cable links or via establishing separate links with the East European countries.[476] Furthermore, the report emphasized that, beside the political differences, the technical difficulties of creating parallel links between the Western and Eastern systems only lagged the efforts even further.

However, these difficulties did not stop experts from finding solutions for facilitating the connections between East and West. One of the solutions was to create isolated, "island" links that would be separated from the rest of the network and operate in a closed system. This was the main idea behind creating the SUDEL connection, which Yugoslavia, Austria, and Italy started propagating at the beginning of the 1960s. Beside Yugoslavia's obvious aspirations to position itself as a sort of bridge between the East and West, a similar role could be attributed to Austria as well.[477] In a meeting of the ECE in 1963, representatives from Yugoslavia, Austria, Czechoslovakia, and Poland called for the Secretariat to, again, create a framework for studying the possibilities of creating new and straightening existing links between the electrical networks of Western and Eastern European countries.[478] Since the initiative with Yougelexport failed to produce desired results, the main idea of exploiting Yugoslav untapped hydro resources remained, and Italy, Austria, and Yugoslavia approached solving this problem from a different angle.



[476] François Cahen and Bernard Favez, "Control of Frequency and Power Exchanges within the Framework of International Interconnections (report IV.2)," in *UNIPEDE Congress of Scandinavia* (Paris: Imprimerie Chaix, 1964), 23.
[477] Stjepan Han, "Yougelexport," *Elektroprivreda* 2 (1954), 12.
[478] UNOG, GX/19/6/1/15-32212, Sevette to Zachmann, and Meller-Conrad and Batros, 3 July 1963.

**Beyond the Third Way**

By the beginning of the 1960s, Yugoslavia had already built a significant number of cross-border connections with neighboring countries, with the exception of Albania. However, from a broader point of view, Yugoslavia remained practically isolated in terms of electricity connections. The attitude of not picking any sides of clashed Cold War blocs also spilled on the indecision of interconnecting the Yugoslav system with either the UCPTE or CDO/IPS systems.

During the 1950s, Yugoslavia had no choice but to find allies in Western Europe and the United States, since the treaty and economic isolation from the Soviet Union left it with no other options. However, at the beginning of the 1960s, the political situation changed. With more pressure from the West and no warm embrace from the East, Yugoslavia's choice for non-alignment was a strategic move during the Cold War to assert its sovereignty and independence amidst the bipolar tension between the United States and the Soviet Union. By co-founding the Non-Aligned Movement in 1961, Tito aimed to provide an alternative for countries unwilling to align with either the Western or Eastern blocs. This policy allowed Yugoslavia to pursue an independent foreign policy, receive aid from both sides, and maintain a degree of political and economic autonomy, illustrating the nation's commitment to self-determination and peaceful coexistence.[479]

Thus, at the beginning of the 1960s, Yugoslavia embarked on two important projects: the SUDEL connection and the construction of the Iron Gates Hydro and Navigational System.[480] By engaging in these two projects with Western and Eastern parties, Yugoslavia was testing the options of being a bridge and, again, non-aligning with neither. But this policy could

[479] Robert Niebuhr, *The Search for a Cold War Legitimacy: Foreign Policy and Tito's Yugoslavia* (Brill, 2018), 53-87.
[480] Vilim Boranić, "Problemi perspektivnog snabdevanja Zapadne Evrope energijom," [Problems of prospective energy supply to Western Europe] *Energija* 17, 5-6 (1968): 141-145.

not last long in the case of electric infrastructure. The interplay behind the curtains of idealistic representation of the non-alignment policy and self-management system reveals that already in 1960, tensions between the Yugoslav federal republics started. The case of SUDEL particularly highlights the efforts of Slovenia to gain greater autonomy and control over its resources. More importantly, the aspirations of Slovenia to connect with Western European countries reveal the deep divide between the northern and southern federal republics of Yugoslavia and the invisible line that stretched over the Balkans, right across the Yugoslav space.[481]

Beside the political attitudes of Yugoslavia on an international scale and domestic tensions, the efforts to interconnect the Yugoslav system with greater power systems were stalled due to technical limitations as well. These limitations were due to the relatively low voltages of transmission lines in Yugoslavia (the majority were operating at 110 kV) and the small transmission capacities of international power lines, as well as the fact that Yugoslavia connected with its neighbors only with "direct" or "island" links.[482]

It was within the SUDEL group that the initiative was born to technically improve this activity by establishing a parallel way of working between Yugoslavia, Italy, and Austria. Already at the beginning of 1962, Slovenian engineers began to propagate the idea of parallel work and established several research groups that worked on finding the solution for technical issues in Yugoslavia.[483] Specifically, for parallel operation, intersystem transmission lines of appropriate capacity as well as compatible system regulation and frequency were required. Even if the Yougelexport project was not fully realized, the ideas of exploiting Yugoslavia's hydroelectric resources were still attractive, and the establishment of parallel operation of the system would create technical possibilities for the economic exchange of electric energy. In



[481] Niebuhr, *The Search for a Cold War Legitimacy*, 131-145.
[482] Lazar Ljubiša, "Osnovna 380 kV mreža Jugoslavije i koncepcija njenog daljeg razvoja," [The basic 380 kV network of Yugoslavia and the concept of its further development] *Elektroprivreda* 19, 7-8 (1970): 267-269.
[483] Dušan Čučković, "SUDEL- regionalna elektroprivredna grupa Jugoslavije, Austrije i Italije," [SUDEL - regional power industry group of Yugoslavia, Austria and Italy] *Elektroprivreda* 17/6 (1964): 3-7.

addition, the experts of the Institute in Ljubljana emphasized the advantages of obtaining a source of help in an emergency as well as facilitating the maintenance of the frequency in accordance with the transmission capacities of the lines. Since the Slovenian engineers pushed the idea of interconnecting with the UCPTE system, which was a logical move since Austria and Italy were already members, several electrical engineers' conferences in 1962 emphasized not only the logical sequence but also the technical advantages of the UCPTE system.[484]

Namely, in the normal operation of UCPTE, each individual system automatically took on its own power fluctuations, and the task of maintaining the frequency of the entire system was divided among all participating partial systems. Finally, the most important technical aspect of the creation of the SUDEL connection was that the Italian and Austrian grids operated at 220 kV, which further inspired Yugoslav engineers to invest in the construction of the 220 kV grid and thus connect with the Italian and Austrian grids.[485]

Again, the question of connecting to existing power systems was not only technical but, more importantly, deeply political. The two big projects that Yugoslavia undertook at the beginning of the 1960s—Iron Gates and SUDEL—differ in many ways. In the first place, the main players taking decisions and using the infrastructure for further goals were completely different. In the case of Iron Gates, the entire project was in the hands of Josip Broz Tito personally, and every important step in negotiations with Romania and construction was followed up with ceremonies attended by Tito himself or at very least some of the high dignitaries. In the press, the Iron Gates were constantly propagated as a colossal project that demonstrated the might of Yugoslav engineering and infrastructure, and the politicians and



[484] Marjan Plaper, *Mogućnost paralelnog rada i ekonomsko-tehnički značaj interkonekcije elektroenergetskog sistema Jugoslavije sa sistemima susednih zemalja, Dio I* [The possibility of parallel operation and the economic and technical importance of the interconnection of the power system of Yugoslavia with the systems of neighboring countries, Part I] (Elektroinštitut Milana Vidmarja: Ljubljana 1969).

[485] Marjan Plaper, *Prepletanje 220 kV daljnovod Cirkovice-Podlog-Ljubljana-Divača* [Interlacing of the 220 kV transmission line Cirkovice-Podlog-Ljubljana-Divača] (Elektroinštitut Milana Vidmarja: Ljubljana, 1967).

engineers involved in the projects were frequent guests in the television news and newspaper articles.[486] Furthermore, when Iron Gates were completed, numerous monographs were dedicated to various aspects of its construction, from architectural and archeological concerns to purely technical monographs explaining in great detail the importance of the project.

On the other hand, the initiative for the creation of SUDEL came from the Slovenian engineers, and even though the representatives of JUGEL played an important role in decision-making, the majority of critical decisions were made by Slovenian representatives.[487] Additionally, Tito and other important members of the CPY did not partake in the activities of the SUDEL group, and Tito never took part in any important step of SUDEL ring construction. The SUDEL project was not followed up in the Yugoslav newspapers as much as Iron Gate. However, this was not the case with Slovenian publications, both domestic in Yugoslavia and the newspapers of the Slovenian diaspora in Italy and Austria.[488]

**Possible Solutions: Addressing Challenges in Yugoslavia's Energy System Interconnections**

There were three possible ways for the Yugoslav power system to interconnect with the existing neighboring systems. The impossibility of remaining undecided on this question became more and more apparent at the beginning of the 1960s, when Yugoslav engineers started studying different variants of solving this issue. At the general meeting of the JUGEL group in 1963 and 1964, Yugoslav engineering institutes and associations jointly expressed



[486] The chapter dealing with Iron Gates Project paints this case in more detail. Few examples of Iron Gates in the media: "Kolos u Đerdapu," [Colossus on the Iron Gates] *Borba* [Struggle] 29/254, 6.09.1964, 3; "Pregradili te bomo, Dunava!" [We will dam you, Danube!] *Aluminij* [Aluminum] 5/6, May 1968; "Sklicana zvezni in gospodarski zbor," [Convened federal and economic council] *Delo* 156, 9.06.1964, 1.
[487] "Sastanak pododbora SUDEL," [SUDEL subcommittee meeting] *Gospodarstvo* [Economy] 19/554, 24.09.1965, 2.
[488] "Koroška prometno energetsko vozlišče Evrope," [Carinthia transport energy hub of Europe] *Ameriška domovina* 75/162, 23.08.1973, 2.

concern that if Yugoslavia remains isolated, it could deeply affect the further development of industry and urbanization and that the efforts to modernize Yugoslav infrastructure and the country overall could be seriously slowed down.[489] Therefore, the study groups inside JUGEL produced three possible variants for overcoming the issue of the isolation of Yugoslav electric infrastructure.[490]

The first variant suggested that the Yugoslav power system should permanently (synchronously) interconnect with the CMEA CDO/IPS system while simultaneously (asynchronously), via DC links, being connected with the UCPTE system, in which case it would be needed to build 380 kV transmission line links: Divača (YU)–Padriciano (IT) and Podlog (YU)–Obersilah (AU).[491] However, this possibility entailed numerous difficulties. In the first place, experts emphasized that the CMEA countries in the 1960s still had relatively high consumption rates, which caused a permanent imbalance between consumption needs and the possibility of electricity production that this interconnection brings. Additionally, the study suggested that CMEA member countries, with the exception of Poland and the USSR, have relatively insufficient energy resources for the production of electricity. Also, it was emphasized that in the case of pursuing the possibility of interconnection with CDO/IPS, it should be considered that the power system of the USSR produces 41% of its electricity from liquid or gaseous fuels and that it should be expected to substitute these fuels with other forms of energy.[492] The final conclusion of the study of the possibility of interconnection with the



[489] AY, 850, 28. Beleške upravnog odbora JUGEL-a. IV zasedanje [Notes from YUGEL meetings. 4th Session], 9.5.1963, 1-9; AY, 850, 28, "Beleške upravnog odbora JUGEL-a. VII zadedanje" [Notes form YUGEL meetings. 7th Session], 11.8.1964, 1-16.
[490] Hrvoje Požar, "Studij elektroenergetskih sistema," [Study of power systems] *Energija* 7-8 (1963): 206-211.
[491] Vjekoslav Korošec, "Povezivanje jugoslovenske električne mreže sa mrežama susednih zemalja," [Connecting the Yugoslav electricity network with the networks of neighboring countries] *Elektroprivreda* 14/3-4 (1963): 133-147.
[492] Vladimir Zloković, "Stanje elektrifikacije SSSR i njen perspektivni razvoj," [The state of electrification in the USSR and its prospective development] *Elektroprivreda* 20/3-4 (1967): 92-97; Karlo Fišer, "O povezanoj mreži u SSSR," [About the connected network in the USSR] *Energija* 11/5-6 (1962): 183.

eastern energy system was that the CDO/IPS interconnection works without sufficient power reserve, with reduced frequency and bad quality of electricity.[493]

The second variant that study groups suggested was the possibility of Yugoslav power systems being parallelly (synchronously) connected to UCPTE systems while operating asynchronously with CDO/IPS, in which case it would be necessary to build 38 kV transmission line connections Niš (YU) – Sofia (BG) and Osijek (YU) – Kaposvár (HU).[494] Unlike the study of interconnection with the CDO/IPS system, the report on the possibility of interconnecting with the UCPTE system had way more advantages for Yugoslavia. The UCPTE interconnection included countries with a relatively low rate of consumption, so in this interconnection there would be no imbalance between consumption needs and the possibility of electricity production.[495] Furthermore, member countries of the UCPTE cover their electricity needs by building their own power generation facilities and capacities. Also, the UCPTE network operated with sufficient power and stable connections. The expert group strongly recommended that JUGEL support the option of interconnecting Yugoslavia on the UCPTE network.[496]

Finally, there were some suggestions that Yugoslavia should not connect to either system or operate asynchronously with both networks. However, in the final report, engineers did not sugarcoat that this option was unlikely to be realized as it had no realistic advantages for Yugoslavia. The representatives of JUGEL and the Ministry of Energy were very conscious of the importance of the decision for the interconnection of electric infrastructure and the urgency of making it. However, the political landscape of the 1960s Cold War Europe and



[493] AY, 850, 437. Predlog za uključivanje jugoslovenske elektroprivrede u rad Objedinjene SEV mreže [Proposal for the inclusion of the Yugoslav electric power industry in the operation of the Unified Comecon network], 1967, 1-11.
[494] AY, 850, 477. Materijal naučno istraživačkog rada: protokol sa 19. zasedanja 4-te sekcije [Material of scientific research work: protocol from the 19th session of the 4th section], 1968, 3-15.
[495] AY, 850, 103. Saradnja sa UCPTE [Cooperation with UCPTE], 11.07.1964, 1-7.
[496] AY, 850, 477. Materijal naučno istraživačkog rada: protokol sa 19. zasedanja 4-te sekcije [Material of scientific research work: protocol from the 19th session of the 4th section], 1968, 3-15.

Yugoslav new tendencies of exploring the global politics of non-alignment affected the decision-making process. Almost in all reports of meetings of JUGEL experts[497] of occasional newspaper articles dedicated to the interconnecting Yugoslav electricity infrastructure the indecisiveness ruled the discussion, as every time the question was raised the idea of being able to "sit in two chairs at the same time" was favored.[498]

However, as time passed, the obviousness of the decision that had to be made became more and more apparent. A Slovenian group of experts, led by engineers Vladmir Šenk and Vjekoslav Korošec, was the loudest, emphasizing that the continuous growth of electric power production and transmission capacities requires the corresponding constant development of the existing electric infrastructure.[499] Engineers Korošec and Lazar Ljubiša additionally emphasized that the prerequisite for ensuring the satisfactory functioning of the electric power system of Yugoslavia was to build sources of electric energy that would ensure the production of electric energy that would meet the growing needs of consumption, including the possibility of making reserves.[500] And, finally, Ljubiša reported that it would be necessary, for the sake of improving the electrical infrastructure, to connect the Yugoslav system with the existing systems, in which case it was recommended to connect to the UCPTE network.[501]



[497] AY, 850, 111. Sastanak odbora za razvoj prenosne mreže i elektroenergetskog sistema [Meeting of the committee for the development of the transmission network and power system], 7.09.1965, 1-5; 11.03.1966, 2-8.
[498] Milan Đurić, "Izlaz: jedinstven elektroenergetski sistem," [A wayout: a unified power system] *Borba* 34/309, 9.11.1969, 15.
[499] "Važen korak k povezavi elektrogospodarstva," [An important step towards connecting the electricity economy] *Delo* 9/271, 5.10.1967, 3.
[500] Lazar Ljubiša, "Realizacija programa razvoja 380 kV mreže Jugoslavije," [Realization of the development program of the 380 kV network of Yugoslavia] Elektroprivreda 22/11-12 (1971): 327-333.
[501] Ibid, 331-333.

**Interconnecting Regions: The SUDEL Ring Project**

The South European Union for Coordination of Production and Transmission of Electricity (SUDEL) was founded by twelve leading figures from the electricity utilities sector of Yugoslavia, Italy, and Austria, four from each country. The founding meeting of SUDEL was held on April 22, 1964, in Ljubljana.[502] The representatives defined that the goal of SUDEL was to find the best way to use means for energy production and transmission that already exist or that will eventually be realized in the member countries. At the initial meeting, it was immediately emphasized that the use of overflow hydropower was prioritized.[503] Furthermore, SUDEL was founded with the task of facilitating and expanding the exchange of electrical energy between member states. However, the Slovenian representative particularly emphasized the role of SUDEL in creating both technical and political conditions to achieve this through cooperation with UCPTE, especially regarding the engagement of Yugoslavia. For the headquarters of SUDEL, the participating members agreed that it should be Ljubljana, and the first president was Franz Hintermayer, who previously actively participated in the Yougelexport project.[504]

In terms of organization, the plenary sessions were the largest organ of the SUDEL group. Moreover, two subcommittees were formed to prepare material for the sessions and solve technical issues: the subcommittee for propulsion issues and the subcommittee for hydraulics.[505] As the technical challenges turned out to be numerous, at the 1965 plenary meeting in Vienna, SUDEL representatives established a subcommittee for technical issues.



[502] "Ustanovljena SUDEL," [Established SUDEL] *Primorski dnevnik* 20/5780, 23.04.1964, 1; "Osnovana Južnoevropska unija elektroprivrede," [The South European Union of Electric Power Industry was founded] *Borba* 29/112, 23.04.1964, 5.
[503] "Ustanovitev Južnoevropske unije za električno energijo," [Establishment of the Southern European Union for Electricity] *Gospodarstvo* 18/480, 3.04.1964, 1.
[504] Dušan Čučković, "SUDEL - Regionalna elektroprivredna grupa Jugoslavije," 5.
[505] "Regionalno zasedanje SUDEL," [SUDEL regional session] *Delo* 5/288, 21.10.1964, 2.

The subcommittee was mostly tasked with examining the technical possibilities of the operation of the 220 kV transmission line that would connect the power systems of Austria, Italy, and Yugoslavia.[506]

Plenary meetings of the SUDEL group took place at most twice a year; however, study groups within the designated subcommittees held meetings more often. Most of the meetings and discussions were held in connection with the construction of transmission lines in order to connect the SUDEL ring system.[507] In the study drawn up by the members of the group during 1964 and 1965, it was anticipated that the transmission line would extend to a total of 795 km, of which 387 km would be built in Italy, 226 km in Austria, and 182 km in Yugoslavia.[508] The ring would connect the networks of Yugoslavia and Italy on the route Divača – Padcriciano, the networks of Yugoslavia and Austria on the route Podlog – Obersielach, and the networks of Italy and Austria on the route Soverzene – Lienz.[509] This plan was done by Austrian ÖVG and officially accepted on the SUDEL plenary meeting in 1967 in Belgrade.[510]

In 1968, engineer Vjekoslav Korošec gave several interviews in major Yugoslav newspapers, announcing that the 220 kV SUDEL ring was nearing completion and that this project would "connect Yugoslavia with Europe and set on the path of further development and modernization."[511] He mostly emphasized the possibilities of electricity trade beneficial for Yugoslavia, especially during the winter months when Western and Central Europe lack energy, and the advantages of interconnectedness, such as help in cases of system collapse or major breakdowns of the network. Granted, the SUDEL project did not get nearly as much attention



506 "Izmenjava elektro-energije ob meji," [Exchanges electrical energy at the border] *Gospodarstvo* 19/559, 29.10.1965, 1.
507 Vladimir Šenk, *Wesen und Aufgaben der SUDEL* (Ljubljana: Sekretarijat SUDEL,1969).
508 "Povezava električnega omrežja Italije, Avstrije in SFRJ," [It connects the electrical grid of Italy, Austria and SFRY] *Delo* 7/326, 2.12.1966, 3.
509 "Električni daljnovod med Avstrijo, Jugoslavijo in Italijo," [Electric transmission line between Austria, Yugoslavia and Italy] *Slovenski vestnik* 22/11, 17.03.1967, 2.
510 "Posvet o elektrogospodarstvu," [Dedication on electrical economy] *Slovenski vestnik* 22/39, 29.09.1967, 1.
511 "Prsten povezuje susede," [The ring connects neighbors] *Borba* 33/407, 18.94.1968, 8.

as the Iron Gates project, but that is not to say it was not followed up in other newspaper media outlets in Yugoslavia during the 1960s.[512]

During the work of the SUDEL group, the question of creating a monitoring center for parallel work in the SUDEL ring, which would monitor the flows in it and coordinate cooperation with the UCPTE system, also arose. On this issue, Yugoslavia did not insist because it was the most geographically distant member and left this issue to be resolved between Austria and Italy. Italy suggested that the center should be located in Rome, as it was the closest to the UCPTE supervisory center in Laufenberg, while Austria insisted that it should be in Vienna, guided by the desire to be an important center for the interconnection between the East and West.[513]

One of the interesting issues faced by SUDEL members was the issue of drafting a dispatch code that would be applied in mutual communication between the member states. This was discussed deeply for several years and only resolved in 1971.[514] On the other hand, there were no major problems related to the construction of transmission lines, and the technical issues that occasionally arose were resolved relatively quickly at the meetings of the technical subcommittee.[515] And if, by the end of 1969, it had not yet been officially decided within JUGEL which system Yugoslavia would interconnect with, it was quite clear that it would be UCPTE. From the working materials of the SUDEL group, the electrical engineering institute in Ljubljana, and the Slovenian ENEL, it can be concluded that the engineers had tacit approval to continue finding solutions to technical problems for the establishment of parallel work with the UCPTE network.



512 "Vodno in elektrogospodarsko sodelovanje med Austrijo in Jugoslavijo," [Water and electricity cooperation between Austria and Yugoslavia] *Naš tednik* 20/4, 25.01.1968, 3-5.
513 AY, 850, 403. Elaborat o dosadašnjem radu SUDEL grupe [Elaborate on the previous work of the SUDEL group], December 1970, 8-11.
514 "K daj SUDEL zanka?" [When will SUDEL ring be done?] *Delo* 13/97, 10.04.1971, 2.
515 "Sodelovanje treh sosednih dežel," [Cooperation of three neighboring countries] *Slovenski vestnik* 21/27, 8.07.1966, 5.

Yugoslav engineers, on the other hand, had the serious task of preparing the Yugoslav electrical system for parallel operation with the Austrian and Italian ones. Namely, for the parallel operation with SUDEL partners, it was necessary for the Yugoslav system to work as a single technological system.[516] During the meetings of SUDEL representatives within JUGEL, a decision was made to take the approach to parallel work more seriously and to engage in more permanent commitments with the UCPTE representatives.[517] In 1969, JUGEL established the forum that would take care of the coordination policy: the Coordinating Committee for Parallel Work (KO), composed of delegated representatives of all Yugoslav electrical utilities and a certain number of political officials. The majority of work was delegated to the SUDEL group in Ljubljana, whereas the KO committee only organized meetings to brief on certain higher decisions and to officially confirm those.[518]

By organizing this committee, Yugoslavia officially confirmed its choice of interconnection with the UCPTE system. Since JUGEL officially confirmed this course of action, the SUDEL group could finalize the initial ideas of finding more permanent solutions for integration with the UCPTE network. Therefore, with the SUDEL connection, Yugoslavia became an associate member of the UCPTE. From a formal point of view, Yugoslavia was present in all parts of the UCPTE, except in Comité Restreint, in which membership was limited to the founding countries of the UCPTE.[519]

However, in 1969, JUGEL was still considering at the meetings how to simultaneously establish cooperation with the CMEA countries, although there was no official consensus or



[516] AY, 850, 403. Podloge za uključenje Jugoslavije u paralelan rad SUDEL mreže [Grounds for the inclusion of Yugoslavia in the parallel work of the SUDEL network], 08.11.1970: 1-3.
[517] "Priprave za paralelno obratovanje med Jugoslavijo, Avstrijo in Italijo so u polnem teku," [Preparations for parallel operation between Yugoslavia, Austria and Italy are in full swing] *Delo* 11/153. 6.06.1969, 3.
[518] AY, 850, 403. Uključenje elektroenergetskog sistema Jugoslavije u paralelan rad sa Južnoevropskom unijom SUDEL [Inclusion of the power system of Yugoslavia in parallel operation with the Southern European Union SUDEL], March 1970, 7-9.
[519] AY, 850, 403. Uključenje elektroenergetskog sistema Jugoslavije u paralelan rad sa Južnoevropskom unijom SUDEL [Inclusion of the power system of Yugoslavia in parallel operation with the Southern European Union SUDEL], March 1970, 10.

will to raise any issue of inclusion in the CDO/IPS.[520] Until the end of the 1960s, Yugoslavia's cooperation with CMEA regarding the power industry was limited to study and consultation within the Permanent Commission for Energy and its five sections.[521] In 1969, the construction of the Iron Gates was coming to an end, and the JUGEL study group stated that with the completion of the Iron Gates, Yugoslavia would connect with CDO/IPS via the 380 kV line.[522]

Already in 1969, JUGEL experts concluded that for successful cooperation with any of the two neighboring European power interconnections, the most important aspect was a well-coordinated and organized power system in Yugoslavia. The issue of simultaneous cooperation with both interconnections in the form of parallel work could be solved only with cooperation with both UCPTE and CMEA and not exclusively with the bilateral activities of Yugoslavia.[523] Furthermore, Yugoslav experts were very conscious that it was necessary to understand and accept the fact that Yugoslavia would not be predestined, nor would it be assigned the role of exclusively solving the complex issue of the interconnection of the UCPTE and CDO/IPS systems. Undoubtedly, the possibility of a very active role for Yugoslavia was never completely ignored, and experts never lost sight of the possibility of becoming the bridge between two systems, given its location and the structure of the electric power system in Yugoslavia. Moreover, UNECE had already raised the issue of organizing a group of experts to provide solutions for the interconnection of the UCPTE and CDO/IPS systems, and Yugoslavia was actively involved in the work of this group.[524]



[520] AY, 850, 437. Izveštaj o učešću jugoslovenskih predstavnika na XXII za sedanju saveta SEV [Report on the participation of Yugoslav representatives at the 22nd session of the Comecon Council], 21-28. 01.1969, 1-5.
[521] AY, 850, 437. Protokol o vodjenim razgovorima izmedju energetskih stručnjaka SSSR i SFRJ [Protocol on discussions held between energy experts of the USSR and SFRY], September 1965, 1-6.
[522] Lazar Ljubiša, "Osnovna 380 kV mreža Jugoslavije i koncepcija njenog daljeg razvoja," 268.
[523] AY, 850, 403. Uključenje elektroenergetskog sistema Jugoslavije u paralelan rad sa Južnoevropskom unijom SUDEL [Inclusion of the power system of Yugoslavia in parallel operation with the Southern European Union SUDEL], March 1970, 15.
[524] AY, 850, 431. Katalog mera za integraciju sistema u UCPTE [Catalog of measures for system integration in UCPTE], 1988, 2-5.

Finally, in 1971 the SUDEL ring was put into the trial operation.[525] The news about this were more present in the Slovenian news than in major Yugoslav newspapers, and where did show up, were in a form of short contributions. However, in Slovenian newspapers, as well as in the newspapers of Slovenian diaspora in both Italy and Austria, this event was followed up with great attention and considerable pride.[526] Interestingly, most of the articles would emphasize that this was "a Slovenian effort"[527] or that "Slovenia was finally connected to the European market," making the clear distinction between Slovenia and Yugoslavia.[528] The importance of this project for Slovenia can be seen in the fact that it was major news in the newspaper of the Slovenian diaspora in the USA, where every year there was a special report on the progress of the SUDEL construction and the jubilation when the system was put into trial.[529]

**Strategic Growth and the SUDEL Ring: Expanding Energy Networks**

The possibility of including Greece in the SUDEL group started being discussed both among the SUDEL members and the JUGEL group in the late 1960s. In 1969, Yugoslav representatives emphasized that Greece too was not interconnected with either UCPTE or CDO/IPS and that Greek representatives were interested in being included in the work of SUDEL. However, the 1969 plenary meeting concluded that the involvement of Greece can be considered only when the SUDEL ring becomes operational.



525 "Jugoslovenska struja uključena u evropsku," [Yugoslav electricity included in the European one] *Borba* 49/344, 16.12.1971, 10.
526 "Zaključen elektrosistem Italija-Austrija-Jugoslavija," [Italy-Austria-Yugoslavia electric system closed] *Primorski dnevnik* 26/7704, 19.09.1970, 3.
527 "Medsebojna pomoč z električno energijo," [Mutual aid with electricity] *Slovenski vestnik* 22/27, 7.07.1967, 2.
528 "Sadež SUDEL naj ostane v Ljubljani," [Headquaters of SUDEL should stay in Ljubljana] *Delo* 12/123, 9.05.1970, 2; "Kratek stik z vso Evropo," [A short stick with all of Europe] *Tovariš* 26/50, 1970, 30-31.
529 "Medsebojna pomoč z električno energijo," [Mutual aid with electricity] *Slovenski vestnik* 22/27, 7.07.1967, 2.

Negotiations between Yugoslavia and Greece already started in 1958[530], and the connection was finalized with the construction of Bitola – Ptolemais 110 kV powerline in 1960.[531] After the trail period of the SUDEL ring, that proved successful, the negotiations with Greece were initiated. Finally, in 1972 Greece became the member of SUDEL group and started the work on improving the Bitola – Ptolemais connection.[532]

Ultimately, the Yugoslav electricity infrastructure was connected and established full joint parallel-synchronous operation with the Italy in 1974 via the Divača – Padriciano transmission line, with Austria in 1975 via the Obersielah – Podlog transmission line, and with Greece in 1977 via the Bitola – Ptolemais transmission line.[533]

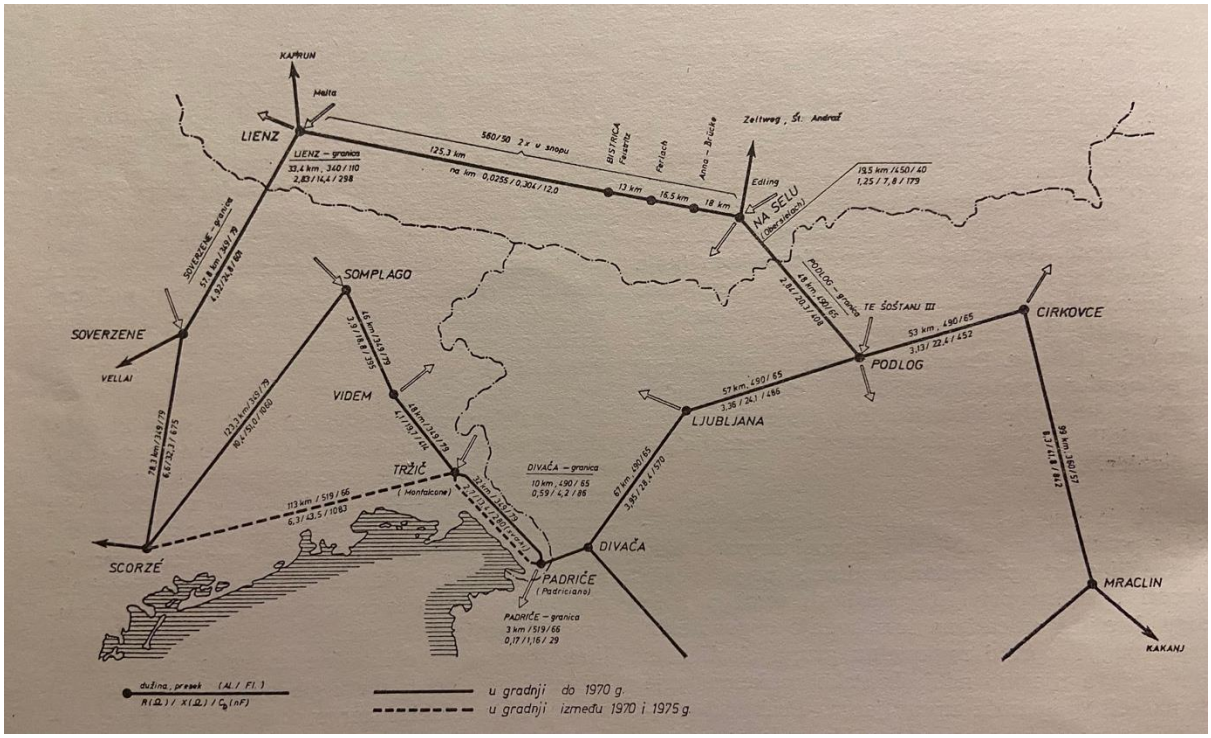


*Figure 13. SUDEL Ring 1969 (Source: Elektroprivreda 22/7-8 (1969))*



530 "Pregovori u vezi sa mogućnošću povezivanja elektroenergetskih sistema Jugoslavije i Grčke," [Negotiations regarding the possibility of connecting the power systems of Yugoslavia and Greece] *Elektroprivreda* 11/2 (1958): 140.
531 AY, 850, 395. Izveštaj o svečanom otvaranju postrojenja za povezivanje elektroenergetskih sistema izmedju FNRJ i Grčke [Report on the ceremonial opening of the power system connection facility between FPRY and Greece], 10.09.1960, 1-2.
532 "Električne vezi," [Electrical Connections] *Delo* 14/128, 13.05.1972: 3.
533 AY, 850, 403. Sudel. Document elabore par le groupe de travail 'Economie de l'energie electrique'. May 1978, 1-4.

By the end of the 1970s, the initial 220 kV transmission line was already lagging behind the 380 kV (and even more modern 400 kV) transmission lines, so the SUDEL group started working on establishing new links inside the ring that would operate at 380 kV. Thus, in 1980 the connection between Italy and Yugoslavia was expanded with the construction of Redipuglia – Divača 380 kV transmission line, with Austria in 1984 via transmission line Kainachtal – Maribor[534], with Greece in 1979 via transmission line Negotino – Thessaloniki.[535] The construction of 380 kV transmission lines facilitated the connection of Albania to the SUDEL network.

Over the years, Yugoslav negotiations with Albania regarding the creation of electric connections between the two countries have been either rocky or nonexistent. After the termination of friendly relations in 1948, Yugoslavia and Albania did not have cordial relations. The questions of cooperation and connections between electric grids were initiated several times, but every time the animosities overtook the course of negotiations, they would be abruptly terminated.[536] Because of this, Albania remained an isolated system in the Balkans, as it did not have better relations with Greece as well. However, in 1985, after the death of Enver Hoxha, the possibilities for creating better relations with Yugoslavia and Greece opened up. Thus, in 1985, Albania connected to the SUDEL ring over Greece via the 380 kV transmission line Ptolemais – Elbasan.[537] Furthermore in 1988 Yugoslavia, Greece and Albania engaged in the establishment of intermediate parallel-synchronous operation of the three electrical



[534] AY, 850, 409. Beleška o pregovorima sa predstavnicima elektroprivrede Austrije [Note on negotiations with representatives of the Austrian electricity industry], 14.12.1984, 1.
[535] AY, 850, 409. Sporazum o tranzitu električne energij iz Austrije u Grčku preko jugoslovenskog elektroprivrednos sistema [Agreement on the transit of electricity from Austria to Greece through the Yugoslav electric power system]. 18.10.1984, 1-3.
[536] AY, 850, 408. Materijali zasedanja Jugoslovensko-Albanske komisije za vodoprivredu [Materials of the session of the Yugoslav-Albanian Commission for Water Management], 1965, 1966.
[537] AY, 850, 409. Sporazum o utvrdjivanju prava i obaveza po uvozu električne energije iz Albanije u 1985. [Agreement on establishing rights and obligations for the import of electricity from Albania in 1985], 12.02.1985, 1-4.

systems[538] via previously constructed transmission lines between Yugoslavia and Albania, Titograd – Van Deja[539] and Prizren – Fierza.[540]

The 1970s in Yugoslavia proved to be a challenging period in terms of domestic policies. After the 1974 constitution, Yugoslavia experienced a period of increased decentralization and a delicate balancing among the six republics and two autonomous provinces.[541] The new constitution gave the republics wide autonomy, a move designed to defuse nationalist sentiments and avoid the primacy of a single ethnic group. The decentralization resulted in a divisive outcome: it intensified conflicting power claims among the republics and reinforced the ethnic divides.

Ultimately, the authority of the federal government was weakened, and the increased autonomy of the regions created a fragmented political landscape.[542] This was also reflected in the Iron Gates project, where the republics, especially Croatia and Slovenia, were against providing finances for the project located in Serbia, which was not benefiting their territories. Additionally, the health of Yugoslav leader Josip Broz Tito was deteriorating, raising concerns about the nation's stability post-Tito. In the context of electrical infrastructure, the decentralization was welcomed by Slovenian engineers, as they could pursue connections with Western Europe with more autonomy. On the other hand, with the new constitution, the financing of the project fell onto the republic, on whose territory it was constructing.[543] This proved positive in the case of SUDEL, as Slovenia had no qualms about financing the



538 AY, 850, 403. Tehnički aspekti paralelnog rada elektroenergetskih sistema Jugoslavije, Grčke i Albanije [Technical aspects of the parallel operation of the power systems of Yugoslavia, Greece and Albania], 18-19.06.1990, 1-6.
539 AY, 850, 408. Problematika strujnog opterećenja 220 kV dalekovoda Titograd – Albanija [Current load problems of the 220 kV transmission line Titograd – Albania], December 1979, 1-5.
540 AY, 850, 408. "DV 220 kV Prizren (SFRJ) – Fierza (NSRA)", 13.05.1987, 1.
541 Vojin Dimitrijević, *The 1974 Constitution as a Factor in the Collapse of Yugoslavia or as a Sign of Decaying Totalitarianism* (Florence: European University Institute, 1994).
542 Ellen T. Comisso, "Yugoslavia in the 1970's: Self-management and bargaining," *Journal of Comparative Economics* 4/2 (1980): 192-208.
543 "Elektroenergetika ne sme biti zadnja," [Electric energy must not be the last] *Delo: Sobotna priloga* 16/151, 29.06.1974, 5.

construction and maintenance of the SUDEL transmission lines, unlike Serbia's dissatisfaction with the expectation to finance the Iron Gate II project on their own, which they ultimately refused.

At the beginning of the 1980s, the SUDEL group already had an operational network with Greece as a new member and, by extension, Albania (even though Albania never became a full member of SUDEL). Even though, after Tito's death, Yugoslavia entered a new period that would lead down the path of chaos that culminated in the civil war, the enthusiasm and ideas of JUGEL engineers and other experts for further development of the electric grid do not reflect this. If anything, documents from the mid- to late 1980s reveal that Yugoslav delegates in SUDEL had many new ideas and suggestions for improvement of the SUDEL operations.[544]

From two comprehensive studies prepared by JUGEL, it can be seen that Yugoslav engineers at the end of the 1970s were satisfied with the mutual power line connections and the exchange of electrical energy between the connected systems. Therefore, they proposed to approach the more serious study of improving cooperation not only between the energy systems of SUDEL members but also to coordinate cooperation with CMEA systems that were bordering SUDEL members. They pointed out that three out of four systems of the SUDEL link were bordering CDO/IPS systems and that there could be a possibility of creating a link similar to SUDEL that would include some of the members of the eastern energy pool. This plan, named SUDEL ENERGO PULL, anticipated that with all the political and economic reforms and changes happening in the countries of the Eastern bloc, there was a great opportunity to create more tangent cooperation between East and West. The Yugoslav part of SUDEL reported in 1980 that the energy systems of Bulgaria, Turkey, Romania, Hungary,



[544] AY, 850, 403. Sudel. Document elabore par le groupe de travail 'Economie de l'energie electrique', May 1978, 1-4.

Czechoslovakia, and Albania approached with great interest to establish a parallel connection and cooperation with SUDEL and, by extension, with UCPTE.[545]

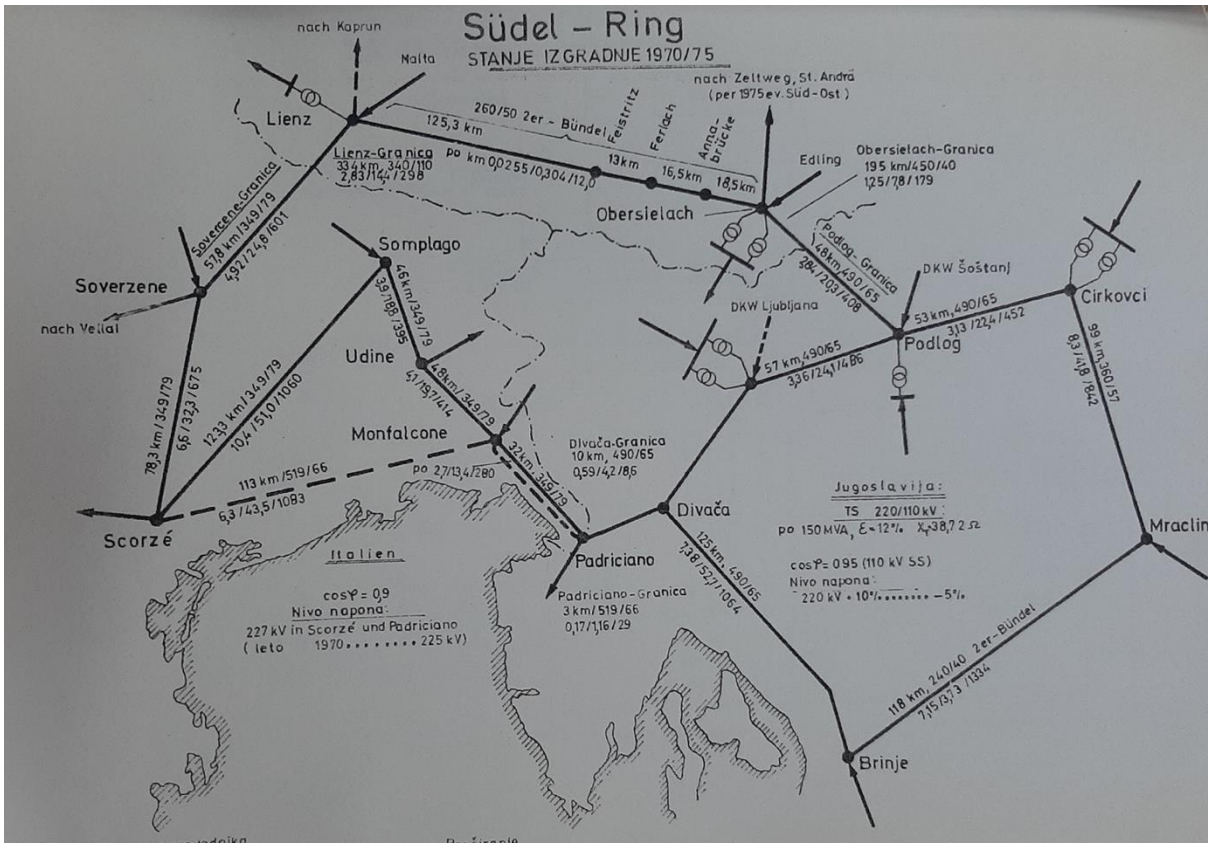


*Figure 14. Sudel Ring 1975 (Source: Archives of Yugoslavia, 850, 403)*

The bilateral cooperation was not enough to establish more permanent cooperation between the East and West, and Yugoslav representatives were already aware that Yugoslavia would not be able to negotiate this effort on their own, and the platform that SUDEL offered proved to be a very fertile and stable framework to connect two energy polls. In this sense, multilateral cooperation between the power systems of Southern European countries, starting from the needs and interests of each individual power system and the jointly harmonized needs and interests of the systems of the Southern European countries, could be coordinated and realized within the SUDEL ENERGO PULL group. The project anticipated that all the aforementioned countries would take part in this new organization, while the headquarters

[545] AY, 850, 403. SUDEL ENERGO PULL Study. March 1970., 1-15.

would be in Vienna. The project also anticipated interconnection with the UCPTE in the near future.[546] In many ways, this project was inspired by the NORDEL branch of the UCPTE system, and the main focus was on the southern European countries. However, despite the enthusiasm and hopes that a project like this would be possible, political circumstances once again proved to be the most determining factor.[547]

The advantages that such an organization would bring to power systems, such as parallel operation, long-term and short-term sales of electricity, assistance in the event of breakdowns, and the creation of transit between the systems of Southern European countries, remained in the shadow of the political turmoil that heralded the turbulence that would shock the countries of the former Soviet Bloc at the end of the 1980s and the growing tensions between Yugoslav republics that would ultimately lead to the civil war.

**Conclusion**

The 1960s and 1970s in Yugoslavia proved to be a dynamic and versatile period marked by strategic maneuvering, both domestically and abroad, particularly in the field of electric energy cooperation. During this period, Yugoslavia was pursuing the new foreign policy path, forging the "third way" by establishing the Non-Alignment Movement. Yugoslavia stacked its claims as a fundamentally different actor in global politics. Domestically, Tito was still pursuing the goal of achieving energy autarchy and inserting Yugoslavia as an inevitable political partner in bridging the East and West divide. Because of this, Yugoslavia continued to prioritize the development of electric infrastructure as the main vector of industrialization. Beside the



[546] AY, 850, 403. SUDEL ENERGO PULL Study. March 1970., 1-15.
[547] "Profesor Plaper o medunarodnem sodelovanju na področju elektro-gospodarske politike," [Professor Plaper on international cooperation in the field of electro-economic policy] *Primorski dnevnik* 35/10448, 4.10.1970, 2.

investment and construction of hydroelectric and thermal power plant projects, Yugoslavia focused on interconnecting with its neighbors and using the electrical infrastructure as one of the means for pursuing political ambitions and goals. International projects like SUDEL and Iron Gates aimed not just to meet domestic electricity demands but to serve as links towards two major European electric power systems, putting Yugoslavia right in the middle.

In the international framework, Yugoslavia's non-aligned path allowed it to engage in cooperative projects with both Cold War blocks, navigating a path that had the most beneficial outcome. During the 1950s, Yugoslavia was in a different position, forced to seek financial and technological assistance from Western Europe and the United States to modernize electric energy infrastructure and continue the process of industrialization. Western countries viewed Yugoslavia as a potential partner and were willing to provide support.

While some countries viewed Yugoslavia as a buffer against Soviet influence, others saw the opportunity of building a bridge that could foster reproachment between two opposing blocks. This cooperation was marked by capital investment projects such as Yougelexport. This project provided Yugoslavia with assistance and expertise from Western Europe and the United States. Initially, Yugoslavia attempted to present itself as a trustworthy partner, but the constant pressures from the United States and new tensions with the Soviet Union pushed Yugoslavia to pave the new path. Unlike the international political decisions that could be influenced by this new path and where in-betweenness proved beneficial, the question of interconnecting with two neighboring energy systems, UCPTE and CDO/IPS, could not remain undecided. Yugoslav experts continuously warned that the longer Yugoslavia remains isolated from the rest of the European grid, the more it would lag behind, and that would impact the development of the economy, particularly industry.

This in turn would damage Yugoslavia's reputation, especially in the context that Tito strived to show Yugoslavia as a provider of technology and expertise to third-world countries.

Furthermore, after the Yougelexport project did not provide what it was supposed to, representatives of the Slovenian electricity sector continued to support the idea of interconnecting with its Western neighbors, Italy and Austria. In the Yougelexport plan, the locations in Slovenia were either dropped from the original plan or, as in the case of the Idrijca River hydropower plant, never realized. The opportunity to use their geographical position to pursue the Western connection allowed Slovenian ELES to be the main facilitators of negotiations with the UCPTE, Austria, and Italy.

When compared with the Iron Gates project that was being constructed at the same time as SUDEL, the latter had less public and state attention. In the case of the Iron Gates, the negotiations were conducted in many instances by Josip Broz Tito personally or through diplomatic representatives, whereas in the case of SUDEL, the main system builders were representatives, mainly engineers, of the Slovenian electric utility company, ELES. The representatives from JUGEL were only present when the main decisions were officially confirmed and did not engage in active negotiations or decisions regarding the SUDEL ring construction.

This project proved to be very well publicized in Slovenian media, both domestically and internationally, with even occasional columns in newspapers of the Slovenian diaspora in the United States. Interestingly, the SUDEL project was popularized as a "Slovenian project," making a distinction from the Yugoslav entity, indicating that already in the 1960s, Yugoslav republics strived for more autonomy and were pointing out "cultural differences."[548] In several articles dedicated to SUDEL projects, the advantages of interconnecting with the UCPTE system were described as "logical choices regarding the historical and cultural development" in Slovenia.[549] Therefore, it can be argued that on a domestic level, Slovenia was using the

[548] "Sadež Sudel naj ostane v Ljubljani," [Sudel should stay in Ljubljana] *Delo* 12/123, 9.05.1970, 2.
[549] "Energetski problemi na področju Alpe-Adria," [Energy problems in the Alps-Adriatic area] *Novi list* 23/990, 30.05.1974, 7.

infrastructure as a means to push their political agenda and establish stronger connections with the West.

Simultaneously, Yugoslavia maintained robust relations with the Eastern Bloc. This relationship was characterized by occasional clashes but also by a mutual exchange of resources and technical know-how. The initial enthusiasm of Yugoslavia to reapproach the Soviet Union found a cold shoulder and definitely set the course of Yugoslav international politics towards the “third way." Although Yugoslav experts occasionally would raise the idea of interconnecting with the CDO/IPS energy poll, the detailed analysis would show that this move would not be beneficial for Yugoslavia, as this network proved to be more unstable and with fewer reserves. In the end, with the green light to engage in the SUDEL project, Yugoslavia made a choice to interconnect with the UCPTE network, even though it became a full member only in 1987.

Although the decision was ultimately made, Yugoslavia nevertheless tried to practice a dual engagement strategy, even in this case. Balancing between the two blocks meant securing for Yugoslavia the technological and financial resources needed to develop while still maintaining its political independence and ideological integrity. Yugoslav experts were very much aware that Yugoslavia did not possess the capability to be the main protagonist in interconnecting the UCPTE and CDO/IPS systems and that, in many aspects, that question could be resolved only with the broader engagement of all interested parties. This did not deter Yugoslavia from still presenting itself as a sort of bridge and having an active role in these negotiations. This approach proved to be more fruitful than anticipated, as the SUDEL link was more successful than the Yougelexport project, both in economic and political aspects.

This period also highlighted underlying vulnerabilities and contradictions. The reliance on foreign technology and investment exposed Yugoslavia to external economic fluctuations and geopolitical pressures. Although ambitious projects often led to financial strain and

inefficiencies, which would later contribute to economic challenges, this was not the case with SUDEL, which, at least in the case of Yugoslavia, proved to be a very successful and prospective project. After the inclusion of Greece (and Albania via a Greek link) in the SUDEL group, Yugoslavia and Austria were inspired to make a study known as the SUDEL ENERGO PULL, which would unite all South European energy systems similarly to the SUDEL ring. Also, this link would then serve as a solid foundation for the interconnection of UCPTE and CDO/IPS systems. This project, even though it only remained an idea, paved the way for the establishment of BALKEL, the Balkan interconnection established in the early 1990s.

Yugoslavia's electro-energy cooperation with both East and West during the 1960s and 1970s was a confirmation of the innovative and pragmatic approach to international relations and domestic development forged in the framework of the new "third way." Through its non-aligned status, Yugoslavia was able to achieve substantial advancements in the electric energy sector despite the difficulties of Cold War politics. This period highlights the need for strategic flexibility and international cooperation to realize the national development objectives, thus providing crucial lessons to present-day states facing similar geopolitical realities. In the end, the non-aligned approach could not be pursued in the case of electric infrastructure, and Yugoslavia interconnected with the UCPTE network, but it continued to be an important bridge towards achieving the interconnection with the CDO/IPS system.

# Chapter 5: Electric Currents and Political Storms: The Iron Gates Hydroelectric and Navigational System

The Danube River has always held an important role in European history as an important conduit both in terms of the transportation of goods and energy utilization and as an important geopolitical marker in the European landscape. Navigation and utilization of the Danube's energy were not without challenges because the rivers traversed numerous countries, each with their own political and strategic interests. The Danube served as an important cultural and political actor, facilitating trade and cultural interchange between East and West. In the wake of the Cold War, the Danube gained a new geopolitical role, symbolizing both cooperation and conflict between competing powers.

The main focus of this chapter is the construction of the Iron Gates Navigational and Hydropower System. The history of the Iron Gates stretches from the nineteenth century, but the actual construction took place from 1964 to 1972 and was the greatest hydropower project constructed in Yugoslavia and Romania. The aims of this chapter are twofold: analysis and discussion of the entanglements international and domestic politics of projects of this size, and the political use of infrastructural projects of this size in the Yugoslav framework. While I will touch upon the political and economic significance of the Iron Gate project for Romania, my focus remains on the distinct politics that Yugoslavia employed in negotiations with Romania and the Soviet Union. Additionally, I will also focus on the political use of the Iron Gates as a showcase project that Tito used for non-alignment movement partners.

Hydropower projects are multifaceted. They provide electricity, improve navigation and river management, and provide water for irrigation systems. The sheer size and importance of big hydroelectric projects create a technopolitical environment, making them politically,

economically, and ideologically significant. The relationship between hydropower and technopolitics is deeply entangled.

The hydropower large-scale infrastructure is not just related to technical undertakings but is also connected to political power and control. The political priorities of the state are reflected in the construction and operation of hydropower objects. In a political sense, constructing large hydropower plants reflects strategic goals and the desire to harness and secure natural resources. The construction of large hydropower systems often involves intricate political decisions and a willingness for cooperation. Additionally, the construction of large hydropower objects is connected to political ideology and serves to show the might of the nation in both capitalist and non-capitalist regimes.[550] In that context, communist regimes placed an exceedingly strong emphasis on large-scale projects. These projects were fundamental for showcasing state power and economic and industrial progress. The case of Iron Gates exemplifies this tendency towards the "cult of scale" present in communist regimes.[551] Although Yugoslavia and Romania used the construction of the Iron Gates in different ways, the common thread was that the project was deeply intertwined in the narrative of both political regimes, serving as a tool for both social engineering and boasting of national pride and as a tool for improving the position on the international stage.

The construction of the Iron Gates was a multifaceted project that involved many actors, political decisions, and international regulations. The construction of large-scale hydro projects such as the Iron Gates was in line with general engineering thinking zeitgeist the 1930s onward. The hydraulic engineers, both in the East and West, started to draw up hydraulic complexes,



[550] Erik Swyngedouw, "Technonatural revolutions: the scalar politics of Franco's hydro-social dream for Spain, 1939–1975," *Transactions of the Institute of British Geographers* 32, no. 1 (2007): 9-28.
[551] Paul Josephson, "'Projects of the Century' in Soviet History: Large-Scale Technologies from Lenin to Gorbachev," *Technology and Culture* 36, no. 3 (1995): 519-559.

such as the Tennessee Valley Authority in the United States, which would solve many problems at once.[552]

The Iron Gates project was not only a hydroelectric project but also a project that would solve the centuries-long problem of dangerous navigation on that stretch of the Danube.

The first steps towards official internationalization of the Danube were taken after the Crimean War. In 1856, a European Danube Commission was established with the purpose of ensuring safe and free navigation across the Danube.[553] This governing body existed until the First World War, and in 1921 a new Danube Commission was established, consisting of eleven countries: Germany, Czechoslovakia, Austria, Hungary, Yugoslavia, Bulgaria, Romania, and three non-riparian countries: the United Kingdom, France, and Italy.[554] Again, after the Second World War, in 1948 in Belgrade, a new Danube Commission was formed; however, this one was under the strong influence of the Soviet Union, and many of the original members did not take part in its work.[555] In this way, Danube gained a new political and cultural role in the framework of the Cold War. The primacy of the Soviet Union inside the Danube Commission greatly influenced the course of plans related to the Iron Gates construction because of the 1948 clash between Yugoslavia and the Soviet Union.

The turning point for the Iron Gates project's development was Stalin's death in 1953. The renewal of negotiations between Yugoslavia and Romania also signified a new outlet for the improvement of relations between the East and West. Yugoslavia in the 1950s and 1960s experimented with new domestic and international political paths. The political use of the strategic position as the country between the East and West was always constant in Yugoslav



[552] Vincent Lagendijk, "Divided Development: Post-war ideas on river utilisation and their influence on the development of the Danube," *The International History Review* 37, no. 1 (2015): 80-98.
[553] Constantin Ardeleanu, *The European Commission of the Danube, 1856-1948: an experiment in international administration* (Brill, 2020).
[554] Glen A. Blackburn, "International control of the River Danube," *Current History (1916-1940)* 32, no. 6 (1930): 1154-1159.
[555] Josef L. Kunz, "The Danube régime and the Belgrade conference," *American Journal of International Law* 43, no. 1 (1949): 104-113.

political ambitions. The Iron Gates project reflects the entirety of Cold War politics and the entanglements between Western Europe, Yugoslavia, and the Soviet Union. The case of the Iron Gates project is also distinct from other case studies in this thesis, as it is the only one that involved negotiations at the highest levels and the involvement of the presidents of Yugoslavia and Romania. In the case of Yougelexport or SUDEL, the main actors were engineers, and the decision-making was in the hands of technomanagers. In the case of the Iron Gates construction, the situation was different. The scale of the project dictated different political uses, approaches to decision-making, and the attention of the government. Although technoamangers took part in decision-making during the negotiations and construction of the Iron Gates, the final decisions were made by either high government officials or Josip Broz Tito himself. Additionally, in the beginning of the 1970s, the downfall of technomanagers and the states reconning with them were reflected in the public discourse of the Iron Gates construction in Yugoslavia.

Since the history of the history of the Iron Gates history predates 1948, the first part of the chapter will be dedicated to the prehistory of ideas and projects for this stretch of the Danube. Following this short description, the rest of the chapter will outline the intricate negotiations and bilateral cooperation between various actors that took part in both negotiations and the construction of the Iron Gates, such as politicians, diplomats, engineers, and other experts. The construction of the large dam demanded the relocation of the population in both Yugoslavia and Romania, and this will be reflected in the chapter, with a special focus on the small Turkish community in Yugoslavia that lived on the island of Ada Kaleh. Additionally, the Iron Gates was one of the largest projects that Yugoslavia undertook, and the chapter will address in what ways Tito used this construction in an ideological and political context domestically. Finally, I also argue that Tito used the Iron Gates project, not just as a political

tool for establishing Yugoslavia as an inevitable bridge between the East and West but also as an example of Yugoslav engineering that he showcases to Non-Aligned Movement partners.

**Historical Currents: The Iron Gates Prior to 1948**

The part of the Danube where the Iron Gates are located is a strategically important place, but at the same time one of the most dangerous and treacherous stretches of the Danube. The problem of the regulation of the Danube at this point was already addressed on an international level in the late nineteenth century.[556]

The first deliberate plans for regulating the Danube and constructing a canal that would ensure safe passage of boats also inspired the idea of utilizing the Danube's hydropower for the production of electric energy.[557] In September 1896, a German engineer and contractor from Braunschweig, Hugo Luter, wrote to the Ministry of Economy of the Kingdom of Serbia, asking for a concession of the Danube for the purposes of exploiting hydropower and building a hydroelectric facility. The negotiations proved to be successful, and in 1897, the Kingdom of Serbia concluded an agreement with Luter for building the hydropower plant on the Iron Gates part of the Danube.[558] According to this arrangement, Luter had authorization to exploit the water resources on the Serbian side of the Danube, from Brnjica to Kladovo. In the end, the plan that engineer Luter had in mind was never realized, and the unpredictable politics in the



[556] Additional publications on navigation and regulation of Danube: Adrian-Aurel Baltălungă, and Daniela Dumitrescu, "The role of the Danube river as the main waterway of central and southeastern Europe. Geopolitical and economic aspects." *Romanian Review on Political Geography* 1 (2008): 57-66; Stanley M. Max, "Cold War on the Danube: The Belgrade Conference of 1948 and Anglo-American Efforts to Reinternationalize the River,"*Diplomatic History* 7, no. 1(1983): 57-78; David T. Cattell, "The politics of the Danube Commission under Soviet control," *American Slavic and East European Review* 19, no. 3 (1960): 380-294; Joanne Linnerooth-Bayer, and Susan Murcott, "The Danube River Basin: international cooperation or sustainable development," *Natural resources journal* (1960): 521-547.

[557] Nikola Stamenković, "Upotreba vodene snage Dunava na Đerdapu," [Utilizing the Waterpower on Danube] *Srpski tehnički list* 5-8 (1897): 83.

[558] "Zakon o pogodbi zaključenoj izmedju Države Srpske i Huga Lutera, inženjera i industrijalca," [The Law on Contract between Kingdom of Serbia and Hugo Luter] *Srpske Novine* 161, 18.07.1897, 1-2.

Kingdom of Serbia and the looming shadow of the Great War put the plans for the utilization of the Danube on hold.

During the First World War, ideas of Danube exploitation sprouted again. The Austro-Hungary touched upon the possibility of building a hydroelectric power plant on the Danube near Sip. In 1918, engineer Banski presented his idea of constructing a lateral tunnel that would connect Golubinje and Brza Palanka and building a hydropower plant near Sip. These ideas never materialized as the Austro-Hungary dissolved after the war and the new borders and countries emerged after 1918.[559]

After the First World War, the newly established Kingdom of Serbs, Croats, and Slovenes (the Kingdom of Yugoslavia) renewed its interest in taming and utilizing that part of the Danube. In 1921, the Czech engineer Antonín Smrček, one of the most prominent hydrologists of that time, proposed two possibilities for constructing the hydropower plant on the Iron Gates stretch that would utilize the waters near Juc and Sip.[560]

At the beginning of the 1920s, the General Section for the Waters in the Kingdom of Yugoslavia took a greater interest in studying projects on building ship locks on the Danube. The section did not abandon the idea of constructing hydropower plants on both the Yugoslav and Romanian sides of the Danube. In 1924, Yugoslav engineers gathered in the newly formed Iron Gates Section and conducted an extensive study on building two dams and hydroelectric power plants on the Iron Gates part of the Danube.[561] Therefore, in 1932, the very first ideas of cooperation between the Kingdom of Yugoslavia and the Kingdom of Romania on building the hydroelectric system on the Iron Gates emerged. Romanian engineer Gregor Vasilescu



[559] Radoje Zečević, *Srbija i međunarodni položaj Đerdapa. Istorija i sadašnjost* [Serbia and the international position of the Iron Gates. History and present] (Beograd, 2000), 51-55.
[560] Ibid, 51-55.
[561] Nikola Maksimov, "Elektrotehnički izveštaj," in *Rad na studiji o generalnom uredjenju dunavskog sektora zvanog „ Đerdap ". Plovidba i iskorišćenje vodene snage* [Work on a study on the general arrangement of the Danube sector called "Iron Gates." Navigation and use of water power] ed. Sergije Maksimov (Beograd, 1928), 49-51.

presented a plan for building the hydropower plant near Greben, Juc, and Sip.[562] These plans never came to fruition because Europe, once again, fell into the maelstrom of war.

Even during the Second World War, the allure of the energy potential of the Iron Gates did not vain. In the period between 1941 and 1943, German Siemens-Schuckert made a study on the possibilities of exploitation of the Danube in the Iron Gates. The Siemens experts conducted a thorough field study and concentrated on a specific stretch of Iron Gates on the 942. kilometers of Danube. The project proposed the construction of two locks and two hydroelectric plants that would produce approximately 10.5 billion kWh.[563]

This short overview of the history of ideas and plans for the utilization of Danube serves to point out the importance of the potential that Danube had and the importance of the Iron Gates, not just for Yugoslavia and Romania but for every country that used Danube as a trading route.

**Strategic Interests and Regional Stability: Setting the Stage for Iron Gates Negotiations**

In the postwar reconstruction efforts of Yugoslavia, the idea of utilizing the Danube emerged once again. Yugoslav engineers and water experts inside the Department of Energy organized the working group dedicated to studying the potential of the Danube. During the visit to Siemens Headquarters in Berlin in 1946, the Yugoslav delegation obtained the project designed during the Second World War. Based on Nazi German blueprints, Yugoslav experts continued working on the project in the hope it would be possible to implement the plan before the



[562] "Na Đerdapu treba da se podigne veličanstvena hidroelektrična centrala najmoćnija u celoj Evropi," [A magnificent hydro-electric plant, the most powerful in all of Europe, should be built on Djerdap] *Politika*, 11 July 1933, 5.
[563] AY, 837, I 2/7-2. Korišćenje vodenih snaga Dunava na Đerdapu [Utilization of waterpower on Danube's Iron Gates], 1-5.

1950s.[564] Once again, the plans for the Iron Gates had to be put on hold because of the Tito-Stalin rift in 1948. After the Cominform resolution, Yugoslavia ended up being blacklisted by both the Soviet Union and the rest of the Eastern Bloc countries, and cooperation with Romania was out of the question. In this period, Yugoslavia dedicated efforts and attention to cooperation with Western Europe, as reflected in the Yougelexport project. However, Yugoslav experts did not abandon the idea entirely and continued working on viable solutions for the utilization of the Iron Gates in hopes that the future would bring a resumption of diplomatic ties with the Soviet Union.

*Figure 15. Locomotive at Sip (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972))*

Although the plans for the construction of hydropower plants fell off, relations regarding the administration of the Danube continued. In 1949, Yugoslav diplomats initiated a

[564] AY, 837, I 2/7-5. Korišćenje vodenih snaga Dunava na Đerdapu [Utilization of waterpower on Danube's Iron Gates], 1-3.

new round of negotiations with Romania regarding the establishment of the new Iron Gates Administration on the Danube.[565] The initiative came in the worst of times because Romania showed unwillingness to even talk. The answer from Bucharest was short: the negotiations regarding the administration could only be conducted under the auspices of the Danube Commission. This meant that the Soviet Union had to have a leading role, which Tito could not allow. The Danube was an important marker for the Soviet Union, and their engagement to establish dominance deprioritized the establishment of the Iron Gates Administration. The Soviet Union signaled that such a governing body could only be part of the technical section, under the strict guidance of the Danube Commission.

The hostile attitudes did not change the fact that the navigation on the Iron Gate stretch of the Danube continued to pose a problem for all parties involved. In 1952, Romania expressed frustration regarding the losses brought upon after Yugoslavia canceled locomotive usage in the Iron Gates stretch. Namely, the railway and the locomotive that were used to tow ships on the dangerous stretch were located on the Yugoslav side of the Danube. The cancellation of the locomotive service was a Yugoslav response to the intensive anti-Yugoslav campaign that was led in Romania. Anti-Yugoslav sentiments were present in all countries of the Soviet Bloc, but the level of anti-Yugoslav propaganda in this kind of campaign was far worse in Romania.[566] Tensions and hostile attitudes brought things to the status quo, which remained so until 1953. In the meantime, Yugoslavia turned to cooperation with the West.



[565] The negotiations regarding the administration of the Danube mostly focused on facilitating and improving navigation on the Iron Gates. The Iron Gates passage was treacherous, and its currents were very dangerous. Therefore, many ships did not have enough strength to move upstream. In order to make navigation safer for the ships passing through the Iron Gates, from 1899 until 1912, the tugboat helped with navigation, and in 1912, the tugboat was replaced by the locomotive that pulled ships over fast streams of Iron Gates. Because the locomotive was from the Yugoslav side, Romania heavily relied on it. Literature on the use of locomotive on the Iron Gates: "Dunavom kroz Đerdapsku klisuru" [Danube on the Iron Gates Gorge] *PINUS* 9-10 (2019): 181-208; Višeslav Živanović, "120 godina od puštanja u saobraćaj Sipskog kanala: bilo nekad, da se podsetimo" [120 years since the opening of the Sip Canal] *Baštinik* 18 (2016): 284-300.

[566] Dan Drăghia, "Bordering Tito. The Romanian Borders under the Pressure of the Soviet-Yugoslav Conflict," *Studia Politica. Romanian Political Science Review* 14, no. 2 (2014): 243-260.

The death of Stalin in 1953 changed the course of political engagement between Yugoslavia and the Soviet Union. The process of de-Stalinization led by Nikita Khruschev paved the way for the gradual reproachment of two countries. This also changed the prospects of negotiations regarding the Iron Gates. In the first place, this meant the renewal of diplomatic relations with Romania, and the resumptions of the negotiations that resulted in the establishment of the Iron Gates River Administration in 1953 were signed by Romanian Deputy Minister of Foreign Affairs, Grigore Preoteasa, and Yugoslav Minister, Slavoljub Petrović. This signaled the positive attitude of Romania towards other possible arrangements, including the utilization of the Iron Gates.[567] After a rough couple of years without locomotive use on the Danube, Romania was willing to repair relations with Yugoslavia. Romanian President Gheorghe Gheorghiu-Dej tried to minimize his role in the cold relations with Yugoslavia, blaming former Romanian Minister of Foreign Affairs, Ana Pauker, for the anti-Yugoslav campaign and hostile politics of Romania in the period between 1948 and 1952. Also, Dej clearly stated that relations depend on the attitude of Moscow and that he will follow the Kremlin's lead.[568]

The change in Romania's attitude was not only a result of the renewal of Yugoslav-Soviet relations but also of their own ambitions. The possibility of constructing a hydropower plant of such scale held particular values and symbols in communist ideology. Romania's renewed enthusiasm for the Danube's utilization stemmed from its aim to position itself as a potential champion of heavy industry production among the members of CMEA.

Similarly to Yugoslavia, postwar Romania did not have a large electrical network. After 1945, accelerated electrification was deemed one of the most important goals. In contrast to Yugoslavia, which mostly relied on hydropower, Romania produced 95% of its electricity in

[567] AY, 190. Đerdapska rečna uprava Tekija-Kladovo. Sporazum o ustanovljenju Đerdapske rečne uprave [Agreement on the Establishment of the Iron Gates River Administration], 10.
[568] DA MSPRS, PA, Rumunija, 78. Telegram iz Bukurešta 20.05.1956 [Telegram from Bucharest], 1-2.

thermal power plants, and the existing hydropower plants produced only 5.3% of electric energy, and only from 1960. This disproportion did not originate in a lack of hydropower resources in Romania but in the abundance of oil and coal and the fact that the construction of thermoelectric power plants was less expensive and complicated.[569] With the development of industry, the Romanian need for additional sources of electric energy became apparent. In the projections for the new Five-Year Plan, the Romanian government predicted production of 18.5 billion kWh until 1965 and an astounding 70 billion kWh by the beginning of 1970.[570] In order to achieve this ambitious Five-Year Plan, the possibility of utilizing the Danube for electricity production again became attractive, and Romania initiated a renewal of conversations regarding the Iron Gates construction with Yugoslavia.

In 1956, several weeks before Tito's visit to Romania, Romanian Prime Minister Chivu Stoica, in conversation with Yugoslav ambassador Nikola Vujinović, emphasized the importance of the Iron Gates Gorge and the abundance of unexploited natural resources (coal and iron) located there. The Yugoslav ambassador reported that Romanians showed great willingness to talk about the Iron Gates, and that should be one of the most important topics of Tito's upcoming visit.[571]

During Tito's visit, Yugoslavia and Romania signed several bilateral agreements and, for the first time, officially debated the possibilities of utilizing the Danube on the Iron Gates stretch.[572] Tito and the Romanian president, Gheorghe Gheorghiu-Dej, both agreed on the establishment of an official body that would study the prospects and possibilities of Iron Gates utilization. With the approval of both presidents, the ambassadors continued negotiations. In



[569] DA MSPRS, PA, Rumunija, 78. Telegram iz Bukurešta 20.05.1956 [Telegram from Bucharest], 2.
[570] DA MSPRS, PA, Rumunija, 120. Elektroenergija Rumunije [Electricity situation in Romania] 1961, 438738, 5-8.
[571] DA MSPRS, PA, Rumunija, 79. Telegram ambasade FNRJ u Bukureštu [Telegram from the FNRJ embassy in Bucharest]. 17.06.1956, 411675.
[572] AY, 507. IX 107/I-9. Objavljena razmena mišljenja o odnosima izmedju SKJ i RRP [Exchange of opinions on relations between CPY and RWP], Bukurešt 26.06.1956.

the end, it was agreed that the first meeting of the Joint Commission on Iron Gates Hydro and Navigation System should be held in Yugoslavia. In the meantime, both countries should conduct independent research and present the findings and results during the initial meeting.

Before the official establishment of the Joint Commission, the technical experts from Romania and Yugoslavia met in Orșova in October 1956 and exchanged findings and ideas that could help them prepare for the first official meeting. The Yugoslav experts shared the Siemens project with their Romanian colleagues. Both groups of experts agreed that the German study was a good starting point for further examination.[573] Although the Siemens project offered a good foundation, both groups of experts agreed that further studies were necessary. The experts agreed that there should be two hydropower plants, one on the Romanian side and one on the Yugoslav side, and that the exact locations for the plants should be prioritized in initial studies. Finally, it was agreed that once the Joint Commission gets established, the study groups should focus on the field preparations for the development of the Technical and Economic Memorandum.[574] Following the expert meeting, the official establishment of the Joint Commission was signed during Dej's visit to Yugoslavia on Brijuni Island on October 27, 1956.[575]



**Laying the Foundation for Cross-Border Collaboration: The Role of the Iron Gates Joint Commission**

[573] "Počeli rumunsko-jugoslovenski razgovori," [Romanian-Yugoslav Talks Start] *Politika*. 23.10.1956, 1.
[574] DA MSPRS, PA, Rumunija, 79. Telegram ambasade FNRJ u Bukureštu [Telegram from the FNRJ embassy in Bucharest]. 17.06.1956, 411675.
[575] AY, 837, I/3-a/97-4, 1956. Beleške o jugoslovensko-rumunskim pregovorima na Brijunima [Notes on the Yugoslav-Romanian negotiations at Brijuni]; AY, 850, 401, Statut Mešovite jugoslovensko-rumunske komisije [Statute of the Joint Yugoslav-Romanian Commission], 27.10.1956, 1-12.

The newly formed Joint Commission had a task to study the utilization of the Danube in the Iron Gates sector on a multifaceted level. Since the 1930s, engineers have been planning vast hydraulic projects to involve a combination of goals and solve many problems at once. The Iron Gates project was not different. With the construction of the Iron Gates complex, the final goal was not just water harnessing for electricity production. Engineers also considered factors like flood control, safer navigation, hydro-melioration, and other minor issues that might occur in studying this sector from a technical, economic, legal, and social point of view. The experts had to address the possibilities of exploitation of natural resources in the region, protection of important historical monuments, establishment of a new border between Yugoslavia and Romania, relocation of the population, and numerous other changes that would impact flora and fauna in the Iron Gates sector.[576]

In September 1957, Belgrade hosted the first meeting of the Joint Romanian-Yugoslav Commission. During the meeting, Čedomil Milićević, president of JUGEL, and Nicolae Gheorghiu, Romanian Deputy Minister of Heavy Industry, officially signed and approved the establishment and the statute of the Commission and discussed general rules and dates regarding the study of the Iron Gates Project.[577]



[576] AY, 850, 401. Statut Mešovite jugoslovensko-rumunske komisije [Statute of the Joint Yugoslav-Romanian Commission], 27.10.1956, 1-12.
[577] "Poseta predsednika Tita Rumuniji," [President Tito's visit to Romania] *Borba* 21/164, 26.06.1957, 1-2.

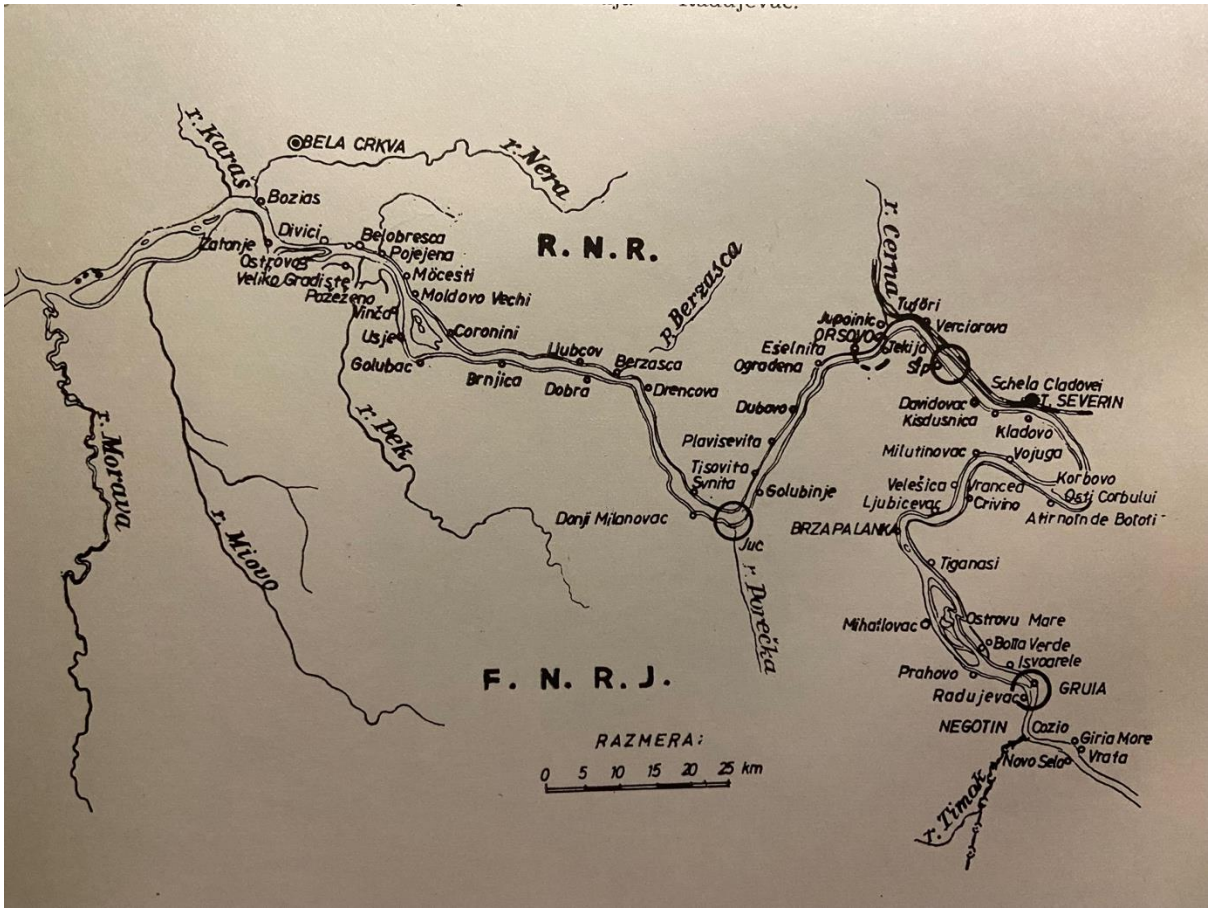


*Figure 16. Map of the Iron Gates 1962 (Source: Zdravko Milanović ed., Elektroprivreda Jugoslavije (Beograd, 1962))*

In Yugoslav political circles, the beginning of the negotiations regarding the Iron Gates was also seen as a platform for the renewal of Yugoslav-Soviet relations. The interests of the Soviet Union and CMEA on the Danube have been very much present since 1948 and the establishment of the Danube Commission.[578] The possibility of cooperation with Yugoslavia encouraged CMEA to renew interest in that part of the Danube. Yugoslavia was very careful in its approach to the Soviet Union. Tito also understood that good multilateral relations with other countries within the Soviet bloc laid the foundation for building the political pre-conditions for further rapprochement. On the other hand, Romania saw the cooperation with Yugoslavia in the Iron Gates construction as an opportunity to gain economic independence within the Soviet Bloc. Very early on, Yugoslav diplomats noted that the Romanians were more

[578] Lagendijk, "Divided Development," 96-97.

than eager to start the construction at the earliest possible date.[579] Consequently, the reluctance of Yugoslavia to rush the start of the construction mainly resided in the conviction that the construction of the Iron Gates had greater significance, both political and economic, for Romania. This did not mean that Yugoslavia was reluctant to start the project in the first place, but the attractiveness of being involved in a project of such size was overshadowed by Tito's cautious attitude towards the Soviet Union and his involvement in the establishment of the Non-Alignment Movement.[580]

Either way, the progress of Yugoslav-Romanian negotiations for the exploitation of the Danube in many respects still depended on the attitude of Moscow.[581] With the establishment of the Joint Commission and the start of initial field studies, the Soviet Union extended an invitation to Yugoslavia to attend the CMEA meeting in 1958 as an active observer. Yugoslavia sent Čedomil Milićević and Radmilo Marković, electric engineers, to represent the Yugoslav delegation. The Soviets kept the involvement of the Yugoslavs at the minimum, and Milićević and Marković were only allowed to take part in talks regarding the utilization of the Danube. Regarding the locations for the future hydroelectric facilities of the Yugoslav-Romanian project, CMEA experts recommended that the stretch from Bazijaš to Turn Severin could be the most attractive location for building the hydropower plant. Additionally, CMEA offered to send a group of Soviet experts from *Gidroprojekt* to visit Yugoslavia during the summer and assess the hydroelectric potential of the Iron Gates stretch.[582] The CMEA meeting facilitated the disagreements of Romanian and Soviet experts regarding the most profitable and accessible

[579] DA MSPRS, PA, Rumunija, 88/28. Izveštaj eksperata Mešovite komisije [Report of experts of the Joint Commission], 1957, 422782, 3-4.
[580] "Uzajamna pomoć izmedju socijalističkih država – istorijska su nužnost," [Mutual aid between socialist countries is a historical necessity], *Politika*, 22.10.1956, 2.
[581] Selected publications on history of Yugoslav-Soviet relations on the utilization of Danube: Spiridon G. Focas, *The Lower Danube River. In the Southeastern European Political and Economic Complex from Antiquity to the Conference of Belgrade of 1948* (Boulder, 1987); Arthur Tuluş, "The Tito-Stalin Conflict and its Political Consequences over the International Regime of the Danube River," *Acta Universitatis Danubius. Relationes Internationales* 8, no. 1 (2015): 25-36.
[582] DA MSPRS, PA, Reg., 92. III zasedanje stalne komisije Saveta za uzajamnu ekonomsku pomoć [III session of permanent Comecon committee], 1958, 4697.

location for the construction of hydroelectric power plants on both sides of the Danube. The main discussion revolved around two locations: Sip and Orșova. The leader of the Romanian Technical Group in the Joint Commission, Vasile Horduniev, insisted that Sip was the most suitable place for hydropower plant.

The lack of career politicians in the Yugoslav delegation was the consequence of decentralization and the emergence of technomanagers who took over the tasks of the negotiation not just domestically but also internationally. At the same time, other representatives of JUGEL, Han, and Brelih were conducting negotiations regarding the Yougelexport project. Of course, this does not mean that the Yugoslav high officials and the Communist Party were not actively following the negotiation. Milićević and Marković were not just experts in their respective fields but also active members of the Communist Party. They took on the various roles in the different ministries and merged several roles into one. In the following years, the role of technomanagers engaged in the Iron Gates project would become more apparent, especially in the Yugoslav media and public.

Although the Yugoslav representatives had the autonomy to negotiate the technical issues in relation to the Iron Gates construction, they were instructed not to accept the invitations of the Soviet representatives to be more active in the discussions regarding the general questions regarding the utilization of the Danube.[583] This directive signals that Tito was approaching Soviet offers quite cautiously, in fear that too much involvement could jeopardize Yugoslav independence. The negotiations between Yugoslavia and Romania continued at the Third Meeting of the Joint Commission in Belgrade in March and April 1958. The representatives agreed that tackling such a complex project requires several working groups



[583] DA MSPRS, PA, Reg., 92. Izveštaj sa IV zasedanja Saveta za uzajamnu ekonomsku pomoć [Report from the IV session of the Comecon], 1958, 49732, 1-2.

that would address different aspects regarding hydrotechnical details, navigational solutions, and the relocation of the population and cultural goods.

Based on engineer Miloš Brelih's suggestion, the Commission adopted the decision for the establishment of economic, legal, and financial sections that would work independently and report their findings or issues in joint meetings. Romanian experts initiated their field studies much earlier than Yugoslavs and reported meeting their initial findings. Engineer Florin Iourgolescu reported that five locations - Sip, Orșova, Juc, Gruja, and Ciganaš – should be topographically and geologically studied in more detail.[584] Finally, the meeting ratified the contract between Yugoslav company *Energoprojekt*, represented by engineer Živko Mučalov and the Romanian Institute for Study of Energy Projects (Institutul de Studii si Proiectari Hidroenergetica, ISPH), represented by Florian Iourgolescu. Energoprojekt and ISPH were entrusted with gathering the findings of the field studies and drafting the Technical and Economic Memorandum.[585]

**Stalled Progress: Friction and Frustration in Talks**

In 1958, Yugoslavia experienced a significant shift in the political landscape, causing instability and affecting Yugoslavia's standing in the Balkans, Europe, and globally. On the one hand, Tito's relations with the Western allies were going cold, especially after Yugoslav recognition of Eastern Germany. Tito was getting cold feet since the mid-1950s, and the growing American influence concerned him. On the other hand, the reproachment between Yugoslavia and the Soviet Union encountered, once again, irreconcilable differences caused by ideological and

[584] AY, 850, 401. Zapisnik III zasedanja jugoslovensko-rumunske mešovite komisije [Minutes of the III session of the Yugoslav-Romanian Joint Commission], 26.03-5.04.1958, 1-4.
[585] AY, 850, 401. Ugovor o saradnji [Collaborative Agreement], 6.02.1958, 2-6; "Energoprojekt i rumunski ISPE projektovaće đerdapsku centralu," [Energoprojekt and the Romanian ISPH will design the Iron Gates power station] *Borba* 23/356, 28.12.1957, 7.

political disputes. The cause of the new anti-Yugoslav campaign in 1958 was essentially the same as the one that occurred ten years earlier, which led to the Yugoslav expulsion from Cominform. The Soviet Union had no tolerance for Tito's autonomous decision-making. This time Yugoslavia was not completely isolated, and the clash remained on anti-Yugoslav propaganda and cold shoulder politics.[586] The negotiations regarding the Iron Gates Project continued, but Yugoslavia was even more cautious. In contrast, Romania showed much enthusiasm. This is not surprising; the project, as it soon became apparent, was of much greater importance for Romania. Romania was starting to show unwillingness to sacrifice the goals of successful industrialization and the development of heavy industry, despite the protests from the Soviet Union and other CMEA members.[587]

In the July 1958 Bucharest meeting of the Joint Commission, representatives of the Romanian Technical Section, led by engineer Alexandriu Diacon, remarked that Yugoslav representatives had a "nonchalant attitude" and were prolonging the finalization of the Technical and Economic Memorandum.[588] Yugoslav representatives simply responded that there was no need to rush things and that the financially related questions should be addressed first.

The end of the 1950s marked Tito's escape from Europe, and the crystallization of the political path Yugoslavia intended to follow materialized with the establishment of the Non-Alignment Movement. During the second clash with the Soviet Union, Tito was undertaking his famous "peace voyage" when he visited Indonesia, India, Burma, Ceylon, Ethiopia, Sudan, Egypt, and Syria. These trips were crucial in straightening the ties with the countries of the Global South that were also reluctant to align with either of the Cold War blocs and the vision



[586] Svetozar Rajak, *Yugoslavia and the Soviet Union in the early Cold War: reconciliation, comradeship, confrontation, 1953-1957* (Routledge, 2010), 43.
[587] John Michael Montias, "Background and Origins of the Rumanian Dispute with COMECON," *Europe-Asia Studies* 16, no. 2 (1964): 125-151.
[588] DA MSPRS, PA, Rumunija,105. Zapisnik sa IV zasedanja Mešovite jugoslovensko-rumunske komisije [Minutes of the IV session of the Joint Yugoslav-Romanian Commission], 1958, 419180, 1-5.

of the new "policy of active coexistence."[589] Not surprisingly, the main attention of Yugoslavia was elsewhere in this period. This does not mean that Yugoslavia had completely abandoned its engagement in the Iron Gates project. Due to the underperformance of the Yougelexport project, the Iron Gates project remained one of the most important domestic projects. In the framework of Yugoslav new foreign policy and place on the global stage, the construction of a system of that magnitude would not only provide Yugoslavia with ample energy resources but also serve as a remarkable platform to showcase Yugoslav aspirations of engineering to new political partners in the Global South.

Yugoslavia was constantly engaged in the active exchange of economic, scientific, cultural, and expert delegations with the future members of the Non-Aligned movement. The exchange of expertise and the transfer of technology were already well established in Yugoslav engagement with the Global South. For example, in 1955, a delegation from Burma (today Myanmar) spent sixteen days in Yugoslavia with the focus on showcasing Yugoslav electric infrastructure. At the end of this visit, Yugoslavia and Burma signed an agreement that Yugoslavia would supply and maintain the Balu Chaung Hydroelectric Power Plant.[590] The Iron Gates project also fit within the Yugoslav tendency to promote hydraulic experts, which eventually paved the way for building numerous hydroelectric power plants and dams around the world.[591]

During 1959, study groups of the Joint Commission mostly focused on the legal and technical aspects. Romanian experts picked up on the Yugoslav attitude and tactic of slow-paced responses. This shows that the Iron Gates project served various political objectives,



[589] Josip Broz Tito, "Osvrt na neke aktuelne međunarodne probleme" [Review of some current international problems] in *Govori i članci* XI [Speeches and Studies vol. XI] (Zagreb, 1959), 423-434.
[590] "Burmanska privredna delegacija u Jugoslaviji," [Burmese economic delegation in Yugoslavia] *Elektroprivreda* 8/6 (1955): 314.
[591] Dubravka Sekulić, "The Sun Never Sets on Energoprojekt… until It Does: The Yugoslav Construction Industry in the Non-Aligned World," in *Socialist Yugoslavia and the Non-Aligned Movement: Social, Cultural, Political, and Economic Imaginaries* ed. Paul Stubbs (McGill-Queen's University Press, 2023), 257-280.

especially in the case of Yugoslavia. This strategy is in line with the theory of "techno-scientific promises." Markku Lehtonen points out that megaprojects in different sectors suffer from many "pathologies," such as delays and miscalculations in budget.[592] The Iron Gates in 1959 still did not have material form but played an important political role for both Yugoslavia and Romania.[593]

The Yugoslavs kept pushing that the legal issues must be resolved first before the Technical and Economic study groups could finalize their reports. President of the Yugoslav Legal Section, Miša Levi, pointed out that Yugoslavia and Romania had legal obligations towards other countries regarding the utilization of the Danube and that it would be foolish to discuss the location and the costs without the prior approval of other Danubian countries.

The most important issue was assurance that there would be no interruption of ship navigation during the construction.[594] The Legal section finally proposed that before drafting the Technical and Economic Memorandum, members of the Joint Commission should consult with the members of the Danube Commission. Additionally, the proposal also recommended that Austria and West Germany should also be consulted, regardless of not being members of the Danube Commission, because the improvement of navigation concerned them as well.[595]



[592] Markku Lehtonen, "Optimism and pessimism in nuclear technology promises: the legacies of three European EPR projects," *Entreprises et histoire* 1 (2024): 120-139.
[593] DA MSPRS, PA, Rumunija, 106. Podaci o bilateralnim odnosima Rumunije i Jugoslavije [Notes on bilateral relations between Romania and Yugoslavia], 1959, 425358, 1-2.
[594] AY, 850, 401, Zapisnik V zasedanja Mešovite jugoslovensko-rumunske komisije [Minutes of the V session of the Joint Yugoslav-Romanian Commission], 1-8.04.1959, 3-11.
[595] AY, 850, 401, Zapisnik sa sastanka jugoslovenskog dela Pravne sekcije Mešovite jugoslovensko-rumunske komisije [Minutes from the meeting of the Yugoslav part of the Legal Section of the Joint Yugoslav-Romanian Commission], 20-22.06.1959, 1-6.

**From Concept to Reality**

Despite the sluggish progress in collaboration between Yugoslavia and Romania in 1958 and 1959, caused by the strained relations between Yugoslavia and the Soviet Union and the Yugoslav focus on the establishment of the Non-Aligned Movement, things started to turn for the better in the beginning of 1960. The change was particularly welcomed by Romania because, in 1960, the Romanian government adopted the new Five-Year Plan.

The newly found enthusiasm of both Yugoslavia and Romania resulted in the first draft of the Technical and Economic Memorandum.[596] The Yugoslav ambassador in Romania, Arso Milatović, noted that the new Five-Year Plan in many respects relied on the construction of the Iron Gates. Also, it fit into Romanian ambitions to gain more autonomy inside CMEA.[597] Romanian state representatives initiated many talks with the Yugoslav ambassador in order to get their point across. In a private meeting between Chivu Stoica and Milatović, Stoica insisted that the ambassador should relay to the Yugoslav representatives that Romania does not want to delay the start of the construction any further.[598]

In April 1960, the experts from all three sections presented the results of their studies and exchanged information. The representatives of the Technical section presented the study on three possible locations for the construction of two hydroelectric power plants (one on the Romanian side and one on the Yugoslav side of the Danube). The first option considered building the power plants on Sip (YU) and Gura Vai (RO). The second option suggested that plants should be built between Gura Vai and Orșova.[599] The third option proposed that there



[596] DA MSPRS, PA, Rumunija, 112/17. Napomene u vezi međunarodne politike Rumunije i njenog odnosa prema Jugoslaviji [Notes regarding Romania's international policy and its relationship with Yugoslavia], 1960, 424658, 3-8.
[597] DA MSPRS, PA, Rumunija, 114. Utisci o razgovorima vođenim kod ambasadora Arsa Miliatovića [Impressions of the talks held with Ambassador Arsa Miliatović], 1960, 411222.
[598] DA MSPRS, PA, Rumunija, 113. Depeša jugoslovenske ambasade iz Bukurešta [Dispatch from the Yugoslav Embassy in Bucharest], 1960, 426611, 1.
[599] AY, 850, 401. Proces-verbal al celei de a V-a intilniri a Sectiei technice a Comisiei mixte romino-ingoslave pentru condcerea si coordonarea lucrarilor de amnejare a Dunarii in Sectorul Portilor de Fier

should be three instead of two hydropower plants on Sip, Gura Vai, and Juc.[600] The discussion regarding the location revolved around the decision between Sip and Juc locations on the Yugoslav side, and after short deliberations, experts agreed on Sip and Gura Vai as the official locations in the Memorandum. The Technical section also presented the first phase of the works on the construction of the power plants and preparations for damming the Danube. The first phase of the Iron Gates project also included the construction of two locks in order to ensure uninterrupted navigation on the Danube.[601]

*Figure 17. Signing of the Technical and Economic Memorandum, Bucharest 1963 (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972))*



[Minutes of the Fifth Meeting of the Technical Section of Romanian-Yugoslav Joint Commission], 6.02.1960, 2-9.

[600] DA MSPRS, PA, Rumunija, 114/14-15. Detalji o zajedničkom jugoslovensko-rumunskom projektu u sektoru Djerdapa [Details of the joint Yugoslav-Romanian project in the Iron Gates sector], 1961, 428321, 1-2.

[601] Nikola Komnenić, "Đerdap: ekonomsko I tehničko rešenje" [Iron Gates: economic and technical solution]. *Ekonomska politika*: *Borba*, 27.02.1960, 3-5.

In hopes of making Yugoslavia part of the Joint Commission to finalize their part of the Technical and Economic Memorandum and officially start the construction, Romania organized a conference and invited representatives of the electric energy sector from all over Europe, including the representatives of UNECE. During the conference, the president of the Romanian branch of the Joint Commission, Ghegorhe Nicolae, spoke of the Iron Gates as already having been adopted and that the beginning of the construction work was imminent. Yugoslav representatives were still reserved and avoided giving a tangible date for the start of the construction, and this was an attempt to put some pressure on the Yugoslav delegation in order to finalize the Technical and Economic Memorandum. However, the Yugoslav delegation was previously advised not to make any comments and to keep their appearance as the Iron Gates had a high priority, and because of that, things should not be rushed.[602]

Whether the Romanian pressures and willingness to make compromises worked or Tito approved more engagement in the Iron Gates project, the Yugoslav delegation finalized their part of the studies and, on September 21, 1960, officially approved the Technical and Economic Memorandum for the Iron Gates Hydro and Navigational System. The Yugoslav delegation kept their attitude that things were rushed and only gave approval after reassurances that some unanswered questions would be solved before the official start of the construction.[603] They pointed out that the question of the height of the dam, the exact dimensions of the locks, and the coordination of logistics for the future construction site were not agreed upon. Also, the consultations and approval of the Danube Commission remained unaddressed. The Romanian delegation agreed with the Yugoslav demands and promised to solve those issues with the utmost urgency.[604]



[602] DA MSPRS, PA, Rumunija, 113. Depeša jugoslovenske ambasade iz Bukurešta [Dispatch from the Yugoslav Embassy in Bucharest], 1960, 426611, 2.
[603] DA MSPRS, PA, Rumunija, 114. Zajednički jugoslovensko-rumunski projekat na Đerdapu [Joint Yugoslav-Romanian project in Iron Gates sector], 1960, 428320, 1-3.
[604] AY, 850, 401. Službena beleška o Tehničko-ekonomskom memornadumu na Đerdap [Official note on the Technical and Economic Memorandum on Iron Gates], 5.01.1961, 1-2.

The most pressing issue and the stumbling block for the beginning of construction were the Yugoslav concerns related to financing the project. In 1961, during the visit to Bucharest, Yugoslav representatives expressed these concerns, stressing that the financial strain of a venture of that size could ultimately force Yugoslavia to delay the beginning of construction.[605] Romania was not willing to risk further delays for the Iron Gates project and offered Yugoslavia two possible solutions regarding the financial concerns. The first suggestion proposed that Romania could approve a construction loan to Yugoslavia, with a clause that Romanian contractors would construct both hydropower plants and that Yugoslavia would repay the loan in electric energy produced in Yugoslav hydropower plant with at least 3 billion kWh per year over a period of twenty years. The other solution was that each side should finance their part of the project individually. Both of these suggestions were unacceptable for Yugoslavia.

The first suggestion was out of the question because the repayment of the loan would drain too much electricity from the Yugoslav electric system, and with those conditions, Romania would have almost six times the profit from the original loan. The second suggestion could not be considered because it clashed with already established investment plans in Yugoslavia. To avoid further discussion and fear the possible delays, Romanians came up with a counteroffer of a loan for 25 years with a 2% interest rate and the possibility of repayment in electric energy, which Yugoslavia agreed to consider. The dispute over the methods of financing also came from the Romanian side.

The Yugoslav delegation suggested that the costs of construction preparations would be much higher for the Yugoslav side of the Danube and that Romania should compensate for the additional costs. The Romanian experts argued that the Romanian side of the Danube also poses challenges and would be costly, but they were willing to negotiate certain compromises. The

[605] AY, 850, 401. Izveštaj Ekonomsko-fiansijske sekcije o troškovima prve faze radova [Report of the Yugoslav Economic and Financial Section on the costs of the first phase of construction], 9.02.1961, 3-4.

Yugoslav financial section says that other Danubian countries should provide a loan or some type of financial aid for the construction of the navigational part of the Iron Gates project and that the loan could be repaid by Yugoslavia and Romania, renouncing navigation taxes for thirty years.[606] However, Romania fiercely rejected this proposition because of its unwillingness to allow the participation of other CMEA members in the project that was important not just for the Romanian economy and industry but also as a symbol of modernization and independence.

**Unexpected Triumvirate?**

The qualms regarding financing the Iron Gates project were overshadowed by the prospect of a third partner in the construction. In 1957, during the CMEA meeting, Romanian and Yugoslav representatives presented their studies and plans for building the Iron Gates System. Following the presentation, other members of CMEA expressed their interest in being part of this project. The most interested countries were Czechoslovakia, Bulgaria, and Hungary. Czechoslovakia and Hungary only offered to support the project through investment, asking for 20-30% of the capacity to be allotted to them, but Bulgaria offered to participate actively in the construction as an equal partner to Yugoslavia and Romania.[607]

The Bulgarian interest in the Iron Gates project resurfaced after the official signing of the Technical and Economic Memorandum. The results of the studies, which were presented at the 1960 conference in Romania, attracted the attention of Bulgarian experts. However, the Bulgarian engagement remained only on the level of interest without any follow-up on possibilities of cooperation. The situation changed during the January 1961 meeting of the

[606] DA MSPRS, PA, Rumunija, 122. Pregovori o finansijskim aspektima izgradnje Đerdapa [Negotiations on the financial aspects of Iron Gates construction], 1961, 41029, 2-8.
[607] DA MSPRS, PA, Rumunija, 92. Zasedanje III sednice Saveta za uzajamnu ekonomsku pomoć [Third meeting of Comecon],1957, 4697-4698, 1-6.

Danube Commission, when Bulgarian representatives had an opportunity to be closely informed on the burning financial issues between Yugoslavia and Romania. Despite Romanian reluctance, Yugoslav delegates informed the members of the Danube Commission that the costs for the construction of the dam, ship locks, and two planned hydroelectric power plants at the Sip-Gura Vai location would amount to 278 million US dollars and that Yugoslavia was open to the possibility of getting loans from other Danubian countries.[608] During the 1961 CMEA meeting in Sofia, the Permanent Commission for Electric Power approved a Romanian request for the utilization of the Danube's hydroelectric resources. Following the approval, Bulgarians approached the Romanian delegation with suggestions of involvement, but the Romanian delegation answered that they were not able to negotiate this at the time.[609]

The obtained information signaled to the Bulgarian government that the issue of financing the project could be their entry ticket to becoming part of the project. The 1961 suggestions of the Romanian delegation offering loans to Yugoslavia were not the final solution. Yugoslav concerns about financing the project were twofold. On the one hand, Tito was reluctant to rely on any Soviet bloc member to provide the loan, and on the other hand, the option of requesting loans from the United States and West European countries seemed far-fetched because the Iron Gates would serve the needs of communist countries. Because of this, Yugoslavia hopes that other Danubian countries would be interested in financially aiding the project. However, Yugoslavia was more inclined to include Austria and West Germany in financing the dam's construction.[610]

The Yugoslav preference for the Western partners and Romanian reluctance to engage in talks did not deter Bulgarians from seeking the possibility of being a part of the Iron Gates

608 "Finansijski troškovi izgradnje Đerdapa," [Financial costs of Iron Gates construction] *Politika*, 27.02.1961, 3-4.
609 "Portile de Fier," *Scinteia*, 30.09.1961, 2.
610 "Gigant na Dunavu sa 10,7 milijardi kWh," [Giant on the Danube with 10.7 billion kWh] *Borba* 28/101, 12.03.1963, 5.

project. Bulgarian Prime Minister Anton Yugov sent a letter informing Josip Broz Tito of Bulgaria's interest in being included in the Iron Gates project. In January 1962, Yugoslav Foreign Ministry spokesperson Drago Kunc revealed that Yugoslav President Tito expressed a positive attitude regarding the Bulgarian government's outreach. Interestingly, the official addressing of the Bulgarian suggestion was answered only after the questions by the journalist during the press conference regarding the news on the trade and expert exchange agreements with the members of the Non-Alignment Movement, and the answer was informal, without any emphasis that it was being considered more closely.[611]

The Bulgarian outreach to Tito and the suggestions of involvement in the Iron Gates project did not resonate with Romania. Yugoslav ambassador Milatović noted that the Romanian representatives did not show any enthusiasm for this possibility. This reaction was not surprising. Romania had been effectively working on the Iron Gates plan for almost a decade, and the calculations on which the 1960 Five-Year Plan relied did not count on Bulgarian involvement in the construction.

Concerned with the new Bulgarian interest in the project, Romania organized a meeting in Bucharest in February 1962 and invited representatives from Yugoslavia and Bulgaria to discuss the possible Bulgarian involvement.[612] The Yugoslav ambassador Milatović reported that in his meetings with Aurel Malnasan, Deputy Foreign Minister in Romania, the attitude of Romania towards Bulgarian participation was mostly negative, but this reluctance was not expressed directly.[613] Since both Romania and Bulgaria were part of the CMEA, Romania avoided openly expressing dissatisfaction with the possibility of Bulgarian participation. Additionally, it is important to note that in 1962, there were first signs of difficulties in



611 "Konferencija za štampu u D.S.I.P," [Press conference in the Ministry for the Foreign Relations of Yugoslavia] *Borba* 27/11, 13.01.1962, 1.
612 DA MSPRS, PA, Rumunija, 122. Pregovori o finansijskim aspektima izgradnje Djerdapa [Negotiations on the financial aspects of Iron Gates construction], 1961, 41029, 1-5.
613 Arso Milatović, *Pet diplomatskih misija Knjiga 2* [Five diplomatic missions] (Zagreb, 1986), 70-81.

Romanian-Soviet relations. This strain between them was due to Romania's reluctance to accept the agricultural role in CMEA and abandon the plans for the development of the heavy industry, as well as the interpretations of the liberation of Romania and the role of the Romanian Communist Party.[614] In the 1962 celebration of Romanian National Day, the praise for the Soviet Union was overshadowed by the celebratory speeches and praise of the cooperation of Romania with Yugoslavia and China.[615]

On the other hand, Bulgaria continued to actively insert itself in the project and advocated obtaining Yugoslav and Soviet support. Bulgarian politicians posed the question of Bulgarian involvement, as it was already set and done. In his pre-electoral speech in February 1962, Yugov spoke of Bulgaria's participation in the Iron Gates project as one of the achievements of the regime. Soviet President Khrushchev notified Dej that Bulgarian participation would be beneficial for the project and that Romania should positively embrace the new partner.

Additionally, Todor Živkov informed Dej that he had already gotten a positive answer from Yugoslavia and that Tito approved moving forward in negotiations with Bulgaria.[616] Živkov's attitude annoyed Dej, and he demanded to meet with the Yugoslav representatives. In an urgent meeting between ambassador Arso Milatović and Bogoljub Stojanović, president of the Yugoslav delegation for the Iron Gates Commission, and the Deputy Prime Minister of Romania, Alexandru Bârlădeanu, in March 1962, the confusion caused by Živkov was finally resolved. Tito did answer the 1961 letter in a positive tone. The answer did not specifically



[614] DA MSPRS, PA, Rumunija, 116/6. Telegram jugoslovenske ambasade iz Bukurešta [Telegram from the Yugoslav Embassy in Bucharest], 30.08.1962, 428848, 1-2.
[615] DA MSPRS, PA, Rumunija,116/6. Telegram jugoslovenske ambasade iz Bukurešta [Telegram from the Yugoslav Embassy in Bucharest], 28.08.1962, 443490, 1.
[616] „Stenograma discuțiilor purtate de delegația română, condusă de Gh. Gheorghiu-Dej, primsecretar al CC al PMR, cu delegația sovietică, condusă de Nikita S. Hrușciov, prim-secretar al CC al PCUS, referitoare la divergențele româno-sovietice" [Transcript of disscusions between Romania and the Soviet Union regarding the Romanian-Soviet divergences] , în: *În umbra Kremlinului: Gheorghe Gheorghiu-Dej și geneza Declarației din Aprilie 1964* [In the shadow of the Kremlin: Gheorghe Gheorghiu-Dej and the genesis of the April 1964 Declaration] edited by Mihai Croitor (Cluj-Napoca, 2012): 86–89.

approve the idea of Bulgarian participation in the Iron Gates project but signaled that Yugoslavia had a positive attitude towards the idea and was looking forward to cooperation in the electricity and energy sector.[617] This explanation resonates with the nonchalant answer by Foreign Ministry spokesperson Kunc in 1961, and Yugoslavia never considered the Bulgarian proposition in detail.

The confident attitude from Bulgaria did not fare well with the Yugoslav delegation. Also, the possibility of Bulgarian ownership of the hydroelectric and navigational system on Yugoslav territory was out of the question. The Yugoslav official answer was clear: Bulgarian participation in the Iron Gates project would not be pursued any further.[618] Živkov tried to intervene with the Soviets in hopes that their pressure might change the Yugoslav and Romanian attitudes, but there he found a negative answer as well. Khrushchev advised Živkov that Bulgaria should focus on drafting a new project with Romania to build a new hydropower plant on the Danube.[619] With the loss of Soviet interest in supporting the idea, Bulgarians quickly abandoned the idea of participation in the Iron Gates project.

**Towards the Finish Line: Closing Chapters of Iron Gates Negotiations**

After the confusion over whether Bulgaria would participate in the realization of the Iron Gates project was resolved, the Yugoslav-Romanian Joint Commission resumed work on solving the remaining issues. The 1962 Bucharest meeting addressed several burning issues, but the discussion mostly revolved around setting the date of the beginning of construction and the



[617] DA MSPRS, PA, Rumunija, 118. Telegram jugoslovenske ambasade iz Bukurešta [Telegram from the Yugoslav Embassy in Bucharest], 1961, 46088, 1-2.
[618] "Tito odgovorion na pismo premijera Jugova," [Tito answered the Yugov's letter] *Borba* 28/336, 7.12.1963, 14.
[619] Mihai Croitor and Sandra Borsa ed., *Triunghiul suspiciunii: Gheorghiu-Dej, Hrușciov și Tito (1954-1964*) [The triangle of suspicion: Gheorghiu-Dej, Khrushchev and Tito], vol. I (Cluj-Napoca, 2014), 188-190 .

question of obtaining favorable loans. The Yugoslav representatives remained reluctant to accept any of the Romanian propositions for loans.[620] The question of financial compensation regarding the building and maintenance of the embankment on the Yugoslav side remained open. The Yugoslav delegation insisted that the construction of embankments on the Yugoslav side was more costly and that if Yugoslavia were to pay on its own, the Romanian government should compensate for additional costs.[621]

Financial concerns were not easy to solve and were the point of disagreement between the Romanian and Yugoslav delegations. In 1963, Romanian delegates again suggested that Romania should grant a loan of 47 million US dollars to Yugoslavia. Yugoslavia could repay this loan by relinquishing all income from navigation on their part of the Danube. Again, the Yugoslav delegation would reply that the proposition would be considered and refuse to give clear and straightforward answers. This strategy of the Yugoslav delegation was mostly due to the fact that the 47 million loan was not a bad option, but they did not want to accept it without first trying to obtain loans from the Danubian countries or the Soviet Union.[622] In the end, the Yugoslav government agreed to finance their part of the Iron Gates project on their own and that the additional costs regarding the embarkment preparation would be compensated by Romania, either in goods or money.[623] The delegates also agreed that construction preparation should be divided between three specialized groups: electric equipment, mechanical equipment, and construction equipment.[624]



[620] AY, 850, 401. Izveštaj Tehničke komisije sa sastanka u Bukureštu [Report of the Technical Commission from the meeting in Bucharest], 1-2.
[621] AY, 850, 401. Zapisnik o radu jugoslovensko-rumunske komisije [Record of the work of the Yugoslav-Romanian commission], 3-8.
[622] DA MSPRS, PA, Rumunija, 115. Beleške o pregovorima za Sklapanje ugovora o izgradnji Đerdapa [Notes on the negotiations for the conclusion of the contract for the construction of Iron Gates], 1963, 44121, 1-7.
[623] "Hidroenergetski sistem Đerdap finansiraće se pod povoljnim uslovima," [The Iron Gates hydropower system will be financed under favorable conditions] *Borba* 29/350, 22.12.1964, 4; "Usvojen zakon o finansiranju sistema Đerdap," [Law on financing the Iron Gates System] *Borba* 29/354, 26.12.1964, 1.
[624] DA MSPRS, PA, Rumunija, 116. Zapisnik sastanka Mešovite komisije Jugoslavije i Rumunije [Minutes of the meeting of the Joint Commission of Yugoslavia and Romania], 1963, 439188, 2-14.

Despite the financial disagreements, 1963 proved to be the most productive year of Yugoslav-Romanian negotiations. Both Yugoslav and Romanian experts agreed that multilateral cooperation regarding the construction of the Iron Gates project was out of the question. Khrushchev attempted to reverse this decision by pressuring Romania and pointing out that the project would be finalized much faster with the participation of other countries.[625] The Yugoslav and Romanian governments were united in expressing a negative attitude towards Soviet influence. In this case, Romania was even fiercer about preventing other countries of the Soviet Bloc from becoming a part of the Iron Gates project.

The Yugoslav representative in the 1963 Bucharest negotiations was Bogoljub Stojanović, a member of the Executive Council of the Federative Republic of Serbia.[626] The shift towards sending high government officials to the Iron Gates project negotiations signaled that Tito was paying close attention to this project. The shift in attitude of the Yugoslav government towards involvement in the project was even more evident in the media. From 1963 on, the Iron Gates project was a constant topic in the official Yugoslav newspapers *Borba* and *Politika*. In comparison to the SUDEL project, which took place in the same time frame as the Iron Gates, the difference in coverage was stark. The SUDEL project got featured in a couple of articles, but only when it reached a significant milestone. On the other hand, the Iron Gates project had almost daily coverage and was presented as the project of the century and the greatest achievement of Yugoslav builders.[627]



[625] DA MSPRS, PA, Rumunija, 115. Podaci o Hruščovom mišljenju o izgradnji Đerdapa [Information about Khrushchev's opinion on the construction of Iron Gates], 1963, 49491, 1-5.
[626] DA MSPRS, PA, Rumunija, 116. Zapisnik sastanka Mešovite komisije Jugoslavije i Rumunije [Minutes of the meeting of the Joint Commission of Yugoslavia and Romania], 1963, 439188, 1-7.
[627] "Iduće godine početak radova na Đerdapskoj hidrocentrali?" [The construction of the Iron Gates Hydropower Plant starts next year?] *Borba* 28/85, 28.03.1963, 5; "Domaće fabrike se pripremaju za Đerdap," [Factories are ready for Iron Gates construction] *Borba* 28/339, 10.12.1963, 5; "Đerdap HE-Velikanka," [Iron Gates Hydropower Gigant] *Litostroj* 4/5 May 1963, 5; "Med obiskom romunske delegacije bodo podpisali sporazum o Đerdapu," [The Iron Gates Agreement to be signed during the Romanian visit] *Delo* 5/325, 26.11.1963, 1.

The remaining question before the conclusion of the agreement on the governmental level was the question of the new state border. The construction of the Iron Gates System included the locks, two hydroelectric power plants, the dam, and the reservoir lake, and the change in the environment was inevitable. Since the Iron Gates pass was located on the very border between Yugoslavia and Romania, this indicated that the new state border had to be drawn. In the initial meeting of the Technical section, the experts agreed that the future state border should stretch exactly along the middle of the dam. Yugoslav experts from the Demarcation Bureau agreed that Romania should be compensated for the territorial losses. Since the dam was not yet built, this served only as the initial agreement, and details would be finalized once the system was operational.[628]

The Belgrade meeting in March concluded with the most pressing matters being resolved. The Romanian Prime Minister, Ion Gheorghe Maurer, insisted that the official agreement should be signed by two state presidents in an official ceremony. Yugoslav delegates were not too keen to agree with this request and give the project such importance. The loudest opponent of this idea was Konstantin Popović, Vice President of Yugoslavia. He insisted that such agreements were usually signed by representatives of ministries and that Romania was trying to push their agenda by involving the highest representatives of the state.[629] On the other hand, Dej saw the official agreement signing as an opportunity to strengthen Romania's position in the Soviet Bloc. Although many Yugoslav high officials were against this, Tito decided to take part. He also saw an opportunity to make a ceremonial show for himself, and what better excuse than the formal inauguration of a project of such size as the Iron Gates.

Finally, in November 1963, a Romanian delegation led by Dej traveled to Belgrade. On November 30, 1963, Josip Broz Tito and Gheorghe Gheorghiu-Dej signed the official

[628] AY, 130, 616. Pitanje granične linije [The question of the border line], 1-5.
[629] Aleksandar Nenadović, *Razgovori sa Kočom Popović* [Conversations with Koča Popović] (Beograd, 1989), 51-55.

agreement for the construction of the Iron Gates Hydroelectric and Navigational System.[630] The agreement proposed that the four expert groups would construct the system. The first group would be in charge of the main object, which included the dam, hydropower plants (one on the Yugoslav side and one on the Romanian side of the Danube), and ship locks. The second group of experts was overseeing the construction of the new roads, piers, and docks. The third group of experts was tasked with the planning of protection measures for the water level increase and the construction of embankments, canals, and pumping stations. Finally, the fourth expert team was responsible for the construction of the reservoir lake.[631]

**The Hum of Progress: Initial Phase of Iron Gates Construction**

After many years of negotiations, setbacks, and tensions, in 1964, the construction of the Iron Gates officially began. The beginning of the work was marked by an international event and a ceremonial opening of the construction site attended by the highest state dignitaries from Yugoslavia and Romania, neighboring countries, and representatives of the Danube Commission.[632] In the presence of both presidents, a memorial plaque was ceremoniously revealed in Karataš, on the Yugoslav side of the facility.[633] The ceremony closed with the visit of the Yugoslav delegation to Turn Severin and the exchange of words of good faith, expressing the high hopes that the construction of the joint hydroelectric power plant will straighten the

[630] "Zajedno ćemo pretvoriti Đerdapski tesnac u bogat izvor električne energije, svetlosti i snage," [Together we will turn the Iron Gates stretch into a rich source of electricity, light and power] *Borba* 28/327, 26.11.1963, 1-3; "Đerdap -Gigant sedemletnega plana," [Iron Gates- Gigant of the seven-year plan] *Tedenska tribuna* 11/49, 10,12.1963, 1; "Podpisan sporazum o Đerdapu," [Iron Gates Agreement Signed] *Delo* 5/328, 1.12.1963, 1.

[631] AY, 837, I-2/21. Osnovni podaci i karakteristike sporazuma o Đerdapu [Characteristics and data of the Iron Gates agreement], 1-4.

[632] "Svečano otvoreni radovi na Đerdapu," [Ceremonial opening of the Iron Gates Construction] *Borba* 29/247, 8.09.1964, 1-4.

[633] "Predsednici Tito i Dež otkrivanjem spomen-ploča otvorili radove na izgradnji Đerdapskih hidrocentrala," [Presidents Tito and Dej opened the works on the construction of Iron Gates hydropower plants by unveiling a memorial plaque] *Politika*. 8.09.1964, 1-2.

friendship between Romania and Yugoslavia and prove to be a stable bridge between the West and East.[634]

With the completion of the ceremonial part of the beginning of construction, the work was continued by *Energoprojekt,* led by engineer Vukadin Đorđević, and ISPH, led by Vlad Foksha.[635] The Yugoslav engineers led by Đorđević would, in the next six years, receive undivided attention from the Yugoslav public. This particularly relates to Vukadin Đorđević, who, several days after the official start of the construction, took on a stage and would continue giving interviews and press releases almost on a daily basis regarding the construction.[636] His autonomy in making decisions regarding the construction and management of the various companies and groups of experts that took part in the building of the Iron Gates was evident, and that would stay unchanged until the beginning of the 1970s, when the technomanagers got into an unfavorable position and were dismissed or replaced in the entire Yugoslavia. In the 1960s, the engineers of the Iron Gates project exercised their autonomy in decision-making and were consulted first regarding all aspects of the project.



[634] "Susret na Đerdapu," [Meeting at the Iron Gates] *NIN* (Nedeljne infromativne novine), 6.09.1964, 1.
[635] AY, 837, I/2-21. Beleška o svečanom otvaranju Đerdapa [Note on the ceremonial opening of Iron Gates], 1-2.
[636] "Kolos na Đerdapu," [Colossus on the Iron Gates] *Borba* 29/245, 6.09.1964, 3.

*Figure 18. Yugoslav workers at the Iron Gates 1968 (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972))*

During the first phase of the construction and the preparation of the embankments, the Joint Commission continued with meetings with the aim of exchanging information and finding solutions for the remaining issues. Most of the disputes, again, revolved around financial issues. In 1964, the Yugoslav delegation complained that Romanians were not honoring the agreement to compensate for Yugoslav embarkment preparatory works. Namely, Yugoslav engineers had to improve the protection of the flow of the Velika Morava River. This investment, which was estimated to cost 20 million US dollars, was to be compensated in goods.[637] Romania failed to deliver the agreed amount of goods and insisted on raising prices, especially for petroleum products.

[637] DA MSPRS, PA, Rumunija, 144. Zapisnik o zasedanju komisije o privrednim pitanjima [Minutes of the session of the commission on economic issues], 1965, 444098, 2-7.

1964 was an important year for Romanian-Soviet relations. The information from the Yugoslav embassy in Bucharest shows that Yugoslavia was familiar with Romanian reluctance to be part of the CMEA rules for economic roles and that it was focused on developing the heavy industry. The focus on the development of heavy industry had already initiated clashes between Romania and the Soviet Union, and in 1964, Romanians expressed a strong desire to equip several industrial complexes with machinery imported from the West.[638]

Although Romania and the Soviet Union had many points of disagreement, I will not address them here, and I will keep my focus on the economic sphere. Romanian reluctance became more and more obvious to get in line with the Soviet plans for CMEA. The last attempt by Moscow to force the integration plans was presented in the 1964 article "Problems of Economic Development of Danube Regions in Romania, Bulgaria, and the USSR," presented by Professor Emil Borisovich Valev at Moscow University, calling for the economic integration of that area.[639] This so-called Valev Plan suggested that Romania should integrate territory that was responsible for almost 50% of its industrial and agricultural revenue.[640] It comes as no surprise that Romanians met this suggestion with discontent. In response, published in *Viaţa Economică*Romanian economist Costin Murgescu condemned this plan as an open attack on Romanian integrity.[641]

This clash finally resulted in the so-called April declaration.[642] One of the most important parts of the Declaration was the Romanian critique of economic pressures and exploitation inside CMEA. In relation to Yugoslav-Romanian relations, the Declaration took a more favorable attitude towards Yugoslavia and condemned the anti-Yugoslav propaganda and



[638] AY, 507, 107/1-29. "Beleške razgovora sa Dežom" [Notes on conversation with Dej], 28.03.1964, 23.
[639] Vlad Georgescu, *The Romanians: A History* (London, 1991), 245.
[640] Emanuel Copilaş, "Economical divergences and geopolitical opportunities. Romanian. Foreign Policy in the last period of Gheorghiu-Dej Regime," *Revista Română de Geografie Politică*, no. 2 (2010): 356-374.
[641] Costin Murgescu, "Concepţii potrivnice principiilor de bază ale relaţiilor economice dintre ţările socialiste," Viaţa Economică, nr. 23/5 iunie 1964: 5-27.
[642] Dan Cătănuş, "Declaraţia din aprilie 1964: context istoric şi ecou internaţional," *Arhivele Totalitarismului*, nr.3-4 (2006): 118–124.

sentiments after 1948.[643] The Yugoslav government took a positive attitude towards the Declaration but cautiously, keeping the option of being a negotiator between Romania and the Soviet Union. The Soviet response was also cautious. They did not acknowledge the accusations and commented that the Romanian dissatisfaction would pass in time.

After the finalization of the worker settlements in late July 1964, Yugoslav builders officially started the construction. In 1965, the financial disputes were focused on the costs of damming the Danube, and the works related to ensuring safe navigation continued should be a concern of the Yugoslav budget in the first phase of the construction. The Romanian delegates ultimately agreed that Yugoslav protests were reasonable and that the burden of those costs should be equally divided.[644]

With these disputes set aside, the Joint Commission finalized the main project.[645] The project proposed that the most important part of the construction - the damming of the Danube – should be carried out in three phases. The most important issue was the insurance of uninterrupted and safe navigation on the Danube during the diversion and impoundment phases.[646] The president of the Yugoslav HPP *Đerdap* company, Pantelija Jakovljević, suggested that, in addition to the studies done by individual expert groups, the Joint Commission should ask for the expert opinion of the Soviet *Gidroprojekt.*[647] After the consultations with *Gidroprojekt*, it was decided that the problem of safe navigation should be



643 DA MSPRS, PA, Rumunija, 185, 3. Beleška razgovora ambasadora Kneževića sa Emilom Georgeskuom, urednikom vojnog lista Apararea Patriei [Note of Ambassador Knežević's conversation with Emil Georgescu, editor of the military newspaper Apararea Patriei], 4.05.1964, 420181, 1-2.
644 DA MSPRS, PA, Rumunija, 89. Zapisnik sednice Mešovite komisije od 17.04.1965 [Minutes of the session of the Joint Commission from April 17, 1965], 44309, 3.
645 DA MSPRS, PA, Rumunija, 151. Zapisnik sednice Mešovite komisije od 16-22. jula.1966 [Minutes of the session of the Mixed Commission from July 16-22, 1966], 428194, 1-5.
646 DA MSPRS, PA, Rumunija, 151. Informacije o radovima koje će vršiti rumunska strana [Information about the works to be carried out by the Romanian side], 1966, 437163.
647 "Naukom protiv strahovanja," [With science against the fear] *Borba* 32/127, 16.04.1967, 14.

solved by merging the embarkments from the Romanian and Yugoslav sides into a single phase.[648]

During the dam construction, Yugoslav engineers had an opportunity to advance their knowledge in the construction of hydropower plants during their visit to Romanian hydropower plants.[649] The Romanian colleagues shared their knowledge and experience in building power plants on fast mountain fivers and inaccessible terrain, which Yugoslav engineers reported to be invaluable for the implementation of the Iron Gates system. Engineer Đorđević reported that the visit to the Vidraru hydropower plant and dam proved the most useful for finding solutions for damming the Danube.[650]

After the concerns about the issues in the embankment phase of construction were out of the way, engineers from *Energoprojekt* and ISPH continued the work. Relying on the final version of the project, the builders divided "the embankment phase" into two main phases. The first phase involved the construction of the embankments on both sides of the river. On the Yugoslav side of the Danube, the construction of embankments enabled the construction of non-overflow and overflow dams, a ship lock, and the hydropower plant. Additionally, this phase enabled safer regulation of the riverbed downstream of the dam. On the Romanian side, the first phase enabled the construction of the power plant and a second ship lock. The second phase entailed blocking the middle part of the Danube between the embankments built in the first phase.[651]



[648] DA MSPRS, PA, Rumunija, 151. Zapisnik sednice Mešovite komisije od 16-22. jula.1966 [Minutes of the session of the Mixed Commission from July 16-22, 1966], 1966, 428194, 1-6.
[649] "Izmedju Rumunije i Jugoslavije razvijaju se odnosi svestrane bratske saradnje," [Relations of all-round brotherly cooperation are developing between Romania and Yugoslavia] *Borba* 31/107, 19.04.1966, 2.
[650] AY, 850, 191. Izveštaj sa putovanja u Rumuniju. Poseta hidroelektranama Bikaz i Vidrar [Report from a trip to Romania. Visit to hydropower plants Bicaz and Vidraru], 11.08.1967, 1-3.
[651] *Hidroenergetski i plovidbeni sistem Đerdap. Kompletna studija* [Hydropower and navigation system Iron Gates. Complete study] (Niš, 1977), 41-55.

By the end of 1965, workers from the Yugoslav side of the Danube had finalized the construction of the embankment. With this step finished, the Danube was partially blocked.[652] On the Romanian side, things did not go that smoothly. The reason for delays was due to that part of the Danube being extremely dangerous. Since the flow of the Danube in that section proved to be much faster than the initial studies showed, Romanian engineers had to use unconventional methods to finalize their part of the embankment construction by using floating platforms similar to those used for oil rigs at sea.[653]

**Diplomacy by Design: The Iron Gates Project in the Context of Yugoslav-Soviet Relations**

Among the most important aspects of building the Iron Gates system was the procurement of electrical equipment and installations. Despite the disagreements on financing the construction of the project, both Yugoslavia and Romania agreed that they could not produce electrical equipment for such a project on their own and turned to the Soviet Union for help. Following the finalization of the embankment construction in 1965, representatives of both countries concluded individual agreements with the Soviet Union on the procurement of equipment and technical cooperation.[654]

However, the experience of concluding agreements with the Soviet Union proved to be different for Yugoslavia. Romania concluded the agreement without any delays on March 13, 1965. According to this agreement, Moscow vouched for the delivery of the installations and technical assistance for the construction of the Romanian part of the Iron Gates. The Soviet



[652] DA MSPRS, PA, Rumunija, 147. Izveštaj o napretku radova na jugosloveskoj strani [Report on the progress of works on the Yugoslav side], 1965, 440098, 2.
[653] AY, 850, 402. Izveštaj o kašnjenju radova rumunske strane [Report on the delay of the works of the Romanian side].11.06.1966, 1-5.
[654] "Ugovor Jugoslavije i SEV-a," [Agreement between Yugoslavia and CMEA] *Borba* 30/33, 4.02.1965, 2.

Union agreed to deliver to Romania three complete hydroelectric power aggregates of 178 MW each, construction-assembly installations, and equipment necessary for the proper functioning and maintenance of the aggregates.[655]

By contrast, the Yugoslav experience in concluding the agreements with the Soviet Union was not that straightforward. Yugoslavia's newly assumed role on the international stage as one of the leaders of the non-alignment movement did not fare well with the Soviets. Additionally, Tito still aspired to be an important factor in the Balkans, making Yugoslavia an unavoidable bridge between the East and West. The success of grandiose project such as the Iron Gates held many possibilities for exercising this kind of power. Despite these differences, the Soviet Union did not want to refuse the possibility of having some say in the construction of the Iron Gates. In his 1964 interview, engineer Pantelija Jakoviljević signaled that Yugoslavia intended to invite the Soviet Union to help with the construction:

"The investor [*Energoprojekt* and *Hidrogradnja*] sent their experts to Moscow to visit the International Construction Fair in order to become acquainted with the latest achievements of the construction mechanization industry in the Soviet Union."[656]

The negotiations on the procurement of the equipment from the Soviet Union were in the hands of the technomanagers – engineers and other experts- engaged in the construction of the Iron Gates. The involvement of high political officials and diplomats in any issue happened only when there were some issues that demanded an official note or intricate political negotiations. The negotiations with the Soviet Union support my claim that the technomanagers of the 1960s had a significant amount of autonomy in decision-making regarding the projects

[655] Radu Voinea, *30 de ani de la inaugurarea oficială a sistemului hidroenergetic şi de navigaţie Porţile de Fier I: 1972–2002, coord* (Bucharest, 2003), 11-15.
[656] "Poseta jugoslovenskih stručnjaka Sovjetskom Savezu," [Visit of Yugoslav experts to the Soviet Union] *Politika*, 7.09.1964, 2-3.

they were managing. After short deliberations, the Yugoslav-Soviet agreement was signed on March 22, 1965. Under this agreement, the Soviet Union agreed to deliver to Yugoslavia three hydroelectric power aggregates, necessary assembly parts, special tools, measuring instruments, and other materials needed for the assembly of an additional three aggregates. Additionally, the Soviets agreed to supply the Yugoslav builders with construction and assembly equipment and mechanization.

The agreement also provided that the Soviet experts would extend the advice and expertise of their engineers regarding the construction. Also, the contract stipulated that Soviet experts were responsible for aiding in the design and installation of the ship locks. Finally, the agreement implied that the Soviets would provide legal and technical documentation for the equipment of the hydroelectric power plant and ship locks and provide technical training and consultation with Yugoslav experts.[657] Yugoslav engineers welcomed the possibility of obtaining technical expertise from their Soviet colleagues. During the negotiation meeting, both sides agreed that the Soviet institutes would provide Yugoslav experts with the with the consultation needed for managing the water and ice on the Danube to ensure safe navigation during the construction period. The expertise help was agreed for the ship lock project, protection of the coastal area, hydromechanical equipment for the dam and the power plant, and familiarization of Yugoslav engineers on the issues of water tributary regulation, reinforcement construction, and installation of hydropower equipment.[658]

The Soviet Union granted Yugoslavia a loan of 23 million US dollars for the payment of hydroelectric units and parts to suppliers, Leningrad Metallurgical Institute, which produced the water turbines, and *Elektrosila* from Leningrad, which produced generators.[659] The experts

[657] AY, 850, 437. Pregovori energetskih stručnjaka SSSR i SFRJ, 11.03.1965. [Negotiations of energy experts of the USSR and SFRY], 3-15.
[658] AY, 850, 437. Razgovori energetskih stručnjaka o tehničkoj asistenciji 07.03.1965.[Talks of energy experts on technical assistance], 1-5.
[659] AY, 850, 437. Zajam za nabavku elektro opreme 21.03.1965. [Loan for the purchase of electrical equipment], 1-7.

from *Leingradostal* agreed on providing the blueprints for hydromechanical equipment, while *Gidroprojekt* participated in the conceptual design of the main auxiliary equipment and provided expert consultation on damming the Danube.[660]

Romania and Yugoslavia did not completely rely on Soviet assistance for the procurement of the equipment. Yugoslavia decided to acquire three 420 kV transformers produced by Yugoslav company *Rade Končar* and order one more from Swedish company ASEA.[661] The generators for the Yugoslav hydroelectric power plant were constructed according to the design of the *Rade Končar* with their own technical solutions.[662] The Yugoslav company *Litostroj* produced the complete electromechanical equipment for the pumping station for drainage and the equipment for the compressor station for low and high voltage.[663] The Yugoslav government extended the invitation to Romania and offered to design and produce the necessary equipment for their hydropower plant.[664]



[660] AY, 850, 437. Sporazum o tehničkoj pomoći 22.03.1965. [Agreement on technical assistance], 2-9.
[661] AY, 130, 616. Podaci o doprinosima jugoslovenske industrije izgradnji Đerdapa [Data on the contributions of the Yugoslav industry to the construction of Iron Gates], 1-5.
[662] Saša M. Mihailović ed., *Jugoslovensko građevinarstvo: Hidroenergetski i plovidbeni sistem Đerdap* [Yugoslav civil engineering: Hydropower and navigation system Iron Gates] (Beograd, 1972), 32-33.
[663] "Tovarna Litostroj" in *Neimari Đerdapa* [Builders of iron Gates] ed. Aleksandar Spasić (Niš, 1972), 133; "Sodelovanje Litostroja pri Đerdapu," [Litorstroj to take part in construction of the Iron Gates] *Litostroj* 5/11 November 1964, 1.
[664] DA MSPRS, PA, Rumunija, 140. Ugovori o dopremanju opreme Rumuniji [Agreements on the supply of equipment to Romania], 1967, 45381.

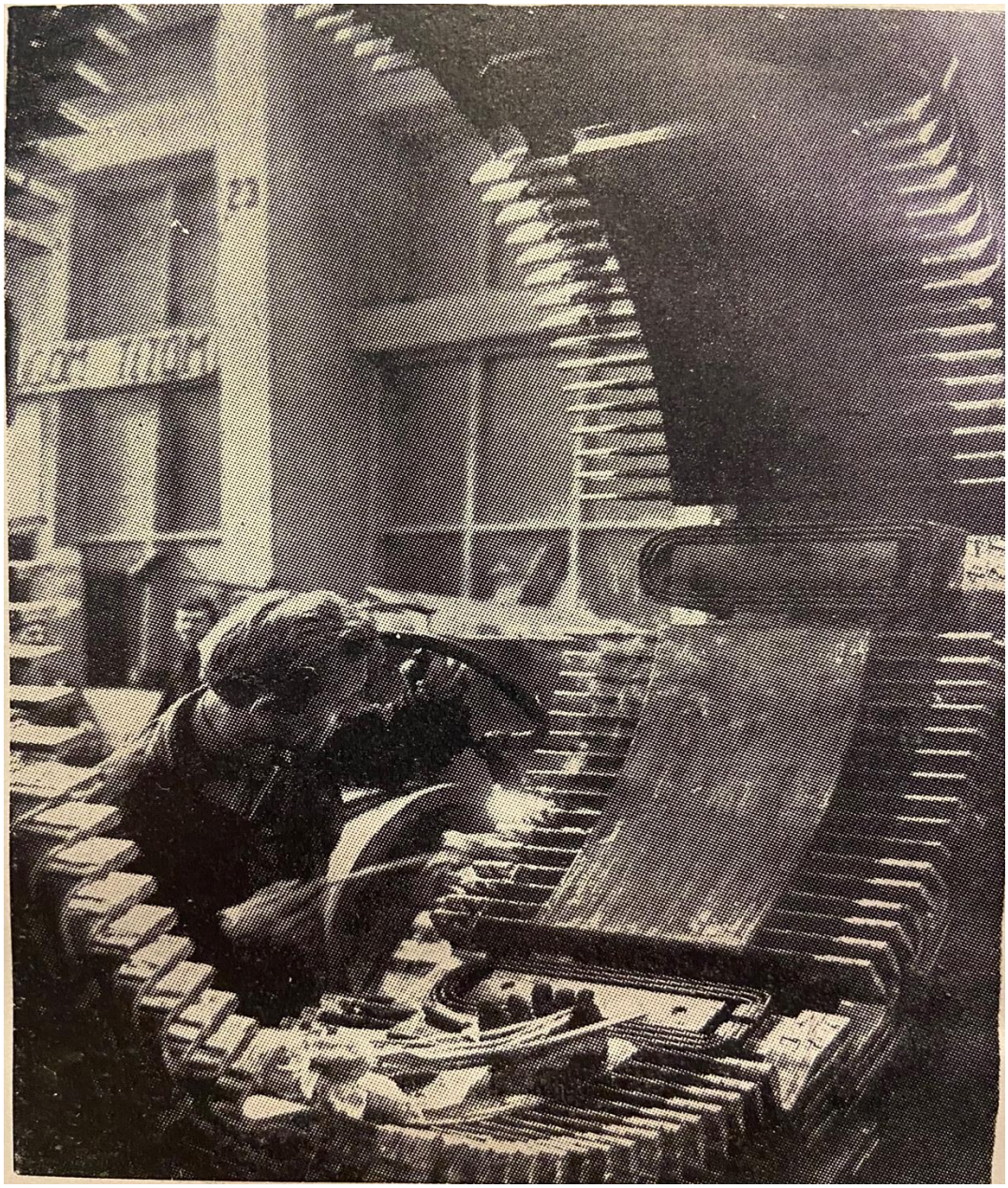

*Figure 19. Rade Končar promotional material for the Iron Gates transformers (Source: Aleksandar Spasić ed., Neimari Đerdpa (Niš, 1972))*

Interestingly, in all brochures of the Yugoslav hydroelectric construction and equipment companies produced during the construction of the Iron Gates, there was always a paragraph underlining the projects that these companies undertook in the countries of the Non-Alignment Movement. For example, in the 1972 brochure, in the section dedicated to the *Rade Končar* company, there was a detailed description of the construction project of HPP in Zambia, for which *Končar* produced four 167 MVA generators that were equipped with

thyristor systems capable of operating in a tropical climate.[665] This was part of the extensive Yugoslav propaganda to insert itself as the leading expert and provider of hydroelectric equipment and experts in the countries of the Global South. The potential of spreading influence with the help of electric infrastructure system builders was recognized since the establishment of the Non-Alignment movement, and Tito used it wisely. The construction of the Iron Gates proved to be a fruitful stage for the display of the accomplishments of Yugoslav industry and engineering.

**Danube Under Pressure: Overcoming Obstacles in Iron Gates Development**

In March 1965, Gheorghe Gheorghiu-Dej passed away from lung cancer.[666] The new Romanian leader, Nicolae Ceaușescu, continued the negotiations on building the Iron Gates. The undertaking of such a project proved to be more important to Ceaușescu than to his predecessor, as he showed more ambition and eagerness.[667] In a meeting between Tito and Ceaușescu in April 1966, both presidents exchanged assurances that further cooperation between Romania and Yugoslavia would result in the successful completion of the project.[668] In his speech during the Bucharest visit, Tito again emphasized the importance of building the Iron Gates for the economies and industries of both countries and as a "bridge of friendship" between the East and West.[669] In 1966, construction work on the Iron Gates continued and was mostly focused



665 "Rade Končar: Proizvodna i znavstvena organizacija" [Rade Končar: Production and scientific organization] in *Neimari Đerdapa* [Builders of Iron Gates], 123-132.
666 *Scânteia*, 19.03.1965, 1-2; "Titov venac položen na odar Deža," [Tito sent his condolences for Dejs' passing] *Borba* 30/81, 24.03.1965, 1.
667 "Predsednik Tito danas u odlazi u zvaničnu posetu Rumuniji," [President Tito is leaving for an official visit to Romania] *Politika*, 18.04.1966, 1-2.
668 "Poseta predsednika Tita Rumuniji," [President Tito visits Romania] *Borba* 31/107, 19.04.1966, 1; "Razgovori Tito-Čaušesku," [Talks between Tito and Ceausescu] *Politika*, 20.04.1966, 2-3.
669 AY, 837, I-2/28. Govor predsednika Tita na mitingu u Bukureštu [President Tito's speech at a rally in Bucharest], 1-3; "Tito i Čaušesku govorili na mitingu jugoslovensko-rumunskog prijateljstva," [Tito and Ceaușescu spoke at the Yugoslav-Romanian friendship rally] *Borba* 31/111, 23.04.1966, 1.

on the excavations for the foundations of the dam. In May 1966, the first cubic feet of concrete were ceremoniously installed in the foundation of the dam. Engineer Pantelija Jakovljević congratulated the builders but also said:

"The construction is going six months ahead and I would like to remind the equipment companies not to delay the delivery of equipment, especially the domestic companies"[670]

In 1967, both Yugoslavia and Romania undertook the project of resettlement of the population that lived in towns and villages destined to be flooded by the construction of the dam and reservoir lake. On the Yugoslav side, experts have estimated that there would be a submergence of land and settlements between the towns of Golubac and Kladovo. The towns of Tekija and Donji Milanovac were completely flooded, as were four surrounding villages. According to the draft investment plan, the construction of Iron Gates entailed the complete flooding of six settlements, as well as the relocation of about 8000 inhabitants, the demolition of over 2170 residential buildings, and the relocation of four cemeteries.[671]

By the same token, the flooding of this area also meant the loss of a significant part of the infrastructure: over 150 kilometers of low-voltage electrical network, telegraph and telephone network, water supply, and road network.[672] On the Romanian side of the Danube Orșova, Tufări, Jupalnic, Coramnic, Eşelniţa, Dubova, and Sviniţa were completely submurged. Similarly, as Yugoslav counter parts, some places were displaced close to old locations like Orșova, and some of the population had to move further away.[673]



[670] "Betoniranje brane počelo šest meseci pre roka," [Concreting of the dam started six months ahead of schedule] *Borba* 31/132, 16.05.1966, 1.
[671] Marinko Paunović, *Đerdap i Timočka Krajina*, 765-769.
[672] AY, 850, 457. Izveštaj o gubicima infrastrukturne mreže prilikom izgradnje Đerdapa [Report on the losses of the infrastructure network during the construction of Iron Gates],1-6.
[673] Remus Creţan, Thomas O'Brien, Claudia Ionela and Fabian Timofte, "Legacies of Displacement from the Iron Gates Hydroelectric Project," *Journal of Settlements and Spatial Planning*, vol. 14, no. 2. (2023): 67-77.

Understandably, the population on both the Yugoslav and Romanian sides of the Danube was not eager to move and abandon ancestral homes. The displacement of the population often follows large projects such as the Iron Gates. The displacement results not only in a change of geographical location and socioeconomic circumstance for the affected population but also in the loss of centuries-old practices and access to culturally significant ancestral places.[674]

The resistance to resettlement was present in all locations that were to be submerged, but the most resistance was among the small Turkish minority that lived on the island of Ada Kaleh.[675] Ada Kaleh was a very small island, just 1750 meters long and 500-600 square meters wide, but it had an incredibly rich history.[676] The people who lived on the island were the descendants of the Turkish population from the Ottoman Empire that remained there despite the turbulent history of the region. At the time of the displacement, according to the 1969 census, there were 680 people from 168 households.[677] The distinct climate, architecture, and customs of the islanders made Ada Kaleh one of the most popular tourist spots. In 1966, American novelist Toni Morrison visited the island. During her visits, she took a number of photographs and described the island:

"It was difficult to think that we were on Ada Kaleh in the middle of the Danube. All the trappings of the Cold War were forgotten - the military posts we were not allowed to photograph, and the travel regulations were put aside. Time was winding back to the Ada Kaleh of wonderful dreams."[678]

[674] Michael Cernea, "Impoverishment risks, risk management, and reconstruction: A model of population displacement and resettlement," in *UN Symposium on hydropower and sustainable development*, vol. 27 (Bejing, 2004), 1-4.
[675] Maria Iancu, *Between past, present and future: the displaced islanders of Ada Kaleh*. PhD diss., UCL (University College London, 2016).
[676] After the First World War Ada Kaleh became officially part of Romania.
[677] Iulia Cheşcâ, "Ada-Kaleh Turks fragments of history, culture and destiny," in *Turkey and Romania: A History of Partnership and Collaboratin in the Balkans* ed. Florentina Nitu, Cosmin Ionita, Metin Ünver and Özgur Kolçak (Istanbul, 2016), 575-585.
[678] Toni Morrison, "Lost in the Danube", Nonesuch Expeditions Features - Lost in the Danube -Ada Kaleh 1966." 2024. Nonesuchexpeditions.com. 2024. http://www.nonesuchexpeditions.com/nonesuch-features/Lost%20Danube/Ada%20Kaleh/ada%20kaleh.htm.

Despite the protests of the locals, the Romanian authorities were adamant that the island had to be submerged. In 1968, Romanian archeologists started the relocation of all important historical objects, including the famous Austrian fortress, cemetery, and valuable objects from the Ada Kaleh mosque. In 1968, filmmaker Liviu Nitu recorded the lives and surroundings of Ada Kaleh inhabitants before it was submerged.[679] The government offered to the local population to move to the nearby island Simian but many of them refused and moved to new Orsova, Bucharest, Constanta or to Turkey.[680] Many of the former residents of the island left testimonies on the trauma of living the ancestral land:

"The place where the island raised is still quite obvious. I saw a loating willow. And then I understood where it was, and I started to cry." (Neriman Mehmet, Constanța).[681]

The Yugoslav press also reported on the submergence of Ada Kaleh, stating that an important part of the history of the Danube would be lost and even organizing tourist trips to enjoy the island before it gets submerged.[682]



679 Liviu Nitu "Ultima primavera pa Ada Kaleh", YouTube, March 17, 2016, video, 10:46, https://www.youtube.com/watch?v=KMWYjnuSM5A

680 Adrian Crăciunescu, "To Move and Reconstruct Monuments–Conflicts with Authenticity and Integrity." *PLURAL. History. Culture. Society. Journal of History and Geography Department,„Ion Creangă" State Pedagogical University* 8, no. 1 (2020): 27-47.

681 Marian Tutui, *Ada-Kaleh or submerged Orient* (Bucharest, 2010): 175.

682 "Simfonija u klisuri," [Symphony in the Gorge] *Borba* 33/119 30.04.1968, 6; "Poslednji susret sa ostrvom Ada Kale," [The last encounter with the island of Ada Kale] *Borba* 33/245, 3.09.1968, 8; "Fetislam-Novo izletište," [Fetislam-a new tourist spot] *Borba* 34/174, 27.06.1969, 8.

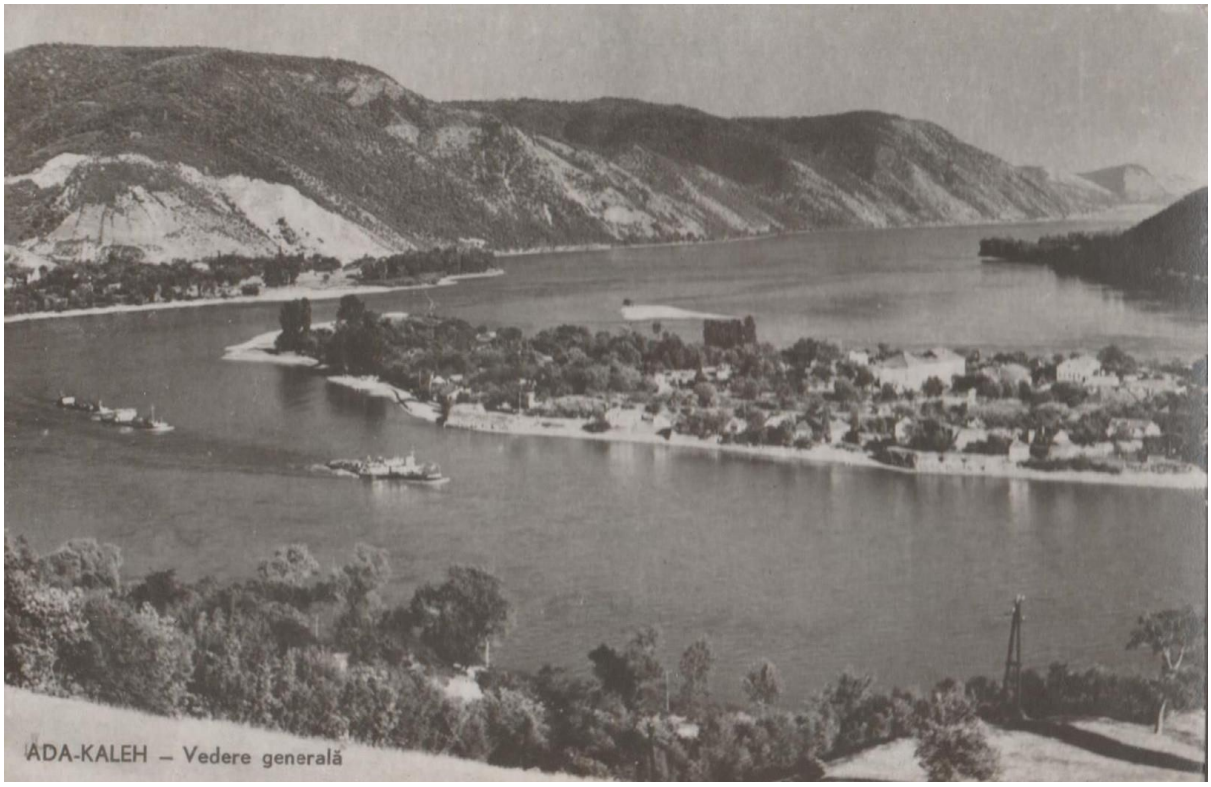


*Figure 20. Postcard from Ada Kaleh (Source: Alexander Christie-Miller, "Ada Kaleh: The Story of an Island," The White Revirew (2016))*

Yugoslavia too had issues with displacement of the population, but without major upheavals. The Yugoslav Academy of Sciences appointed Professor Branko Gavela, head of the Department of Archeology in the Faculty of Philosophy in Belgrade, to organize the protection of cultural and historical heritage spanning from the Neolithic era to the nineteenth century.[683] The most pressing issue at the time was the relocation of the Neolithic Starčevo culture and the archeological location of Lepenski vir.[684]



[683] Branko Gavela, *Iz dubine vekova* [Depth of the Centuries] (Zagreb: Tehnička knjiga, 1977), 35-41.
[684] Dušan Borić, "Lepenski Vir: geography and culture," in *Encyclopedia of global archaeology* ed. Claire Smith (Springer International Publishing, 2020), 6541-6549.

**Taming the Mighty Danube**

In June 1967, the Joint Commission had a meeting in order to polish up details in the Main Plan before moving forward with the second phase of construction. The issues were related to geological and morphological problems, but the experts agreed on corrections without opposing opinions. Additionally, the financial section also agreed on increasing costs to an additional 5 million US dollars because, in the end, they agreed that both power plants should be equipped with turbines with a better coefficient of production than originally planned.[685]

After the details of the Main Project were polished up, the builders could proceed with the most challenging task of the construction: damming the Danube. The damming started with Romanian workers building a temporary floating bridge and Yugoslavs installing the big concrete blocks in the preparation phase.[686] The middle part of the Danube, 279.5 meters wide, was divided by a combined vertical frontal system. Meeting at the middle of the river, Yugoslav builders covered 121.5 meters and Romanians the remaining 158 meters, and the damming of the Danube was finalized. The general construction plan stipulated that the completion of the dam would be completed in the period from July to September 1969, but the construction of the dam was finalized before the set date. The Yugoslav newspapers used this unexpected early date to promote the success of the Yugoslav builders and covered the event extensively.[687] In the article from August 11, 1969, the Yugoslav newspaper even reported the story of a Romanian worker who came to seek help from the Yugoslav doctors because he had a fever.



[685] DA MSPRS, PA, Rumunija, 140. Izveštaj o zasedanju sedme sednice Mešovite komisije [Report on the session of the seventh session of the Joint Commission],1967, 421018, 3-4.
[686] AY, 837, I-2/ 39, 40. Vesti o napretku radova na Đerdapu [News about the progress of works on the Iron Gates], 1-3.
[687] "Donava v novi strugi," [Danube in a new clothes] *Delo* 11/213, 6.08,1969, 1; "Dunav potpuno pregrađen," [Danube is fully dammed] *Borba* 34/232, 14.08.1969, 1.

When the doctor advised him to take rest, he refused, claiming that he must go back to work and "tame the mighty Danube."[688]

The damming of the Danube presented an opportunity for both Yugoslav and Romanian presidents for self-promotion. The meeting between the two presidents was followed by a ceremonial meeting in the middle of the dam and ceremonial happenings both in Yugoslavia and Romania.[689] This project was as important to Ceaușescu as it was to Tito, if not even more, as he strived to establish himself as one of the leading figures in the Soviet Bloc. During the meeting on the Romanian side of the Danube, Ceaușescu, for the first time, mentioned the possibility of building the Iron Gates II.[690]

Unknown to Ceaușescu on the domestic political stage of Yugoslavia, the question of financing the Iron Gates became one of the main issues of disagreement between the federal government and the Socialist Republic of Serbia, where the Iron Gates were geographically located. The other federal republics protested why they should bear the financial burden of a project that does not benefit them, while Serbia refused to finance the project on its own since it was not initially agreed upon. This clash foreshadowed the future tensions in Yugoslavia that would ultimately lead to the purge of liberals and technomanagers and the new constitution in 1974.[691] Because of this, Tito's response to Ceaușescu regarding the second Iron Gates project was:



688 "Đerdap šest meseci ranije!" [Iron Gates six months before the deadline] *Borba* 34/219, 11.08.1969, 1.
689 "Tito i Čaušesku razgovarali u Kladovu i Turn Severinu," [Tito and Ceaușescu met in Kladovo and Turnu Severin] *Borba* 34/260, 21.09.1969, 1-4; "Susret Tito-Čaušesku," [Tito-Ceausescu meeting] *Politika*, 21.09.1969, 1-2.
690 "Čaušesku: Želja za unapređenje saradnje svih zemalja," [ Ceaușescu: Desire to improve the cooperation of all countries] *Politika,* 22.09.1969, 1.
691 "Nekima Đerdap bode oči," [For some, Iron Gates stings their eyes] *Borba* 34/236, 28.08.1969, 4.

"My opinion is that Iron Gates II should be removed from agenda for now. Writing about it in Yugoslav newspapers would create more tensions between the republics, and we have enough of bad blood."[692]

Tito took advantage of an opportunity to visit the Iron Gates construction site and engage in talks with workers. In a meeting with the workers, Tito emphasized that the construction of the Iron Gates System was not just a matter of advancing the industry and economy but, more importantly, "a question of Yugoslav prestige," especially compared to the Romanian partners.[693] This PR stunt also had the goal of setting the stage for the reconning with the technomanagers, which took place next year. Tito walked among the workers, listening to their complaints, agreeing with them that the engineers, managers, and directors do not know the "real struggle" of the workers and that their work was impressive.[694] The Iron Gates project was the showcase stage for expanding political influence in the Global South via the critical infrastructure that Tito started to pursue at the beginning of the 1960s.

The final phase of construction, which began in 1970, included the assembly of hydromechanical equipment, the installation of turbines, and the electrical equipment. The first aggregate for the Yugoslav power plant arrived in February. During the spring, Yugoslav engineers focused on the installation of the big transformers bought in Belgium, for which they even had to construct special vehicles to be able to haul them to the construction site.[695] In late July 1970, the builders started filling the reservoir lake. Before that, according to the project, Yugoslav experts conducted extensive work to protect the coastal areas from water stagnation



[692] "Niko od nas u našoj socijalističkoj zajednici nije dovoljan sam sebi," [None of us in our socialist community is self-sufficient] *Politika*, 22.09.1969, 1-2.
[693] "Predsednik Tito otputovao na Đerdap," [President Tito travels to Iron Gates] *Politika*, 20.09.1969, 1-2.
[694] "Impresioniran sam svim onim što je sagrađeno," [I am impressed with everything that has been built] *Borba* 34/261, 22.09.1969, 1.
[695] "Instaliran transformator," [Transformer installed] *Politika*, 1.03.1970, 3.

in order to avoid harmful algae blooms, poor water quality, and other environmental degradation, particularly on the stretch from Golubac Fortress to the mouth of the Tisza River.

Also, to keep the reservoir lake filled with mud carried by the rivers flowing into the Danube, geological experts created eleven special pools where water can overflow and trap sediment before it reaches the reservoir lake.[696] The Yugoslav Youth Labor Movement was actively involved in the project of protecting the coastal area from the Yugoslav side of the Danube. In the period from 1967 to 1970, the Youth Brigades organized the work action Green Belt of the Iron Gates to construct parks, landscape the coast, and plant threes.[697]

The powering up and connecting of the Yugoslav Iron Gates hydropower plant was done at 1:40 a.m. on August 6, 1970.[698] The main engineer and director of the HPP Iron Gates (YU), Pantelija Jakovljević, gave an interview in which he emphasized that the Yugoslav engineers finished the work six months before the deadline. Interestingly, his tone in this interview was different from interviews from 1968. Namely, unlike 1968 interviews where he kept attention on the international negotiations and the achievements of the engineers, in the 1970 interview his praises were focused on the construction workers.[699] Possibly, Jakovljević was already aware of the storm that was approaching and picked up the hint of the narrative of technomanagers being the exploiters of the working class.

The Romanian hydroelectric power plant was put into production on August 15, 1970.[700] In the summer of 1970, Yugoslav engineers were also dedicated to finalizing the construction of the electric network. The *Dalekovod* company from Zagreb was tasked with



[696] AY, 130, 616/1. Podaci o zaštiti priobalnog područja Dunava [Reports on the protection of the coastal area of the Danube], 2-4.
[697] "Goranska varijanta dobrovoljnog rada," [The voluntary work] *Borba* 34/4, 6.01.1969, 4; "Do Gvozdenih Vrata," [To the Iron Gates] *Borba* 35/48, 19.02.1970, 17.
[698] "Potekla struja iz Đerdapa," [Iron Gates started producing electricity] *Borba* 48/214, 7.08.1970, 1.
[699] "Panta Jakoviljević, inženjer hrabrosti," [Panta Jakovljević, a courageous engineer] *Borba* 48/347, 20.12.1970, 11.
[700] "Potekla u rumunska struja," [Romanian Iron Gates system started producing the electricity] *Politika*, 16.08.1970, 6.

building the new 440 kV system. This was an important milestone for the development of the Yugoslav electric infrastructure because a transmission voltage of 440 kV was used for the first time in Yugoslavia, connecting the HPP Iron Gates and Belgrade.[701] Finally, in October, the Yugoslav ship lock started operating, and navigation on the Danube was resumed normally, with both ship locks being fully functional.[702]

The finalization of the construction was also marked by a nearly deadly accident. On November 21, 1970, in the late afternoon, the water entered the power plant and the dam on the Romanian side of the Danube.[703] The First Vice-Premier of Romania, Ilie Verded, urgently rushed to the scene and informed the Minister of Electric Power, Octavian Groza, of the seriousness of the damage. The news about the accident was reported by media outlets, and by sheer luck, the life losses were avoided.[704] However, the water rose to the thirty-meter level and caused considerable damage. This led to a temporary interruption of navigation on the Danube. The Joint Commission had an urgent meeting in Turnu Severin, where they accessed the state of the damage and reported that the level of the Danube was quickly lowered by six meters and that the damage to the power plants where water broke through was minimal.[705] The pumping of water from the flooded area was conducted in late November, and by December 4, 1970, the navigation continued as usual, and the first generator started producing



[701] *Hidroenergetski i plovidbeni sistem Đerdap. Kompletna studija*, 622-623; "Čitava zemlja u jednistvenoj mreži dalekovoda," [The entire country connected in one transmission network] *Borba* 48/301, 2.11.1970, 5.
[702] "Od danas Dunavom kroz jugoslovensku prevodnicu," [From today on the Danube through the Yugoslav lock] *Borba* 48/299, 31.10.1970, 1.
[703] "Dunav prodro u veliko gradilište brane," [The Danube penetrated the large construction site of the dam] *Borba* 48/323, 23.11.1970, 5.
[704] Policeman Mihajlo Bešević was the first to warn of the danger on the Yugoslav side of the dam. As soon as he noticed that water was breaking through the dam and entering the pit, he started firing his pistol into the air. This is how he drew the attention of the workers and saved many human lives. For this deed, he was awarded a plaque on Republic Day. (*Politika*, 22.11.1970, 2.)
[705] AY, 850, 401. Izveštaj sa vanrednog sastanka Mešovite komisije, 22.11.1970 [Report from the extraordinary meeting of the Joint Commission, November 22, 1970], 1-5.

electricity again.[706] This was followed by putting the second generator on the Yugoslav side into use only four days later.[707]

**Approaching the Finish Line: The Final Phase of Iron Gates Construction**

The construction progress stepped into the final phase at the beginning of 1971. Even though the accident from November 1970 briefly halted the works, builders quickly bounced back, and Dušan Gligorijević, a member of the Yugoslav Federal Government, reassured the public that "the recent accident will not jeopardize deadlines."[708] In early February, Yugoslav engineers successfully started up a third generator.[709] In March 1971, the Yugoslav side started a new rise of the lake level in order to provide the necessary power to start all six generators of the Yugoslav and Romanian hydroelectric power plants. At the end of March, on the Yugoslav side of the power plant, the builders installed the last part of the beam and crane supports. This connected the Yugoslav and Romanian parts of the power plant, which are located at the highest elevations of the complex.[710]

The installation and operation of the fourth generator in the Yugoslav power plant had special media coverage because it was the first generator of that size produced in domestic industry. On June 15, 1971, the 178 MV generator produced in the *Rade Končar* factory successfully started producing electricity. The director of HPP Iron Gates, Živa Topalov,



706 "Agregat ponovo u pogonu," [Generator in operation again] *Politika*, 4.12.1970, 5.
707 "Struja potekla iz drugog Đerdapskog agregata," [Second generator on the Iron Gates put into operation] *Politika*, 9.12.1970, 5; "Novih 170 megavata," [New 170 MW] *Borba* 48/336, 9.12.1970, 5.
708 "HE Đerdap na vreme," [HPP Iron Gates will be finished in time] *Borba* 49/52, 24.02.1971, 6.
709 "Proradio i treći agregat," [The third generator started working] *Politika*, 17.02.1971, 1-2.
710 "Nova sredstva za đerdapske dalekovode," [New funds for Iron Gates transmission lines] *Borba* 49/95, 8.04.1971, 4-5.

reported that "all generators installed so far gave excellent results."[711] During the summer, the bridge between Yugoslavia and Romania was finished and opened for automobile traffic.[712] The ceremonial opening of the hydroelectric and navigational systems at Iron Gates took place on May 16, 1972.[713] Two presidents, Tito and Ceaușescu, in the middle of the bridge, a new Yugoslav-Romanian border, ceremonially opened the Iron Gates system with a canon salute and fireworks shot from one hundred boats surrounding the dam.[714] After more than twenty years of negotiations and eight years of construction, the result of this great endeavor was a Yugoslav-Romanian hydroelectric power plant with a total power of 2100 MW and an average annual production of 10.3 billion kWh. The massiveness of the project is reflected in how big of a system Iron Gates actually was: it was 1270 meters long and over 72 meters high, with fourteen overflow fields with a total length of 441 meters; the left and right plans were each 214 meters long; two ship locks, each 53 meters wide and 310 meters long; and two non-overflow dams, one 117 meters and the other 186 meters long.[715]

The ceremony finished in Turnu Severin with an exchange of medals and plaques between government officials and the Iron Gates engineers, managers, and workers.[716] The ceremonial visit continued the next day with a new meeting of Yugoslav and Romanian representatives in Orșova. Here, both presidents again broached the topic of building another power plant. This time Tito was not dismissive of discussing this topic and gave Ceaușescu a



711 Rade Končar: Proizvodna i znavstvena organizacija" [Rade Končar: Production and scientific organization] in *Neimari Đerdapa* [Builders of Iron Gates],123-132.
712 "Novembarske nagrade," [November Awards] *Borba* 49/325, 25.11.1971, 11.
713 "Završena elektrana Đerdap," [Iron Gates power plant completed] *Politika*, 16.05.1972, 1.
714 "Susret na brani," [Meeting at the Dam] *Politika*, 17.05.1972, 1; "Đerdap most prijateljstva," [Iron Gates. The Friendship Bridge] *Borba* 51/134, 17.05.1972, 1-4.
715 *Hidroenergetski i plovidbeni sistem Đerdap. Kompletna studija*, 21-29.
716 "Groza i Milojević razmenili zdravice," [Groza and Milojević exchanged the salutes] *Borba* 51/34, 17.05.1972, 7.

positive attitude, adding that the topic of the new power plant can be discussed in future meetings.[717]

In line with showcasing the Iron Gates to the political leaders of the Global South, Tito organized in 1972 a visit by the president of the Central African Republic, Jean-Bédel Bokassa, to the Iron Gates and the *Energoprojekt Company,* which was in charge of the construction of not just the Iron Gates but many other critical infrastructures worldwide.[718]

**Integration of the Iron Gates into the Yugoslav Energy Infrastructure**

When the construction of the Iron Gates began in 1964, the total production of electricity in Yugoslavia was 14,2 billion kWh.[719] There were many skeptics in the Yugoslav electric power sector who doubted that the Iron Gates project would ever materialize. The doubts were in terms of whether it would not fit into the Yugoslav power system and whether Yugoslavia would be able to finance such a project. The Iron Gates construction surprisingly went without any major delays, and parts of the project were even finished before the deadlines. However, this was no coincidence. The main construction works on Iron Gates were entrusted to the engineers and builders of HPP Bajina Bašta and HPP Trebišnjica (part of the Yougelexport project).[720] Additionally, the experience that Yugoslav experts gained from visits to Romania, the Soviet Union, and the countries of the Global South advanced their knowledge and expertise, which was implemented in the construction of the Iron Gates.[721]



[717] "Još jedna elektrana," [Another plant] *Borba* 39/185, 8.07.1971, 5; "Tito I Čaušesku: Razgovori o saradnji i medjunarodnoj situaciji," [Tito and Ceausescu: Conversations on cooperation and the international situation] *Politika*, 18.05.1972, 1.
[718] "Tito i Bokasa potpisali saopštenje," [Tito and Bokassa signed the statement] *Borba* 51/124, 7.05.1972, 1.
[719] "Proizvodnja električne energije i opterećenje jugoslovenske mreže," [Electricity production and load on the Yugoslav grid] *Elektroprivreda* 16/6 (1964): 294-296.
[720] "HE Bajina Bašta," *Elektroprivreda* 19/3-4 (1966): 93-97.
[721] "Proizvodnja električne energije i opterećenje jugoslovenske mreže," [Electricity production and load on the Yugoslav grid] *Elektroprivreda*, 23/5-6 (1970): 232-236.

Simultaneously with the building of the Iron Gates System, the Yugoslav engineers were also developing the transmission line network. The result of this endeavor was two transmission lines, Iron Gates-Belgrade and Iron Gates-Bor. This greatly helped the development of the region between Belgrade and Bor, which was until then connected by 110 kV power lines to the Kostolac thermal power plant.[722] The construction of these transmission lines was of particular importance for the eastern and southeastern regions of the Federative Republic of Serbia. Until the construction of these transmission lines, these regions did not have any significant sources of electric energy, which had a negative impact on the safety and quality of supply to the region.[723]

Finally, the construction of a 440 kV transmission line was of great importance for the complete Yugoslav power system, especially in terms of the possibility of connection with neighboring countries and inclusion in European systems (UCPTE and CDO).[724] In the 1960s and beginning of the 1970s, Yugoslavia also took part in the construction of the SUDEL power ring, which connected the power systems of Yugoslavia, Austria, and Italy and, by extension, the UCPTE. The construction of the Iron Gates opened the possibility for Yugoslavia to consider negotiations about connecting with the CDO network. Many Yugoslav engineers strived to realize their ambition of becoming the bridge that would unite two big European electricity systems. However, in 1972, the downfall of technomanagers took away the attention of the experts from even suggesting such a demanding project.



[722] Miodrag Božinović, "Varijante rešenja razvoda 400 kV hidroelektrane Đerdap," [Variants of the solution for disconnection of the 400 kV Iron Gates hydroelectric power plant] *Elektroprivreda*, 20/1-2 (1967): 18-26.
[723] "Trećina struje otiče Dunavom," [The third of electricity supplied by Danube] *Borba* 51/161, 13.06.1972, 1-4.
[724] *Hidroenergetski i plovidbeni sistem Đerdap. Kompletna studija*, 313-351.

**Iron Gates II**

The first mention of the possibility of building a second power plant on the Danube started as early as 1969. As previously noted, during the 1969 meeting between Tito and Ceaușescu, the Romanian president presented a proposal on the possibilities of building a second power plant.[725] Tito did not show much interest in the proposal because of the tensions between the federal government and republics about the issue of financing the Iron Gates I project. The reforms happening on the federal level in Yugoslavia led to the decision that the federal government would stop financing capital investments, and that each republic should be responsible for the projects taking place on their territory. Obviously, this decision led to a clash between the federal government and the Republic of Serbia, as the financing of projects of such magnitude as Iron Gate initially was agreed to be financed on the federal level, and Serbia was not prepared to carry out the costs on their own.[726]

In the next two years, Yugoslavia gave positive signals to Romania that the Iron Gates II project could be discussed. In 1971, the Yugoslav Executive Council discussed the presentation of the studies conducted by the Joint Commission of Yugoslav and Romanian experts. In many respects, Yugoslav representatives found that the construction of Iron Gates II would be beneficial for Yugoslavia. The only opposition to the study made by the Romanian experts was that the initially suggested location for the power plants Radujevac-Gruia should be moved to Kusjak-Ostrovul Mare line.[727]

From the very beginning, the Yugoslav government stated that it was not interested in investing considerably in this project but was willing to support it by providing experts and workers for the construction. The Yugoslav Executive Council approved taking a loan from

[725] "Susret Tito-Čaušesku," [Tito-Ceausescu Meeting] *Politika*, 21.09.1969, 1.
[726] "Nove obale Dunava," [New shores of the Danube] *Borba* 34/140, 24.05.1969, 8.
[727] "Petnaest dunavskih jezera," [Fifteen Danubian lakes] *Borba* 51/277, 7.10.1972, 3.

Romania that would be paid in 23 years and with energy produced in the new power plant, distributing 85% to Romania and 15% to Yugoslavia.[728] The reason for this was the unwillingness of other republics, particularly Slovenia and Croatia, to invest in the construction of the power plant, which was unable to supply them with electricity.[729] Initially, Romania was against the Yugoslav suggestion for financing the project. This disagreement may have put strain on the negotiations regarding the Iron Gates II project because there was no mention of it during the 1973 meeting of Tito and Ceaușescu.[730]

The talks on the construction of the Iron Gates II continued during Tito's visit to Romania in 1974.[731] Tito confirmed that Yugoslavia approved the Iron Gates II project and that both governments should employ experts to start studies for the draft of the Iron Gates II power plants.[732] In the next two years Yugoslav and Romanian Joint Commission conducted the research and presented the final studies in 1976.[733] During Ceaușescu's visit to Yugoslavia in 1976, Yugoslavia and Romania signed a new agreement on building the Iron Gates II System.[734] The agreement stipulated that the new hydroelectric power plants would be built on the 863rd kilometer of the Danube and that each country would invest a minimum of 150 million US dollars.[735]

Compared with Iron Gates I, the second plant was considerably smaller. According to the main plan, a new facility consisted of two power plants, two overflow dams, and two ship



[728] AY, 837, I-2/57. Informacije o projektu Đerdap II [Information about Iron Gates II Project], 11.07.1970, 2-7.
[729] AY, 837, I-2/59. Beleške o razgovorima Tita i Čaušeska [Notes on Tito- Ceaușescu meeting], 10.07.1974, 1-3.
[730] "Razgovori Tito-Čaušesku," [Talks between Tito and Ceausescu] *Politika*, 16.07.1973, 1.
[731] "Tito srdačno i topolo sačekan u Bukureštu," [Tito welcomed in Bucharest] *Borba* 52/185, 9.07.1974, 1.
[732] AY, 837, I-2/59. Zajedničko saopštenje Tita i Čaušeska [Joint statement of Tito and Ceaușescu], 10.07.1974, 1.
[733] "Zgled prijateljskih stikov," [Friendly Views] *Delo* 18/212, 10.09.1976, 4; "Uskoro druga brana u Đerdapu," [Second dam soon to be on the Danube] *Borba* 55/251, 11.09.1976, 6.
[734] "Potvrda dobrih, prijateljskih odnosa," [Confirmation of friendly relations] *Borba* 55/251, 11.09.1976, 1.
[735] AY, 837, I-2/72. Informacije o sistemu Đerdap II [Report on Iron Gates II system], 1.

locks. The Iron Gates II plant, with sixteen generators of 27 MW each, had less than a quarter of the first project's capacity.[736] On December 3, 1977, in the presence of presidents Tito and Ceaușescu, government officials, and experts, the construction site for Iron Gates II was ceremonially opened.[737] In the same manner as the ceremony of the Iron Gates I opening, the presidents first met on the Yugoslav side of the Danube, where they revealed the memorial to Yugoslav-Romanian friendship, and continued the talks and exchange of pleasantries on the Romanian side.[738]

In the background of the Iron Gates II project, the relations between Romania and Yugoslavia were very different than at the beginning of the negotiations for the first project. Ceaușescu proved to be ambitious in achieving self-reliance in Romania and suppressing foreign influences. Already in the mid-1970s, Ceaușescu established his presence and relations with countries in the Middle East and the Global South. On the other hand, Tito already defined his politics of the "third way" in the framework of Non-Alignment movement. Yugoslavia continued spreading its influence in the countries of NAM and the wider Global South by providing help and expertise in the building of critical infrastructure. The company *Energoprojekt* was already an established entity in many African, South American, and Middle Eastern countries. Ceaușescu picked up on Tito's approach to spreading his influence and using the Iron Gates System as a display of power and possibilities.[739]

In 1976, there was mention of possible project cooperation for building Iron Gate III, but both delegations agreed that, at the time, such a new joint venture seemed unrealistic.[740] During the 1970s, Yugoslavia and Romania had their first serious quarrels related to the

[736] AY, 837, I-2/72. Informacije o sistemu Đerdap II [Report on Iron Gates II system], 2-5.
[737] "Počinje izgradnja druge brane na Đerdapu," [Beiginning of second dam construction] *Borba* 55/330, 3.12.1977, 1.
[738] "Otvoreni radovi na Đerdapu II," [Construction of Iron Gates II begins] *Politika*, 4.12.1977, 1.
[739] "Narodi sveta ne žele politiku imperijalizma i dominacije," [The peoples of the world do not want a policy of imperialism and domination] Politika, 5.12.1977, 1.
[740] "Usvojen idejni projekat Đerdapa 2," [Concept of the Iron Gates 2 was approved] *Borba* 55/257, 24.10.1976, 4.

maintenance and strict observance of the 50-50 rule of the Iron Gates System. The planners failed to foresee that during the period when the Danube would sink dramatically, one party could misuse the common reservoir by keeping energy production at its peak and consequently drawing water away from the other side. Such conflict occurred shortly after the opening of Iron Gates II, when, in the winter of 1985, the Yugoslav side accused the Romanian side of irresponsible use of the Danube.[741] Therefore, due to very unprecedented economic difficulties and spats over the use of the reservoir, talks about Iron Gates III were put on hold.[742]

The construction of the construction of the Iron Gates II project took place in two phases, similar to the Iron Gates I project but on a smaller scale. However, Yugoslav leader Josip Broz Tito did not live to see the opening of Iron Gates II in 1984, as he died in 1980.[743] However, the hydropower plants became fully operational only in 1985 in Yugoslavia and 1986 in Romania.[744]

**Conclusion**

The construction of the Iron Gates System had a long and rich history. The idea that emerged in the late nineteenth century encountered many obstacles and setbacks before materializing in 1972. The history of the Iron Gates construction reflects the dynamic politics of the countries involved in the plans for utilizing that stretch of the Danube: the Kingdom of Serbia, Austro-Hungary, Nazi Germany, Socialist Yugoslavia, and Romania. This chapter briefly addressed pre-1945 ideas, but the main focus stayed on the period of socialist Yugoslavia.



[741] "Mraz ne popušta," [The frost does not let up] *Borba* 63/12, 12.01.1985, 1.
[742] The talks on the possibilities of building Iron Gates III emerge every few years to this day; however, there is still no concrete plan for the realization of this project.
[743] "Umro drug Tito," [Comrade Tito died] *Borba* 58/122, 5.05.1980, 1-2.
[744] Čedomir Dragišić, "Gradnja hidroenergetskog i plovidbenog sistema Đerdap" [Construction of the Iron Gates Hydro and Navigational System] in *Đerdap. Hidroelektrana na velikoj reci* [Iron Gates. Hydropower plant on the mighty river] ed. Lazar Bečejac (Beograd, 2002), 27-47.

Iron Gates also makes an interesting case for studying the use of critical infrastructure for political goals and ambition. In this chapter, the main focus remained on the Yugoslav point of view and the development of Yugoslav political ambitions, for which the Iron Gates project was used. Yet, the project also involved Romania, and although I did not analyze in detail the Romanian side of the project, I addressed important actors, and the political and ideological functions Iron Gates had for Romanian politics and their standing inside the Soviet Bloc.

Rarely do historians have an opportunity to analyze how political decisions and changes in ideology affect the development of infrastructure, as is reflected in the history of the building of the Iron Gates Hydro and Navigational System. The case studies in previous chapters focused on projects tied to transitional periods in Yugoslav politics, each reflecting and being used for specific ambitions. However, the Iron Gates project encapsulated all these periods. The Iron Gates project offers a perfect opportunity to follow Yugoslav political ambitions from the afterwar Soviet influence to the Tito-Stalin split in 1948 and Yugoslavia's opening towards Western Europe and the United States, to Tito's redefinition of Yugoslav ideology and the emergence of the Non-Alignment Movement as an alternative to the Cold War divides.

Large-scale hydropower projects are multifaceted. In the first place, they solve practical problems by improving river management and navigation, providing electricity, and provide water for the irrigation systems. Conversely, large-scale projects exist in a technopolitical environment, which gives them political, ideological, and economic functions. In the context of communist regimes, large-scale infrastructural projects such as the Iron Gates were fundamental political and ideological tools for promoting state power, technological expertise, and economic progress. The Iron Gates project had different uses and roles in Yugoslav and Romanian politics.

Yet, both countries used this project in the context of the *cult of scale* to promote the success of their regimes and improve their political standing on the international stage. The

construction of the Iron Gates system was a project that involved many actors. Unlike other case studies, the Iron Gates project was the only one that involved the participation of high government officials and both presidents. In the case of Yougelexport and SUDEL, the main actors were technomanagers, guiding the projects and making all the critical decisions. Although Yugoslav technomanagers took part in the negotiations and decision-making during the construction of the Iron Gates, the final say was in the hands of high government officials or Tito himself.

The political use of strategic position Yugoslavia had between the East and West was a constant in Yugoslav political agenda following the expulsion from the Cominform. The role of the Iron Gates in the political ambitions of Yugoslavia had different roles in different periods of its construction. Initially, Tito saw an opportunity for rapprochement with the Soviet Union. Although Stalin was out of the picture, Tito kept his vigilant attitude. Ultimately, Tito's refusal to compromise Yugoslav autonomy led to the second Yugoslav-Soviet clash. This also affected the context in which the Iron Gates project continued to be developed. After 1958 tensions with the Soviets, Tito was sure more than ever that forging a "third way" and the establishment of the Non-Alignment Movement should be defining factors for the future of Yugoslav foreign policy. This does not mean that Yugoslavia passes up an opportunity to keep the position of a potential bridge between the East and West, and the construction of the SUDEL ring and the Iron Gates System support this claim. Tito might have "escaped from Europe," but the role of the unavoidable factor in the Balkans never left the Yugoslav political arena, and the use of critical infrastructure as a political tool only gained global attention.

On the other hand, the Iron Gates project had different uses for the Romanians. The main aspiration Dej and Ceaușescu had for the Iron Gates project was to ensure greater autonomy and self-reliance for Romania. The position of Romania in CMEA and the Soviet Bloc in general had a rich history, which I did not address in detail, but some crucial moments

had to be mentioned because of their deep influence on Yugoslav-Romanian relations and the construction of the Iron Gates. From the beginning, Romania showed much more eagerness and willingness to finalize the Iron Gates project. The reason for this was that, starting in the early 1960s, Romania showed reluctance to sacrifice its aspirations for the development of heavy industry, despite the protests from the Soviet Union and CMEA. Yugoslav diplomats quickly picked up on these fears and employed the strategy of techno-scientific promises in order to prolong the negotiations and eventually achieve better conditions for financing the project. The pressure from the Soviet Union to insert itself in the project peaked in 1962 when Bulgaria tried to become part of the project. This attempt was met with great disapproval from Romania. On the other hand, Yugoslavia used the tensions to additionally prolong the negotiations but ultimately also refused the Bulgarians to take part in the construction.

This chapter also addresses in what ways Tito used this project, not just as a political tool for establishing Yugoslavia as a bridge between East and West but also as a showcase for representatives from the Global South. The strategy proved successful, and Yugoslav engineers became one of the main actors in the development of electric, road, and railway infrastructure in Africa, Asia, and South America. In this chapter, I mentioned several visits from the leaders from Asia and Africa visiting the Iron Gates construction site and the *Energoproject* company, the leading constructor of the project.

The construction of the Iron Gates involved coordination between numerous actors and organizations. The Iron Gates was not only a hydroelectric project. The construction of the Iron Gates dam solved the centuries-long problem of dangerous navigation on that stretch of the Danube. In this context, the Iron Gates project falls in line with other projects that solved many problems at once, like the TVA system in the United States.

The construction of the dam and the reservoir lake also influenced and changed the environment on that part of the Danube. Consequently, because of this project, the local

population from both the Yugoslav and Romanian sides had to be displaced, and their ancestral homes flooded. Ada Kaleh, a small island on the Danube between Yugoslavia and Romania, which was the home of one of the last Turkish populations in this part of the Balkans, was among the locations that were lost forever after the Iron Gates construction. The loss of Ada Kaleh (and other cities and villages) exemplifies the sacrifices that had to be made for the construction of the Iron Gates. The displacement of the population was not reflected only in a change of geographical location but also in the loss of centuries-old cultural practices and access to significant ancestral places. Although both Romania and Yugoslavia significantly invested in the relocation of the most important historical monuments, like the Ada Kaleh fortress or the Lepenski Vir Neolithic site, some locations only have significance when in constant use by the local population.

Finally, the chapter briefly addresses the negotiations and construction of the Iron Gates II. In the Yugoslav context, this project did not have the same political significance or use as Iron Gates I. Even in the media, the second project was mentioned only occasionally, while the Iron Gates I had almost daily coverage. The project was more important for Romania than the ambitions that Ceaușescu had. For example, the inauguration of the start of the construction of Iron Gates II was mentioned briefly in a small column, despite the presence of both presidents, unlike the opening ceremony from 1963.[745]

The construction of Iron Gates I and II tells the story of the vast web of political actors, engineering decisions, and international relations that all came into play in order to realize such a challenging and massive project. The construction of large dams on major rivers provides national governments with an opportunity not only to alleviate their economies but also to exercise power through their infrastructure. Swyngedonw points out that in such cases, the state

[745] "Počinje izgradnja druge brane na Đerdapu," [Start of the construction of a new dam on the Danube] *Borba* 55/330, 3.12.1977, 1.

emerges as a "master socioenvironmental engineer."[746] Therefore, both Iron Gates projects were not only influenced by the political ideologies of their builders but also by their economic progress and engineering achievements. The importance of this project for the European electric infrastructure is present to this day, especially for the Southeastern European region.



[746] Swyngedeow, "Technonatural revolutions," 20-28.

# Chapter 6: Regional Energy Integration: The Role of BALKEL in the Balkan Peninsula

"Balkan is getting closer to Europe!" proudly announced on the front page of the Yugoslav daily newspaper *Borba* in October 1990.[747] The article praised the work of the BALKEL group dedicated to integrating the electric grids of the Balkan countries and the technical cooperation between them during the conference held in Tirana. If the reader would only concentrate on that article, it would seem that Yugoslavia was doing great, unified, and in good relations with neighbors, especially Albania. Yet, the same page reveals the shadow of the civil war, which would soon envelop the entire Yugoslavia and change the map of the Balkans forever.

The beginning of the 1980s was under the shadow of the death of Josip Broz Tito, a Yugoslav icon. The problems that were being pushed under the rug were starting to catch up, creating a complex political situation. While the period after Tito's death saw increased liberalization and decentralization, this did not lead to any form of prosperity. Yugoslavia's delicate balance of power was under strain. One could even say that the economic death preceded the political death of Yugoslavia. Economically, Yugoslavia was facing severe difficulties. The self-management system was successful in facilitating rapid industrialization and economic growth in the 1950s and 1960s. As we saw in previous chapters, this also allowed the rise of technomanagers, which consequently led the country to lean towards social democracy. The growing autonomy of the technocrats ultimately leads to their being persecuted by the state. The Yugoslav debt of 1.4 billion dollars (1966) grew to nearly 20 billion dollars (1980), and in the 1980s it was slightly reduced. The new loans were taken under increasingly unfavorable conditions. High inflation, increasing foreign debt, and economic stagnation only

[747] "Balkan sve bliže Evropi!" [Balkan is getting closer to Europe!] *Borba* 69/300, 26.10.1990, 1.

deepened the existing problems and increased tensions between the republics. This led to calls for greater autonomy, or even independence, among the republics.[748]

Yugoslavia's federal structure was a political way to give an equal chance to independent interests among ethnic groups; however, by the late 1980s, this balance was clearly eroded. The republics' nationalist movements challenged the unity of the federation. In Slovenia and Croatia, support for nationalists grew as a result of their striving for greater autonomy or outright independence. These movements were met with resistance from the Serbian leadership, particularly under the influence of Slobodan Milošević. Milošević promoted a united Yugoslavia, but with Serbian hegemony.[749]

Ethnic tensions were further deepened by historical grudges and contemporary political rhetoric. The memories of the Second World War crimes and the effects of inter-ethnic violence to stir the population to dehumanize members of other ethnic groups. This period experienced a surge in ethnic conflicts, particularly in Kosovo, where Albanian majority demanded greater rights and autonomy, leading to a harsh response by Serbian authorities.[750]

The political landscape in Yugoslavia was also shaped by geopolitical transitions. The weakening of the Soviet Union's hold on Eastern Europe and the increasing push for democratization across the region presented both an opportunity and a challenge for Yugoslavia. On the one hand, there was hope that the conditions would be favorable for establishing democracy and the expansion of political rights, while on the other hand, there was a widespread fear that these developments would lead to the faster disintegration of the federation.



[748] Viachaslau Yarashevich and Yuliya Karneyeva, "Economic Reasons for the Break-up of Yugoslavia," *Communist and Post-Communist Studies* 46, no. 2 (2013): 263–73.
[749] Lenard J. Cohen, *Broken bonds: Yugoslavia's disintegration and Balkan politics in transition* (Routledge, 2018), 31-33.
[750] Steven L. Burg, *Conflict and cohesion in socialist Yugoslavia: Political decision making since 1966*. Vol. 510 (Princeton University Press, 2014), 127.

This chapter follows a short but important case study dedicated to the interconnection of the Balkan countries. The political landscape of the Cold War dictated the development of the Balkans. Many scholars today still debate whether there were "Balkans" in the Cold War era, while others argue that the Cold War actually started in the Balkans.[751] The tendencies and cooperation in the Balkans during the period this thesis covered were multifaceted. There were several initiatives for political alliances or cooperation in the Balkans. This chapter will open with a brief overview of the attempts at integration in the Balkans during the Cold War period, keeping the focus on technical cooperation. The BALKEL project was an ambitious attempt to unify the Balkan electric network, which unfortunately did not materialize because of the Yugoslav civil war. The archival sources are also scarce, and the limitations of this chapter lie in the fact that I was not able to visit the archives of the other participating countries.

The interesting peculiarity of the BALKEL case was also that the political use of the electric infrastructure was more important for domestic tensions than potential foreign ambitions. The main actors in realizing the BALKEL project in Yugoslavia were the representatives of the Serbian branch of JUGEL. The technomanagers that emerged in 1980s Yugoslavia (or more precisely, Serbia) were completely different from the technomanagers from the 1950s and 1960s. The glances of the technocrats focused on national interests could be seen in the case of SUDEL, because the Slovenian technomanagers were dedicated more to Slovenian interests than to Yugoslav ambitions. In the case of BALKEL this primacy was in the hands of the Serbian representatives, expressing the growing Serbian hegemony tendencies.

Finally, the chapter briefly addresses in which ways the civil war influenced the once integrated Yugoslav electric power grid that was divided among new independent republics,



[751] John O. Iatrides, "Greece and the Birth of Containment: An American Perspective," in *The Balkans in the Cold War. Security, Conflict and Cooperation in the Contemporary World* ed. Svetozar Rajak et al. (London: Palgrave Macmillan, 2017), 3-28.

coming back to the full circle in the opening paragraph of the thesis with the conflict between Serbia and Kosovo.

**Collaboration in the Balkans: Integration Efforts During the Cold War Era**

The idea of interconnecting the Balkan region has been present since 1945. However, the political circumstances dictated the way in which these efforts were pursued. In the period between 1945 and 1948, Yugoslav leader Josip Broz Tito aspired to create the Balkan Federation, but under Yugoslav leadership. After the Tito-Stalin split, the situation changed, and Yugoslavia sought alliances in the West. In response to the growing Soviet influence after Stalin's death in 1953, the Balkan countries established military alliance between Yugoslavia, Greece, and Turkey. The Balkan pact was short-lived and fell apart in 1955 because of Tito's growing fears of United States pressure, his striving to forge a new political path, and the Greek-Turkish disputes over Cyprus.[752]

The period between the 1950s and the 1970s was not marked by significant multilateral cooperation between Balkan countries. The only initiatives calling for cooperation in the Balkan framework were the occasional meetings of the architects and engineers and the experts for developing tourism.[753]

In mid-1970s, on the initiative of Greek Prime Minister, Konstantionos Karamanlis, in February 1976, in Athens was organized the Conference of Government experts for economic and technical cooperation attended by the representatives from Yugoslavia, Greece, Bulgaria, Romania and Turkey.[754] The Albanian representatives were invited but refused to attend. This

[752] Peter Vukman, "The Balkan Pact, 1953-58: An analysis of Yugoslav-Greek-Turkish Relations based on British Archival Sources," *Études sur la Région Méditerranéenne* 22 (2013): 25-35.
[753] Sune Bechmann Pedersen and Elitza Stanoeva, "Tourism Diplomacy in Cold War Europe: Symbolic Gestures, Cultural Exchange and Human Rights," *Contemporary European History* (2024): 1-17.
[754] Aurel Braun, *Small-State Security in the Balkans* (London: Palgrave Macmillan, 1983), 28-78.

response from Albania was not surprising given the politics of extreme self-isolation Albania was exercising in that period. The meeting was characterized with great skepticism by the attendees due to the many political disputes between the Balkan countries that were still unresolved. However, the meeting provided a platform for the experts in agriculture, hydraulics, energy, and transport sectors to exchange ideas and offer possible paths of cooperation. The next meetings of this group in 1979 (Ankara) and 1981 (Sofia) were dedicated to cooperation in the development of transport and telecommunications.[755]

In a 1982 meeting in Bucharest, the representatives discussed for the first time the possibility of interlinking the electricity networks into a unified Balkan power grid. Additionally, the Bucharest meeting touched upon the possibility of trade and cooperation in the sector. The Albanian representatives joined the initiative at the 1987 meeting in Sofia, which was dedicated to ecological concerns.[756] While technical cooperation strived, political multilateral cooperation had to wait until 1988. On the initiative of Yugoslav representatives in Belgrade, the first meeting of the Balkan Ministers of Foreign Affairs was organized, attended by Romania, Bulgaria, Greece, Turkey, and Albania.[757] The second conference in October 1990 in Tirana was dedicated to the negotiations on the development and improvement of the electric network and energy protection of Balkan countries, where the representatives of the power utilities sector and ministries first started negotiating the possibility of establishing BALKEL.[758]



[755] Radovan Vukadinović, "Balkan Cooperation: Realities and Prospects," in *The Volatile powder keg: Balkan security after the Cold War* edited by Stephen Larrabee (American University Press, 1994), 289-295.
[756] "Za mirni Balkan," [For Peaceful Balkans] *Borba* 66/156, 5.06.1987, 4.
[757] Raif Dizdarević, *Od smrti Tita do smrti Jugoslavije. Svjedočenja* [From the death of Tito to the death of Yugoslavia. Testimonials] (Sarajevo, 2000), 148-160; "Bez raketa se lakše diše," [It is easier to breathe without rockets] *Borba* 66/282, 9.10.1987, 8.
[758] Duško Lopandić, *Inicijative i oblici multilateralne saradnje u jugoistočnoj Evropi. Jugoistočna Evropa 2000: Pogled iz Srbije* [Initiatives and forms of multilateral cooperation in Southeast Europe. Southeastern Europe 2000: View from Serbia] (Beograd: Stubovi kulture, 1999, 53-54.

By the end of the 1980s, Yugoslavia had interconnected with all Balkan countries and synchronized with the UCPTE system. Shortly after officially becoming a member of the UCPTE network, Yugoslavia continued to pursue the role of a bridge between the two big European networks. Therefore, in 1987, Yugoslavia concluded an agreement on the purchase of electricity from Czechoslovakia to Yugoslavia, which would transit through Austria and Hungary.[759] In 1988, cooperation with Italy was expanded in the sector of creating joint electricity reserves and additional electricity exports from Yugoslavia to Italy.[760] In 1988, Yugoslavia concluded an agreement with Bulgaria allowing the transit of electricity from Bulgaria to Switzerland via the Yugoslav link. For this transit arrangement, Yugoslavia was reassured that if anything happened, it would be compensated from the energy reserves of the USSR or Turkey.[761]

However, in 1991, Yugoslavia would fall off the platform of this rich and intensive cooperation for the next few years. The cooperation continued after the civil war, but in a different framework and with the new independent republics of former Yugoslavia.

**Balkan Interconnection Committee**

After Albania connected with Greece, and in that way with the SUDEL connection, the possibilities for more concrete cooperation within the Balkan region were finally met. The idea of posing Yugoslavia as a bridge in HVDC interconnection between the UCPTE and CDO network, beside the SUDEL project, took the form of a program within the UNECE, the so-



[759] AY, 850, 403. Saradnja izmedju jugoslovenske i čehoslovačke elektroprivrede [Cooperation between the Yugoslav and Czechoslovak electricity companies], 12.11.1987, 1-4.
[760] AY, 850, 403. "Sporazum izmedju ENEL i JUGEL za formiranje reserve" [Agreement between ENEL and JUGEL for the formation of a reserve], 1.10.1989, 1-11.
[761] AY, 850, 403. "Izveštaj o vodjenim pregovorima izmedju predstavnika JUGEL i asocijacije ENERGETIKA Bugarske" [Report on the negotiations between representatives of JUGEL and the ENERGETIKA association, Bulgaria], 4.04.1988, 1-2.

called Balkan Projects (Coordinating Committee for Balkan Countries Interconnection Development), established in June 1975. The main idea behind this initiative was to interconnect the Balkan region, mainly through Yugoslavia, because of its unique geographical position. However, this proved challenging due to the political factors at the beginning of the 1970s. But by the end of the 1970s, the situation was starting to change.[762]

The SUDEL connection was fully operational, and the Iron Gates project was finalized, proving that cooperation with both the East and West Blocs was possible via Yugoslavia. In the same sense, the situation in Yugoslavia was changing, especially after the death of Josip Broz Tito. During the 1980s, the Committee facilitated interchanges of electricity trade between the Balkan countries, but without some long-term goals to establish interconnection within the Balkan region. Furthermore, Albania remained mainly isolated within the Balkan, not only in the energy sector but in general. This changed after the death of Enver Hoxha. The first step towards Albanian integration within the Balkan energy sector was interconnection with Greece and, via that link, with SUDEL. In 1989, Albania was also included in the Balkan Interconnection Coordination Committee. With the inclusion of Albania, after more than ten years since the establishment of the Committee, all Balkan countries were present within the Balkan project.[763]

Interestingly, by the end of the 1970s, one of the main topics of the Balkan Interconnection Committee was concern about the negative effects of coal consumption on the environment.[764] Mainly, the representatives from the Balkan countries were concerned with the CO2 emissions and extensive usage of coal for the powering up of the thermal powerplants. Moreover, it was emphasized that the negative effects of coal are already proven, and that the



[762] Lagendijk, *Electrifying Europe,* 196.
[763] Elez Biberaj, "Albania at the Crossroads," *Problems of Communism* 40 (1991): 1-3.
[764] AY, 850, 403. "Odlomak materijala za IX sednicu ZJE – Program aktivnosti na polju medjunarodne saradnje" [Excerpt of material for the 9th session of the ZJE - Program of activities in the field of international cooperation], 1982, 1-3.

Balkans have favorable conditions for exploiting hydroelectric energy, which is not only a better option environmentally but also cheaper.[765]

In 1975, JUGEL presented a study on the possible course of the interconnection of the Balkan countries. Summarizing the work of the Balkan Interconnection Coordination Committee, conclusions were drawn that reliable and economical operation of the Balkan countries systems can be achieved by coordinating different types of energy production, using the complementarity of different hydrological conditions, and sharing the burden in periods of uncertainty among participating systems. Under the auspices of the UNECE, representatives of Bulgaria, Greece, Poland, Romania, Turkey, the USSR, and Yugoslavia agreed to undertake the preparation of studies related to the development of interconnections in the power systems of the Balkan countries.

The main objective of these studies was to determine the effects of the superposition of the load curve, the reduction of gaps in power plants, the possibilities of energy export and import, and most importantly, the possibilities of parallel operation of power systems in order to achieve a satisfactory solution from the technical aspect. The studies were conducted from 1975 to 1977, and in 1978, the committee concluded that the first phase of the studies was satisfactory, resulting in a detailed financial proposition. In 1978, at the meeting of the Committee in Athens, the second phase was initiated. The second phase proved successful as well and resulted in establishing transmission lines between Bulgaria and Greece and Bulgaria and Yugoslavia.[766]

The work of the Committee was greatly helped by the representatives of UNECE and CMEA, especially for providing the necessary support for the technical aspects and



[765] AY, 850, 403. “Sastanak Balkanskog komiteta u Budimpešti” [Meeting of the Balkan Committee in Budapest], 10.12.1977, 1-10.
[766] AY, 850, 403. Završni izveštaj za prvu i drugu fazu studija o interkonekciji elektroenergetskih sistema Balkanskih zemalja [Final report for the first and second phase of studies on the interconnection of power systems of the Balkan countries], 1980, 1-13.

specializations of the Balkan countries' representatives, for which purposes in 1978 and 1979 were organized study trips to West Germany, Sweden, and Denmark.[767] The engineers from the representative countries had the opportunity to visit the factories and attend the specialized seminars to expand their knowledge on contemporary technological advances in electricity distribution and transmission.

In a 1979 meeting in Baia Mare, Romania, Yugoslavia reported on the challenges that Balkan countries may encounter in establishing parallel operations with UCPTE and CDO/IPS. Keeping in mind that in 1979, Yugoslavia and Greece were interconnected with the UCPTE network, while Romania, Bulgaria, and Turkey were connected with the CDO/IPS, the study concluded that the best technical solution was to first focus on making connections between these countries, thus laying the foundation for considering connecting two major European networks. Since at the time there was no synchronous parallel operation between the two European interconnections, it was technically impossible to connect them into synchronous parallel operation via the power systems of the Balkan countries.

The problems of interconnecting UCPTE and CDO/IPS, aside from political issues, were also challenging in technical aspects. The first difference was in frequency control and stability, even though both networks operated at 50 Hz. This issue was mostly due to different approaches to management styles. UCPTE allowed a more decentralized approach, while CDO/IPS had a centralized dispatch system. The challenge of achieving stable synchronization between these two networks would require stable frequency management. The second technical challenge was the different voltage levels and grid infrastructure. The proposed solutions of HVDC links in order to overcome these technical issues proved to be technically complex and costly, and the Balkan countries still could not facilitate projects of that size at the time.



[767] AY, 850, 403. Izveštaji o stručnim ekskurzijama Balkanske komisije [Reports on professional excursions of the Balkan Commission], 1980, 1-5.

Therefore, the proposed solution was to integrate the Balkan grid and only then consider bridging two power grids.[768] A Yugoslav study suggested that the only possibility was synchronous connection through large back-to-back converter plants. Furthermore, the two possible locations for such plants were the 400 kV transmission line Niš-Sofia and the 400 kV transmission line Blagoevgrad-Thessalonica.[769]

**The BALKEL Project: The Unfulfilled Dream of Balkan Energy Integration**

The tendencies toward closer cooperation between the Balkan countries found common negotiating ground within the UCPTE and SUDEL groups, especially after the interconnection of Albania and Greece. In May of 1990, the representatives of the energy ministries of Balkan countries (Yugoslavia, Romania, Turkey, Greece, Bulgaria, and Albania) met in Tirana, where they discussed the possibilities of creating an association of Balkan countries similar to SUDEL with the idea of interconnecting the Balkan region with the goal of coordinating energy exchanges and possible imports and exports of electricity.

The initiative was positively welcomed, and the representatives agreed that for the next meeting, the working group should be tasked with drafting the statute of the committee of power systems of the Balkan countries, BALKEL. The initial meeting provided a platform for the ministers to discuss pressing issues in the energy sector. The ministers of participating countries underlined that the economic progress of the Balkan countries as well as their industrial potential offered opportunities to deepen industrial, technical, and scientific



[768] Falk Flade, "The Role of the Council for Mutual Economic Assistance in the Construction of the Transnational Electricity Grid Mir," *Comparativ: Leipziger Beiträge zur Universalgeschichte und Vergleichenden Gesellschaftsforschung* 27 (2017): 48-52.
[769] AY, 850, 403. Tehnički problemi vezani za paralelan pogon prenosnih mreža Balkanskih zemalja sa prenosnim mrežama zemalja UCPTE i CMEA [Technical problems related to the parallel operation of the transmission networks of the Balkan countries with the transmission networks of the UCPTE and CMEA countries], 1979, 25-26.

cooperation in the energy sector. They agreed on studying the possibilities of improving bilateral and multilateral cooperation in energy sector planning and implementation of energy projects, as well as conservation and rational use of energy. Furthermore, ministers emphasized that the Balkan countries should cooperate in the implementation of technology to reduce SO2 and NO emissions.[770]

The working group was established at the next meeting in July 1990, held in Ohrid, Yugoslavia. At this meeting, the participating countries - Yugoslavia, Bulgaria, Romania, Greece, Turkey, and Albania - agreed on establishing cooperation in the development and interconnection of their respective electric networks in the Balkans. Furthermore, it was agreed that the respective countries would all provide assistance and members for the working group that would draft the Statute and precisely define the obligations and goals of the BALKEL.[771] In the available documents of the Yugoslav delegation, there was a visible hegemony of the engineers and managers of the Serbian branch of JUGEL. The new class of technomanagers, emerging around Slobodan Milošević, had little to do with the technomanagers from the previous decades. The exclusion of the representatives from other Yugoslav republics could also be seen as their disinterest in Yugoslav interests, which they saw as equal to Serbian interests.

With the aim of further improving and developing the mutual cooperation of the Electric Power systems of the Balkan countries and in keeping with the recommendations adopted at the meeting of the Balkan countries Ministers of Energy held in Tirana in May 1990, the authorities in charge of the electric power systems of the Balkan countries have founded the Balkan Countries Electric Power Systems Committee, replacing the existing Committee for Coordination of Development of Balkan Electric Power Systems interconnections.[772] Member

[770] AY, 850, 403. Meeting of the Balkan countries power systems representatives, May 1990, 1-15.
[771] AY, 850, 403. Sastanak predstavnika elektroprivrednih preduzeća Balkanskih zemalja u Ohridu [Meeting of representatives of electrical companies of the Balkan countries in Ohrid], 29.07.1990, 1.
[772] "Sustići Evropu," [Catch up with Europe] *Borba* 69/299, 25.10.1990, 1.

states agreed that BALKEL would not be a state nor supranational organization but a professional organization for the coordination of operative collaboration between the electric power systems of the Balkan countries. Having in mind technical and technological possibilities as well as the interests concerning the respective electric power systems of the participating countries, it was decided that the Committee would deal with the coordination of joint operations with special emphasis on several aspects.

Firstly, BALKEL was dedicated to the further improvement of joint parallel-synchronous operation, or direct operation, and cooperation between the Balkan countries. In this sense, participating countries were especially interested in the mutual exchange of electricity and the most efficient utilization of available facilities for the production and transmission of electricity among them. The mutual purchase and sale of electricity and establishing and utilizing the joint power and energy reserves of participating Balkan countries was one of the important aspects of establishing BALKEL, especially because in previous periods the exchanges were limited or non-existent.[773]

The BALKEL group, inspired by the successful cooperation of SUDEL member countries, aimed to establish the necessary conditions for the realization of electricity transit between the electric power systems of the Balkan countries, taking into account the technical and technological capabilities as well as the energy and economic interests of the participating countries. Furthermore, BALKEL Group concentrated on further linking the electric power systems of the Balkan countries with the aim of increasing possibilities for the transmission and exchange of electricity and joint operation with the West European interconnection UCPTE through the Yugoslav electric power system in parallel-synchronous operation and through the Greek electric power system in parallel-asynchronous operation. Finally, BALKEL members

[773] AY, 850, 403. Narcrt Statuta BALKEL sa dodatkom definisanih ciljeva udruženja [Outline of the BALKEL Statute with the addition of the defined goals of the association], 1.08.1990, 1-3.

strived towards the improvement of mutual cooperation in the other areas of operation, development, and functioning of electric power systems, as well as the exchange of technical experiences and knowledge in the fields of energy and economy and data dedicated to the production and transmission of electricity.[774]

In November 1990, in Ankara, the representatives of Yugoslavia, Turkey, Romania, Bulgaria, Greece, and Albania agreed on the establishment of the joint body and unanimously accepted the suggested statute and goals.[775] Despite the enthusiasm and successful initial studies, the political turmoil that would enclose the Balkans at the beginning of 1990 was stalling progress. The studies and solutions presented in Ankara in 1990 were put on hold as Yugoslavia was plunging into the civil war. From the documents available after November 1990, it is clear that the focus on the development of electric infrastructure lost momentum in August 1991, and the documents that are available for the period between 1991 and 1995 are scarce and mostly focused on the damage that the civil war brought to the Yugoslav interconnected network.

**War-Torn Wires: The Collapse of Yugoslavia's Electrical Network**

The civil war in Yugoslavia was intertwined with ethnic conflicts, political fragmentation, and overall destruction. The electric infrastructure faced severe challenges in this chaos, becoming the target to destroy in combat conflict between the conflicting republics. The breakup that began in 1991 led to the emergence of independent republics, and the conflict that ensued resulted in the fragmentation of the electric grid. Each Yugoslav republic had already

[774] AY, 850, 403. Correspondence between Lazar Ljubiša, Yugoslav minister of Energy and Muhittin Babalioglu, General Manager of Turkish Electrical Authority. 3305/3. September-November 1990.
[775] AY, 850, 403. Održavanje Osnivačke sednice BALKEL-a u Ankari [Holding of BALKEL Founding Session in Ankara], 29.11.1990, 1-2.

established federal electric systems in 1950, but the integrated Yugoslav grid was managed centrally from Belgrade. With the escalation of hostilities among republics, electric infrastructure was one of the first targets during the military operations. Transmission lines, power plants, and other electric infrastructure were often destroyed either strategically or coincidentally during the bombings and artillery shelling.[776]

This led to widespread blackouts and energy shortages.[777] The republic that suffered the most damage and disruptions was Bosnia and Herzegovina. The war devastated much of the infrastructure, which was already modest compared to Serbia, Croatia, and Slovenia. The electric network of Bosnia and Herzegovina was completely devastated during the war. The major hydroelectric plants on the Neretva River were severely damaged, and transmission lines all over the country were frequently cut and, by the end of the civil war, almost completely gone. Sarajevo, the capital of Bosnia and Herzegovina, was under siege for 1425 days, during which it was bombarded almost daily.[778]

Croatia also saw significant damage to the electric grid in Slavonia, with Vukovar being the most devastated. However, Croatia managed, by the mid-1990s, to repair much of the infrastructure and successfully establish energy independence.[779]

The first republic to declare independence was Slovenia. The war conflicts circumvented Slovenia, and the electric infrastructure remained intact. This allowed Slovenian engineers to achieve a smoother transition and reach energy independence. Slovenia quickly integrated into the European electricity network and power market, providing stable electricity supply to the country. On the other hand, Macedonia, which was largely spared from direct



[776] "Videl sam, kako je Bosna vedno bolj krvavela," [I saw how Bosnia always bled more] Novi List 41/1826, 16.04.1992, 3; "Žestoki sukobi na Sklenskom ratištu," [Fierce clashes on the Sklen battlefield] *Borba* 18.01.1993, 2.
[777] "Električna mreža u fronclama," [Electrical network in the disarray] *Borba* 69/321, 17.11.1993, 3.
[778] Slivija Jestrovic, "Sarajevo: A World City Under Siege," in *Performance and the Global City* ed. D.J. Hopkins and Kim Sloga (London: Palgrave Macmillan UK, 2013), 202-222.
[779] Jasna Dragović-Soso, "Why did Yugoslavia disintegrate? An overview of contending explanations," in *State collapse in South-Eastern Europe: New perspectives on Yugoslavia's disintegration* ed. Lenard Cohen and Jasna Dragović-Soso (Purdue University Press, 2008), 1-39.

conflicts, faced indirect challenges. Being one of the peripheral republics, Macedonia did not develop an electric power grid. The breakdown of the unified power grid meant that Macedonia had to quickly develop an independent energy structure. Since 1945, at the first conference of electricity experts, Macedonia has complained of being neglected as a possible location for key infrastructural projects. This meant that in the electricity sector, Macedonia largely depended on imports from Serbia because of very limited domestic instability.[780]

Finally, the electric infrastructure of Serbia and Montenegro also avoided the big devastation of the civil war. However, NATO bombings in 1999 during the Kosovo conflict targeted key infrastructure in Yugoslavia (Serbia and Montenegro), including electric facilities, causing widespread disruptions in energy distribution.

The post-war recovery varied from one republic to another. The main factors in the reconstruction of devastated infrastructure were foreign funds and investments. With significant international support, Bosnia and Herzegovina undertook extensive reconstruction of the damaged electric infrastructure. Croatia focused on investing in modernizing the electric grid and pursuing energy independence and resilience. On the other hand, Serbia faced a prolonged recovery due to being under an embargo from 1992 to 1999 and due to the damages sustained during the NATO bombing in 1999.[781] In time, Serbia managed to restore and upgrade its power system.

On the international level, the efforts that BALKEL started in 1990 were paused and only renewed in 1996 and 1997, depending on the level of involvement of newly formed republics. In 1993 and 1994, Yugoslav (Serbia and Montenegro) representatives had limited contacts with the representatives of the UCPTE and only composed several, very brief, reports regarding mostly the damages of the war activities and possible negotiations between newly

[780] "Preživljavanje na crno," [Nearly surviving] *Borba* 74/92, 1.04.1996, 8.
[781] "Stradanja i patnje civilnog stanovništva," [Sufferings of the civilian population] *Borba* 78/146, 25.06.1999, 3.

established republics. Due to the civil war, UCPTE temporarily detached the Yugoslav republics because of numerous disruptions in the grid. The international bodies and experts took an active role in reestablishing the parallel work between the new republic's power systems, and in February 1995, representatives of the UCPTE presided over the interconnection of Bosnia and Herzegovina with the connected systems of Serbia, Montenegro, and Macedonia.[782]

**Conclusion**

After Tito's death in 1980, Yugoslavia took on a different political course, which was reflected in major decisions regarding the development of electric infrastructure. The beginning of the decade started optimistically due to decentralization and liberalization. However, in the background, there were burning economic problems and ethnic tensions between the Yugoslav federal republics.

The Yugoslav politics of the 1980s and early 1990s revealed all the problems that existed since before 1945 and were ignored for the sake of delicate balance. At the same time, the last decade of Yugoslavia saw some of the most intensive cooperation between the Balkan countries, which is often overlooked by scholars. The role of critical electric infrastructure was one of those initiatives, reflecting the broader political and economic crises of Yugoslavia and the Balkans in the 1980s.

There was no extensive cooperation between Balkan countries during the Cold War era, but that changed in 1976 on the initiative of Greece. After the initial meeting in Athens, the

[782] AY, 850, 428. Izveštaj o zajedničkom paralelnom radu elektroenergetskih sistema Srbije, Crne Gore, Makedonije, dela elektroenergetskog sistema bivše Bosne i Hercegovine pod zaštiom UN i auspicijama UCPTE [Report on the joint parallel operation of the electric power systems of Serbia, Montenegro, Macedonia, part of the electric power system of the former Bosnia and Herzegovina under the protection of the UN and the auspices of UCPTE], 1995, 1-5.

representatives of Greece, Yugoslavia, Bulgaria, Romania, Turkey, and, from 1987, Albania, continued meeting almost every year, developing rich technical cooperation that ultimately led to negotiations on establishing the BALKEL initiative. The development and interconnection of the Yugoslav electric power system with two European interconnections were the result of the SUDEL ring project and the Iron Gates project. At the same time, under the auspices of UNECE, representatives of Balkan countries found a platform for the exchange of expertise and discussion with the establishment of the Balkan Committee for Coordination of Interconnection of Power Systems (Balkan Project).

The strain between the Yugoslav republics was present before, but in the 1980s, it became very apparent. The decisions to build important critical infrastructural projects in richer, northern republics, namely Slovenia, Croatia, and Serbia, have already been the reason for dissatisfaction and tension since 1945. The disputes were related not just to electric infrastructure but to road and railway infrastructure as well.[783] Already in 1945, Macedonia and Montenegro complained that the plan for the construction of hydroelectric and thermal power plants completely dropped these two republics from the Five-Year Plan. This trend only continued in the decades that followed and resulted in the less developed infrastructures of other republics and their dependency on the energy sector. Macedonia and Montenegro depended on Serbia, and Bosnia and Herzegovina on Croatia.

The political discord manifested itself in different energy policies and investment strategies across the republics. For instance, Slovenia and Croatia invested heavily in modernizing their electric infrastructure to support industrial development in hopes of attracting foreign investors. In contrast, economically weaker republics like Macedonia and Bosnia and Herzegovina struggled to maintain their aging electric infrastructure and had little to no support from the federal government to invest in either development or maintenance.

[783] Pozharliev, *The Road to Socialism*, 221-231.

The BALKEL project was inspired by the success of the SUDEL project. After over a decade of successful and rich cooperation, Balkan countries – Yugoslavia, Romania, Bulgaria, Greece, Albania, and Turkey established in 1990 a study group called the called the Balkan Countries Electric Power Systems Committee (BALKEL).

From the beginning, it was obvious that Yugoslavia in BALKEL equaled Serbia because the representatives appearing in meetings were the engineers and managers from the Serbian branch of JUGEL. The reason for this could be twofold. Serbia was starting to exercise hegemony before, but after Tito's death and the emergence of Slobodan Milošević, these tendencies became even more apparent. The technomanagers that emerged in the 1980s had little to do with those from previous decades, and while they had certain autonomy in decision-making, the interests they were pursuing were enveloped in the growing national ambitions of individual republics. On the other hand, the representatives of JUGEL in other republics, particularly Slovenia and Croatia, did not show much interest in being part of the Yugoslav initiatives, pursuing more autonomy for their republics. After the 1989 constitution amendments, stripping the provinces Kosovo and Vojvodina of representation in the federal government only confirmed the fears of other republics that Serbia was pursuing complete hegemony.[784]

The work of BALKEL was short-lived, as in 1991 Yugoslavia plunged into civil war, resulting in the dissolution of the former state into the new five republics: Slovenia, Croatia, Bosnia and Herzegovina, Macedonia, and Yugoslavia (Serbia and Montenegro). As the political situation deteriorated and the war broke out, the electric infrastructure became a strategic target. The electric infrastructure was often targeted by military operations, especially in Croatia and Bosnia and Herzegovina. Finally, the disintegration of Yugoslavia and the subsequent

[784] Robert M. Hayden, "Constitutional events in Yugoslavia, 1988–90: From federation to confederation and paralysis;" *NOTES* 6, no. 1 (1990): 4-64.

establishment of new national borders led to the fragmentation of the once-integrated Yugoslav electric grid. After the civil war, newly independent states were faced with the task of rebuilding and reconfiguring their energy systems, aspiring to eventually achieve self-sufficiency and not be dependent on other former republics. This leads us back to the beginning, pointing out that although the former republics have their respective energy systems today, they are still interdependent, and that electrical infrastructure still proves to be an efficient political tool, as was the case between Serbia and Kosovo.

# Conclusion

The main objective of this dissertation was to analyze the political and ideological uses of electric infrastructure in Yugoslavia. The theoretical premise was that the construction of electric infrastructure projects in a cross-border and international framework was a powerful political tool that Yugoslavia used to pursue political ambitions not just in Europe but also globally. Some of the questions I raised in the introduction chapter are: What role did political ideology play in electric infrastructure projects in Yugoslavia from 1945 to the early 1990s? In what ways did electric infrastructure and the realization of cross-border and international projects reflect the political and economic ambitions of Yugoslavia? How did Yugoslavia's non-aligned status influence the realization of electric infrastructure projects in relation to the East-West divide? How did and to what extent did internal conflicts within Yugoslavia influence decisions related to cross-border and international electric infrastructure projects? To what extent did the geopolitics of the Cold War shape Yugoslavia's critical infrastructure projects, especially in relation to neighboring countries? And, finally, to what extent does this study contribute to and challenge existing knowledge on socialist Yugoslavia?

There were three major ways in which Yugoslavia tried to assert political dominance using the critical infrastructure. Firstly, Yugoslavia always had ambitions to establish itself as a dominant force in the Balkans. Secondly, after 1948, the position of being in between the two conflicting blocs provided Yugoslavia with the platform of being the bridge between the East and West. And finally, after 1962, the non-aligned platform opened new possibilities for Yugoslavia to achieve global influence, resulting in the use of the critical infrastructure as a showcase for the newfound partners from Asia, Africa, and South America. Domestically, the decisions about where the critical infrastructure was going to be constructed deeply affected the trajectory of Yugoslav domestic politics and tensions between the federal republics. The

problem of disproportion in the economic and infrastructural development between Yugoslav republics existed before 1945. The decisions on where the critical electric infrastructure projects would be located just deepened the divisive line between the more and less developed republics. The case studies analyzed in this thesis also reveal not just tensions between center and periphery but also tensions between privileged republics, in this case Serbia, Croatia, and Slovenia.

**Between Moscow and Belgrade**

After the Second World War, Yugoslavia emerged as a communist country under the strong influence of the Soviet Union. However, unlike other communist countries under Soviet influence, Yugoslavia's revolution was autochthonous, and Josip Broz Tito exercised a significant amount of autonomy. Following the Soviet example, Yugoslavia embraced the planning economy model and placed great importance on rebuilding and developing the industry. Having the modest electric infrastructure from before 1945, Yugoslavia focused on developing the electric infrastructure that could support heavy industry production. Already in 1946, there were the first disagreements and discontents in relations with the Soviet Union. The development of the first electrification plan in Yugoslavia reveals the timeline of fractures in Yugoslav-Soviet relations.

Soon after the exchange of friendly gestures and promises of mutual help, the Soviet promises remained just that: promises. Yugoslav experts were met with disappointment that the Soviets would send their experts to help develop the extensive network of hydroelectric power plants needed for the revival of the Yugoslav economy and industry. The equipment that was promised never arrived, and, on top of that, even the equipment that was purchased and fully

paid for was never delivered. This clashed with Tito's plans to achieve economic autarky in Yugoslavia.

Simultaneously with the rebuilding of the country, Tito had already, during the war, set his ambition of enlarging the Yugoslav territory. Encouraged by the emergence of the winning side of the war, Yugoslavia expressed hope of expanding Yugoslav territory and openly expressed ambitions in claiming the territories of Trieste, Carinthia, and, most importantly, Albania. The electric infrastructure played an important role in achieving this ambition. The clams on Trieste and Carinthia proved unsuccessful due to the obstruction from the Allied power and the Soviet Union.

The situation with ambitions toward Albania was different. The historiography related to the issue of Yugoslav ambitions in Albania has different approaches. Serbian historiography often has a tendency to paint the period between 1945 and 1948 in light of treacherous Albanians and naïve and well-intended Yugoslavs, thus completely ignoring the broader picture and accessing the historical analysis with the contemporary issues at hand. Yugoslav ambitions in Albania were already analyzed from many different angles, and my aim was to add to the existing literature by approaching the topic from the point of view of electric infrastructure.

My clam is that Tito replicated the Soviet pattern in hopes of achieving economic autarky, and Albania was an important part of this plan. The ambitions towards Albania were also in line with the greater picture of the Balkan federation in which Yugoslavia would hold primacy. However, I would argue that although Tito was engaged in negotiations regarding the Balkan federation, it was not his priority and would come into play only after Albania got fully integrated into the Yugoslav state. Yugoslavia's grip on Albania came in many forms. My focus was on the actions of the Joint Albanian-Yugoslav Electrification Company. The idea of joint companies was also borrowed from the Soviet example. The analysis of the Joint Electrification Company reveals that Yugoslavia made most of its decisions independently and that their

attitude towards the Albanian experts was often dismissive and arrogant. The limitation of this study lies in the fact that I did not have a chance to analyze the archival material from the Albanian side and that the conclusions I drew were based on the Yugoslav documentation.

Ultimately, Yugoslavia did not achieve the final goal of incorporating Albania as one of the federal republics. The Yugoslav ambitions did not escape the attention of the Soviet Union, and while the reasons for the 1948 expulsion were numerous, I would argue that Yugoslav ambitions in Albania (and Greece) were the most responsible for the Tito-Stalin split. Stalin was already aware of Tito's ambitions and desires for more autonomy, but the fact that Yugoslavia was becoming successful in achieving dominance in Albania not only politically but through infrastructure and the economy as well did not fare well with the Soviet plans. If Tito would achieve economic autarky, the Soviet Union would have a powerful rival, and Yugoslav success would ultimately disturb the Soviet plans that would materialize in the establishment of CMEA.

**Turbulent 1950s**

The 1950s were a turbulent decade, not just in Yugoslavia but also on a global scale. Following the 1948 breakup with the Soviet Union, Yugoslavia found itself in the middle of the collision between two emerging blocs of Cold War politics. However, the Yugoslav commitment to uphold the country's independence would guide most of the political decisions made in this decade. Yugoslav ambitions of becoming the dominant force in the Balkans were put on hold as the danger of military conflict with the Soviet Union became a reality. In such circumstances, Tito had to compromise and find new allies. On the other hand, the United States and Western Europe followed the Yugoslav-Soviet clash with great interest. No one expected that Yugoslavia, once the most devout follower of the Soviet Union, would fall from grace. The

interests that the United States and Europe had in Yugoslavia were different. The United States recognized the opportunity to make Yugoslavia an exemplary state and inspire the rest of the Eastern Bloc to rebel against the Soviet Union. On the other hand, the United Nations Economic Commission for Europe and the newly appointed director, Gunnar Myrdal, saw the opportunity to establish a link that would help bridge the East-West divide. The interests of the UNECE and the United States were different. Moreover, the efforts that Gunnar Myrdal was trying to make were in opposition to the plans of the NATO alliance. In the case of Yugoslavia, these interests did not completely clash.

Tito picked up on these interests quite quickly and established cooperation with both UNECE and the United States. The collaboration with the UNECE resulted in the establishment of the Yougelexport Group between Yugoslavia, Italy, Austria, and the FRG. The Yougelexport project offered Yugoslavia the possibility to prove itself as a trustworthy partner to the West by providing much-needed electricity and to obtain the necessary financial and technical aid to continue the development of the economy and industry by investing in the construction of hydroelectric power plants. Yugoslav historiography dedicated to this period rarely paid any attention to cooperation in infrastructural projects, and the Yougelexport project is almost completely absent.

The 1950s in Yugoslavia brought many changes. I argue that one of the most important results of the introduction of self-management systems in 1951 was the emergence of Yugoslav technocracy, which was directly tied to and embedded in it. The Yugoslav technocracy was also wedged somewhere in between the United States and the Soviet model of technocracy. Unlike the United States technocrats who influenced the policies within the democratic framework, Yugoslav technocrats never reached that level of autonomy due to the *witch hunt* on them in the 1970s. On the other hand, Yugoslav technocrats were not like their Soviet counterparts either because they were not hard-pressed to achieve results (or appear to achieve those results).

Also, Yugoslav technocracy had a high level of autonomy in decision-making. Traditional historiography barely acknowledges the existence of the Yugoslav technocracy, and when it does, it still falls into a pitfall of 1970s propaganda against them. This thesis gives a different perspective on technocrats and technomanagers (the terms were used synonymously in Yugoslavia) and analyzes their contribution and role in materializing the electric infrastructure projects in the 1950s and 1960s. The Yougelexport project was the first project that allowed the technomanagers to exercise newly found autonomy in decision-making based on their expertise and become the main actors in negotiations and implementation of this project. The dissatisfaction of Slovenian experts with the primacy of Croatian and Serbian representatives in the Yougelexport project reveals that tensions between Yugoslav republics were already taking shape in the 1950s. The decisions about where the electric infrastructure projects would be constructed directly affected the economic development of republics and just deepened the inherited problem of center versus periphery.

I argue that the Yougelexport project was doomed to fail. The reasons for this are twofold. In the first place, Austria and Italy were weary of Yugoslav intentions, given their prior ambitions towards Trieste and Carinthia. The relations with the FRG in the beginning were promising. After the Yugoslav recognition of GDR, the damage was irreversible and deeply reflected in the realization of the initial plans for the Yougelexport project. The clash with the Soviet Union came as a surprise to Tito. In the first months of the split, he tried to amend the damage but ultimately realized that the relations between Yugoslavia and the Soviet Union were at the point of no return. The decisions following 1948 could be viewed as agreeing to projects because there were no other options. The fact that in 1953 Yugoslavia initiated negotiations with the Soviet Union supports the claim that Tito was not completely dismissive of the idea of Yugoslavia existing in the Soviet Bloc. The pressure from the United States for Yugoslavia to join the NATO alliance only pushed Tito to seek other options. Yugoslavia's

political wandering in the 1950s and indecisiveness in taking sides resulted in Tito forging the new path.

The new clash with the Soviet Union in 1958, pressures from the United States, and the growing fears that Yugoslavia would become just the supplier of cheap energy to West Europe had Tito turn his attention towards the path of non-alignment. In the end, the Yougelexport project failed to be fully realized, with only three power plants being built from the original four. However, the Yougelexport project proved crucial for establishing the foundation for the development of the SUDEL ring project and providing the platform for Yugoslav technomanagers to engage in international projects and negotiations. For Tito, Yougelexport was just a temporary solution and an experimental project. I argue that the idea of establishing Yugoslavia as a bridge between East and West, as Gunnar Myrdal envisioned, was only realized with SUDEL and Iron Gates. While Tito did use the Yougelexport project as a political project, it seems more like a testing project that would provide the foundation for inserting Yugoslavia as the unavoidable bridge between the two blocs.

**Between Two Worlds**

The 1960s and 1970s proved to be dynamic and versatile decades in Yugoslav history. In this period, Yugoslavia was pursuing a new foreign policy path by establishing the Non-Alignment Movement. But, as mentioned before, the Yugoslav ambitions of positioning itself as an inevitable political partner in bridging the East and West materialized in two important projects: SUDEL and the Iron Gates. While Yugoslav historiography addressed the construction of the Iron Gate project before, the SUDEL ring project is completely absent. The analysis of these two projects offers a fresh approach to Yugoslav politics during this period and the ways the infrastructure was used as a political tool not just in Europe but also globally.

During this period, two major electricity systems were established in Europe: UCPTE and CDO/IPS, and Yugoslavia was wedged in between those. Yugoslavia tried to apply the dual engagement strategy even in this case, but it proved impossible. The more Yugoslavia delayed the choice with which energy pool to connect, the more Yugoslav electric systems would lag behind.

The choice ultimately fell on the UCPTE system, which proved to be more reliable, and the SUDEL project got approval in 1962. This idea was mainly pushed by the Slovenian representatives, who took on the role of main actors in negotiations with UCPTE, Austria, and Italy. When compared to the Iron Gates project that was being constructed at the same time, SUDEL received less attention from both government officials and the public. In Slovenian media, the SUDEL ring project was publicized as a "Slovenian project," making a clear distinction from the Yugoslav entity and reflecting the attitudes of Yugoslav republics toward more autonomy from the federal government. This thesis argues that Slovenian representatives used the infrastructure as a means to push their political ambitions and establish a stronger connection with the West.

On the other hand, the Iron Gates project, although it had a long prehistory, materialized at the beginning of the 1960s. The reasons for such long delays were of a political nature. The attention that Iron Gates received when compared to SUDEL was undeniably much bigger. The Iron Gates were popularized as the project of the century. Although I would argue that both of these projects were equally important for the development of Yugoslav electric infrastructure, the attention given to the Iron Gates is not surprising. The large-scale projects in the context of the communist regime were popular political and ideological tools for promoting state power and the achievements of the regime. Yugoslavia and Romania were not different in this case. The other reason was that, although the construction of the SUDEL ring created the foundation for interconnection with the UCPTE system and provided the Yugoslav network with energy

security, it was not visible in the same manner as the Iron Gates. The realization of the SUDEL connection represents the hidden integration described by Thomas Misa and Johan Schot, while the Iron Gates project resonates with what Paul Josephson dubbed "projects of the century."[785] The Iron Gates project involved the participation of presidents and high government officials, and although the technomanagers and engineers in study groups had a significant level of autonomy in decision-making, the final decisions were made at the highest levels. The SUDEL project was, for the most part, completely run by the Slovenian representatives, with occasional appearances by the representatives from JUGEL. Also, the Iron Gates inaugurations served as a display of the political and ideological goals of Yugoslavia and Romania.

Beside the political ambitions of using the Iron Gates as the potential bridge between the East and West, Yugoslavia used this project as a showcase for the Yugoslav engineering capabilities for the partners from the Non-Aligned Movement. This Yugoslav strategy proved to be very successful, and Yugoslav architects and engineers became one of the main actors in the development of electric, railway, and road infrastructure in Asia, Africa, and South America.

The 1960s and 1970s periods also highlighted the vulnerabilities and contradictions of Yugoslav domestic and foreign policies. The reliance on foreign investment and technology exposed Yugoslavia to external economic fluctuations. This was followed by reckless reconning with the technocrats (and technomanagers) at the beginning of the 1970s. The growing autonomy and influence of this class were setting the stage for the inevitable transition to social democracy, and the Communist Party did not approve of this. The removal of capable managers had consequences for the stagnation of the economy and the discontinuation of investing in large-scale projects. Although Yugoslavia agreed on the realization of the Iron Gates II project, it had less relevance for the political or ideological ambitions of the Yugoslav

[785] Josephson, "Projects of the Century", 519-520.

side. This was due to the political changes happening on the domestic scene in Yugoslavia, following the bigger decentralization and the tensions between the republics. On the other hand, the SUDEL project continued to develop well into the 1980s, with the inclusion of Greece (and Albania via the Greek link). Ultimately, the idea of Yugoslavia serving as the bridge that would connect the two major European power pools remained unrealized. The analysis of SUDEL and the Iron Gates reveals that the Yugoslav experts were aware that Yugoslavia did not possess the technological means to be a main protagonist in interconnecting the UCPTE and CDO/IPS systems, but it did not deter the Yugoslav representatives from pursuing this avenue.

**The Calm Before the Storm**

For a long time, I was reluctant to include the period of the 1980s and early 1990s in this dissertation. In contemporary historiography dedicated to this period, the animosities and conflicts stemming from the 1990s civil war distort the picture and present a dangerous pitfall for scholars studying this period. However, the BALKEL project presents an interesting case study for following the evolution of cooperation in the Balkans during the Cold War. There is no consensus as to whether the space of the Balkans actually existed during the Cold War period. I would agree that in the early period of the Cold War, the Balkans, which existed before 1945, did not exist anymore due to the emergence of the Eastern and Western spheres of influence.

While Yugoslavia gravitated between those two, sometimes leaning more to one than to the other, it did not exist in the space of the Balkans, especially not after 1948. In the mid-1970s, the shape of the Balkans was starting to show. The infrastructural cooperation proved to be a successful platform on which the Balkans could exist. The success of the SUDEL project inspired the establishment of the BALKEL project in 1990, with the ultimate goal of finally

becoming the link between the UCPTE and CDO/IPS systems. Additionally, the BALKEL project reveals Serbian tendencies to equate Yugoslav interests with Serbian interests. The lack of experts from the other republics signals that Serbia indeed exercised hegemony over major decisions and that other republics showed less interest in Yugoslav projects and more in their individual ambitions. However, this idea never came to fruition due to the eruption of the civil war in 1991 and the dissolution of Yugoslavia in 1995.

Ironically, it was in 1995 that a large European synchronized network came into existence.[786] While Europe was paving the way to unification within one union, Yugoslavia was doing the opposite. The civil war devastated the electric infrastructure of Bosnia and Herzegovina and partially Croatia, resulting in a breakup. Once integrated, the Yugoslav network was split among the five newly established republics, and it would take a long time before they were operational. In 2005, the former republics of Yugoslavia, Romania, and Bulgaria signed the Agreement on the Energy Community for Southeastern Europe.[787]

**Epilogue**

The importance of historical analysis of the political use of electric infrastructure lies in the fact that the Yugoslav case was unique. The detailed analysis of the Yugoslav case in this thesis shows that a relatively small and developing country like Yugoslavia was more than capable of using the infrastructure as a means of pursuing political ambitions. This dissertation was focused on five case studies that reflected the different uses of the electric infrastructure for political pursuits and the ambivalent nature of Yugoslav ideology and politics.



[786] Lagendijk, *Electrifying Europe*, 221.
[787] Riccardo Vailati, "Electricity transmission in the energy community of South East Europe," *Utilities Policy* 17, no. 1 (2009): 34-42.

The unexpected result of the historical analysis of the initial period of Yugoslav politics was that Tito already had the idea of Yugoslav economic autarky for which Albania proved to be an indispensable element. While I would argue that in 1948 Tito had no intentions of initiating the conflict with the Soviet Union, if the plans with Albania proved successful and Yugoslavia achieved the intended autarky, the conflict would be inevitable. Yugoslav implementation and imitation of Soviet patterns also support the idea that Tito did not plan to break away from the Soviet Union and possibly expected only slaps on the wrist and not full expulsion and isolation. Although Tito's aspirations towards Albania proved to be unsuccessful in the end, this case study reveals that he had set his eyes on achieving autarky and primacy in the Balkans much earlier than traditional scholarship suggests.

The traditional historiography's attitude towards the Yugoslav technocrats barely mentions their contribution towards the development of the Yugoslav economy and infrastructure and focuses only on their downfall. This thesis shows them in a different light and demonstrates the ways in which they practiced their autonomy in decision-making. The analysis of the technocratic model in Yugoslavia that this thesis developed is a tool to understand the interrelatedness between political and managerial actors within the context of large-scale infrastructure decision-making. The presented description of the technocratic model within Yugoslav society also serves for future studies of other implications in Yugoslav cases and the role of technomanagers in other branches of industry.

The questions, conclusions, and evidence presented in this study also open up new topics and avenues for studying the Yugoslav case. The existing scholarship also did not analyze the evolution of Yugoslav foreign and domestic policy in the context of critical infrastructure.

The question to be answered in the end is: what lessons could be learned from the Yugoslav case, and what is their contribution to the broader field of study? The research on the

development and political use of electric infrastructure has proven to be an important source for outlining the Yugoslav experience. In the end, it led us to the opening scene of this thesis, the rouse between Serbia and Kosovo. The energy interdependencies of the former Yugoslav republics are still an issue. This summer, 2024, part of the electric grid in Montenegro, Bosnia and Herzegovina, and Croatia suffered blackouts, revealing not just vulnerabilities but also the uses of infrastructure for political bickering. The president of Serbia commented on the state of the Croatian and Montenegrin electric grids being in poor condition compared to Serbia, while at the same time being silent about the fact that Serbia has to import most of the electricity it uses.[788] This study hopes to open new avenues for researching interdependencies and finding viable solutions for a sustainable future.

My work on this dissertation proved to be an exciting journey. Although my thesis offers new perspectives and models for research, much remains to be addressed. The archives in Albania could change some of my conclusions and present fresh perspectives on the analysis of Yugoslav-Albanian relations regarding critical infrastructure. The questions related to Yugoslav history are still relevant and will remain relevant both for historiography and contemporary politics. Maybe the Yugoslav state does not exist anymore, but the legacy it left behind still lives on and will be an interesting case study for generations to come.



[788] NIN, Vijesti. “Kako Je Došlo Do Havarije Na Balkanu: Stručnjaci o Nestanku Struje u Četiri Zemlje, Najavljena Međunarodna Istraga.” [How the Disaster Happened in the Balkans: Experts on Power Outages in Four Countries, International Investigation Announced] Nin online, June 22, 2024. https://www.nin.rs/drustvo/vesti/51645/zasto-je-nestala-struja-u-crnoj-gori-hrvatskoj-albaniji-i-bosni.

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