Inefficient or not correctly enforced? Municipal solid waste management policies and problems in Naples

By

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ABSTRACT

Waste management is gaining importance on today's decision-makers' agenda; the effectiveness of political actions on waste management affects directly the daily life of citizens, who are more and more sensitive to how waste plans are implemented and waste processes take place. In order to look into the whole process one single case will be depicted; the case of Naples which, in 2008, became infamous for its patent poor waste management. The study of this case will highlight the different phases of waste cycle, the involvement of different stakeholders, whether from the governmental - central and local – or the private sector, as well as the citizens themselves, and, last but not least, an examination of the legal framework regulating waste management. Leading topics of this research study will be the causes of such ecological disruption; the extent to which these are due to political negligence; and the solutions suggested for repairing the damage.

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> "The significant problems we face cannot be solved at the same level of thinking we were at when we created them"

Albert Einstein

"You must be the *change* you wish to see in the world"

Gandhi

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LIST OF ABBREVIATIONS

ACEA, Azienda Comunale Elettricità e Acqua - Municipal Firm for Electricity and Water APAT, Agenzia per la Protezione dell'Ambiente e per i Servizi Tecnici - Agency for the Protection of the Environment and for Technical Services ARPAC, Agenzia Regionale Protezione Ambientale Campania - Regional Agency of Campania for the Protection of the Environment ASIA, Azienda Servizi Igiene Ambientale Napoli Spa - Firm for Environmental Hygienic Services of Naples ASL, Azienda Sanita' Locale, Local Health Care Institution ATO, Ambito Territoriale Ottimale - Optimal Management Area CNR, Centro Nazionale delle Ricerche, National Research Center CONAI, Consorzio Nazionale Imballaggi - National Packaging Consortium EAP, Environmental Action Plan EC, European Commission ECPR, European Consortium for Political Research EIONET, European Topic Center on Resource and Waste Management EP, European Parliament **EEA**, European Environmental Agency Eurostat, European Statistical Office **EIA**, Environmental Impact Assessment Federambiente, Italian Federation for the Environment IPPC, Integrated Pollution Prevention and Control ISTAT, Istituto Nazionale di Statistica – National Statistic Institute MBT, Mechanical Biologic Treatment MSW, Municipal Solid Waste MSWM, Municipal Solid Waste Management OECD, Organisation for Economic Co-operation and Development ONR, Osservatorio Nazionale sui Rifiuti, National Waste Observatory RCSA, Rete Campana Salute e Ambiente - Health and Environment Network of Campania **RDF**. Refuse Derived Fuel SOF, Stabilized Organic Fraction UNDESA, United Nation for Development and Social Affairs WHO, World Health Organization WWF, World Wildlife Fund

INTRODUCTION

1. Background

In our current globalised world consumption patterns have significantly increased resulting in huge quantities of waste produced, impacting our environment (OECD 2002,a). If the initial phase of a good - production - has mainly an economic driver, followed by consumption - which mainly reflects the social pursuit for comfort - the final phase has a significant environmental impact, besides the social and economic ones. The concept of *waste management* has therefore entered the current vocabulary not only of the environmentalists, experts, politicians, but also of common people, increasingly affected by efficient or poor waste management. Over the last decades *waste* started to be associated with *management* because of the need for plans and methodologies to dispose of waste, for which specific policies are necessary.

When did waste emerge as a problem in our society? At the end of the 19th century, at the beginning of the industrial revolution, the whole society in Europe was still sober in consumption, and waste minimization was a natural lifestyle, with the reuse and recycle of materials. Society was naturally sustainable.

Taking Italy as an example within Europe, it was after World War II that the industrial economic development exploded, for which new man-made products appeared bringing in not only plastics and different kinds of packaging, but above all the "throw-away" model, which nowadays dominates our societies, repressing the habit of recycling, reusing and recovering. Already in the First Report of the Italian Ministry of the Environment (May 1989), the then Minister, Giorgio Ruffolo conveyed the 1987 waste production data which totally amounted to 97

million tons, out of which only 16% was treated appropriately. The 80s witness an increase of public concern over waste disposal (Pinna 2009).

In order to better understand the waste management process, the actors involved, and what is needed to make the system efficient and effective, this research will consider one single case, that of Naples, which, in terms of poor waste management caused a sensation in 2008. By analyzing it, the causes will be explored following four hypotheses to be exposed in the next chapter. The analysis will start from an overall European scale, narrowing down to one single EU country – Italy - and focusing on one single city - Naples - the capital of the Region Campania, in Southern Italy.

It has to be pointed out that the subject of this thesis is not waste in its totality, but only municipal solid waste (MSW), as explained in the next chapter.

2. Research aim and objectives

The overall goal of the research is to investigate why waste management policies failed in Naples and what measures are necessary to tackle the political and environmental deterioration. For this purpose two main questions will be researched throughout the study:

- What are the factors determining the weak implementation of the existing municipal waste management policies within the national and local political context?
- How can municipal waste management be more efficient in order to improve the population' life conditions in Naples?

The reasons of the problem will be therefore identified and subsequently the political actions suggested, stressing the importance of implementing prevention policies.

3. Thesis structure

The research has the following structure: the first chapter explains the methodological instruments employed in the study; the second chapter describes the technical processes to dispose of waste and some statistics of the current waste situation in Europe, Italy, Campania and Naples; the third chapter specifically illustrates the regulations for municipal solid waste management (MSWM), at EU, national - Italian - and regional level - Campania; in this context the case itself is presented; the fourth chapter analyses the four hypotheses; finally recommendations are formulated.

CHAPTER 1: METHODOLOGY

The thesis research has employed different methods, as described in this chapter. The methodological approach consisted in analytically reviewing the primary sources concerning MSWM; exploring the relevant legislative framework, namely MSWM regulations and policies – both at European and national (Italian) and regional (Campania) level; using a case study (waste emergency in Naples) conferring with the experts in the field; interviewing key decision-makers, public health officers, operators; Neapolitans in the streets and private companies dealing with waste.

1.1 Methodological framework

Before describing the methodological instruments applied, the general scope of the research will be explained, in order to explain the logic behind the development of the study. As the title indicates, the thesis is focused on the MSWM policies and problems in Naples. Although corruption is strongly rooted in Southern Italy's waste management practices (Saviano 2006), it will not be the focus of the analysis, mainly because the subject is widely discussed in many publications. Therefore this thesis will focus on the reasons of the fragility of the political system; the crisis itself was the result of actions, of non-actions and of *misactions* of the different actors involved in the waste management process.

Four hypotheses will be investigated throughout the research, revolving around the political management in the waste policies, namely:

 Waste management is inefficient in Naples because of lack of political will – on national, regional and local level - to properly enforce and comply with waste management regulations.

- **2.** The lack of clarity and overlapping of competences of different public organs jeopardize the efficiency of municipal waste management in Naples.
- **3.** The lack of controlling and monitoring of entities in charge of waste collection facilitates corruption in waste management at public and private levels.
- **4.** The lack of involvement of citizens in the waste management decision-making process at public levels deters the identification of community concerns and needs regarding life conditions.

Throughout the investigation different research stages were needed. In the following subchapters the preparatory stage and the investigation stage will be described, concluding with a paragraph explaining the difficulties of the research.

1.2 Research Stages

1.2.1 Preparatory stage

Primary sources were collected providing the theoretical background of the topic; in order to understand the legislative framework within which MSWM policies are set, European, national and regional policies and regulations were analyzed. The research revealed that the literature concerning MSWM is quite abundant; specific books, materials, archival and public documents available in scientific and state institutions, articles, reports on waste policies were consulted; also statistics and data were collected about the different phases of waste management (production, landfilling, incineration, recycling and composting) for Europe, Italy, Campania and Naples (from EEA, APAT, ONR, ISTAT, OECD, EUROSTAT) in order to contextualize the case of Naples.

1.2.2 Investigation stage

Qualitative research method

The general aim of this thesis is to find out why the MSWM in Naples failed. The study draws upon qualitative research, which, as Punch (1998) suggests, typically deals with social phenomena, mainly through in-depth, semi-structured and unstructured interviews, case studies and different forms of observations. This research will examine the case study of Naples, supported by interviews carried out with officers, experts and citizens.

1.2.3 Investigation techniques

Case study

According to Yin (2003) the case study offers the flexibility to apply various methods and techniques. Indeed (a) the focus case study on Naples answers to "how" and "why" questions; (b) the behavior of those involved in the study is examined; (c) contextual conditions are covered since they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context.

Once identified what the case study will be, we will also define what it will not be, to avoid falling in the error to have research a question which is too broad. Therefore the case is limited, (a) by time and place (Creswell 1998); (b) time and activity (Stake 1995); and (c) by definition and context (Miles & Huberman 1994); for this reason the subject of the thesis was narrowed down to Naples, specifically over the scandal erupting in 2008, for which a brief chronological reconstruction will be sketched starting from 1994.

<u>Interviews</u>

Interviews were conducted with governmental officials, representatives of the private sector, of civil society and citizens of Naples (Annexes I, II, III). While writing the thesis, in fact, the theoretical readings were insufficient; for a deeper understanding of the case a fieldwork was necessary, providing a real perception of the place and the people themselves. Therefore vis-à-vis encounters with locals - grasping from their words, tones and expressions what written words might fail to convey - the opportunity to stroll around the streets and observe directly the real situation, offered an added value to the research: real inputs taken from the real life made it easier to test the real effects of the problem on the people affected by long years of political and administrative negligence.

The eighteen interviewees were selected according to their knowledge, expertise and position. The type of interview chosen was the unstructured one. As expressed by Kvale (1996) interviews in my research were the tools to understand the case from the subject's point of view, opening up new doors until that moment closed down. As Rubin and Rubin present it (1995) the semi-structured interviews facilitate in "getting more information, learning about particular events or processes". The questions to the experts (Annex II) were meant to explore the causes of the problem from their point of view, and the possible solutions they might foresee (for this stakeholders with different backgrounds were addressed); the questionnaire to the citizens (Annex III) aimed at understanding the extent citizens were affected by the problem, their knowledge about waste processes and their standpoint on the management of administrators in charge of waste.

Indicators

The following indicators have been considered:

- The degree of political will to enforce and comply with waste management regulations in the case of Naples; local authorities' actions and laws enacted regarding waste management.
- The type of public organs and duties required to put into action waste management regulations; including list of responsibilities, positions, organs responsible for waste management.
- Monitoring and controlling processes from public organs responsible for waste management process, other instances involved, and local/community groups, etc; involving the quality of the management process, monitoring documents, reports, opinions, etc.
- Degree of citizens' involvement in the waste management decision-making process; measured by the level of information and knowledge citizens show in waste management and processes.

1.3 Difficulties and limitations of the research

The major difficulties encountered consisted in moving from the initial phase of collecting materials and data to the work of narrowing down and giving a logical sequence to the study. Difficulties were found related to the format of information collected on waste management in Naples which is mainly journalistic. Moreover, during the interviews with citizens, although precise questions were raised, the answers tended to stray away from the point, it was therefore necessary to bring the respondents back to the initial question. One limitation of the questionnaire is the number of the people approached (27), therefore the sample does not provide strong

scientific evidence, nevertheless it helped to have a grasp of the real life of citizens in Naples. The Civil Defense officer (presently in charge of the Extraordinary Commission managing waste in Campania) could not be interviewed due to his constant commitment in Abruzzo because of the recent earthquake. Another major difficulty was with the collection of data and statistics: indeed numbers were not always updated and did not consistently cover all waste management stages (production, landfilling, incinerating, recycling, composting); different units of measurement are applied for the different processes, therefore it was necessary to recalculate the available data (from APAT and EEA), and to create new graphs including the different stages. It is important to point out that the recommendations of the study are limited to technical and political scopes, not digging into the corruption factor (widely explained in some other studies, i.e. Iacuelli 2008, Iovene 2008).

CHAPTER 2: WASTE MANAGEMENT: DEFINITION, PROCESSES AND DATA

In order to understand why MSWM failed in Naples, it should be clear how waste is processed once it is collected, and how it is disposed, which will be explained in this chapter. We will first start with the definition of MSW to understand what is commonly intended for urban waste.

2.1 MSW: definition, classification and types

MSW is defined as waste collected by a municipality. It is waste from households, small businesses, office buildings and institutions such as schools, hospitals, government buildings, waste from parks and street cleaning (Eurostat 2003). Ronchi Decree (22/1997) first and the Single Act on the Environment1 later define waste, in line with the European regulation (Directive 91/156/CEE), any substance or object that the holder throws away or is obliged to throw away. According to law 152/2006 waste is classified according to four main categories: no hazardous municipal waste; hazardous municipal waste; no hazardous special waste.

2.2 Waste hierarchy

In our daily life hundreds of objects pass through our hands but we rarely think of the processes preceding their production and following their use. Being aware and knowing what to

¹ Testo Unico sull'Ambiente - D. Lgs. 152/2006

buy and how to recycle and/or dispose of them has a tremendous impact on our environment (Worldwatch institute 2004).

Waste management is regulated by a set hierarchy symbolized by a pyramid:





In 1975 the Waste Framework Directive stressed the importance of waste minimization for the protection of the environment and human health. Since then the basic principles of reducing, re-using and recycling (the 3 R) gradually but increasingly have taken hold in waste legislations and policies. In 1992 Agenda 21 encouraged the commitment from the member states in promoting *waste prevention and minimization as the principal objective of national waste management programs* [...] giving priority to waste reuse and recycling. Agenda 21 introduced the waste hierarchy by indicating precise steps to be undertaken.

The following sub-chapters will present each category of the hierarchy.

Source: EP, Waste Framework Directive 2007

2.2.1 Prevention

OECD (2000) defines "strict avoidance" the prevention of waste generation by reducing material or energy intensity in production, consumption and distribution. As suggested by EPA (2006) waste can be prevented by:

- Using the least or reusable packaging
- Using and keeping durable equipment and supplies
- Using supplies and materials more efficiently
- Reducing the use of hazardous components, replacing them with substitutes easily recyclable or recoverable

All this results in reduced production costs and environmental impacts.

2.2.2 Reducing (minimization), reusing, recycling

The so-called 3 R can be explained as follows:

Reducing at source involves minimizing material or energy consumption (OECD 2000) can be attained by developing a more efficient technology for production, for example reducing the weight of the product while it is functioning (Report on Waste Prevention, 2006). Therefore by maximizing the use of available resources environmental impacts are reduced.

Product reuse involves the multiple use of a product in its original form, for its original purpose or for an alternative, with or without reconditioning (OECD 2000). Reusing, compared to recycling, saves consumption resources, while recycling implies processing (re-manufacturing or conversion into raw materials). Re-using reduces the need for new objects, consequently decreases the cost of production. Moreover reuse creates new jobs in service and repair industries.

Recycling means to use collected waste materials for other purposes than originally intended – with reconditioning (OECD 2000). Recycling is an approach which saves resources by diminishing the amount of products ending up in landfills. The used product is pulled into different pieces which are reprocessed for their original use or a new one; the phases of this process include collection, sorting, reprocessing and manufacture (Waste Management Board, 2004). Besides the fact that many materials can be recycled, nowadays technological progress advances significantly in the design of recyclable materials. For a better modality of recycling, when waste is collected, the humid part should be separated from the dry ones (plastic, paper, etc.); the humid part can therefore be composted, for which the natural processes of decomposition can be accelerated with an aerobic treatment, transforming the organic waste in compost; if the aerobic treatment is applied with undifferentiated waste the result is stabilized organic fraction (SOF); compost can be used for agricultural purposes as a fertilizer, SOF can be used for other purposes - i.e. daily cover of landfills (Istat 2007).

2.2.2.1 Commitment from citizens and local policies

As it is suggested by EEA (2009) the 3 R can be implemented by citizens supported by local political actions through educational campaigns and a simplified separate collection system; incentives for the industries are also important, such as launch of competitions rewarding the best management of resource recovery, supporting industries and business in equipping them with facilities and infrastructures facilitating resource recovery practices. The final chapter develops an in-depth analysis of the possible measures to improve waste management.

The methods described require the actions of citizens supported by policies; energy recovery presents controversial aspects, indeed lack of public acceptance is often an obstacle for introducing new plants (EEA 2009) - as in the case of Naples.

2.2.3 Energy recovery

Incineration is the most used method to recover energy from waste; as it is explained in EEA glossary (2009), incinerators imply the process of burning solid waste under controlled conditions to reduce its weight and volume; through this methodology garbage is destroyed through burning, gasification and pyrolysis. Gases and ashes produced may be toxic but the original waste is reduced by 95-96 %. The incinerator produces steam which through a turbine can generate electricity with high efficiency. In Italy, since 1st January 1999, only plants with energy recovery have been allowed to be built.

Another interesting energy recovery method is the mechanical/biologic treatment plant (MBT) which includes a mechanical separation of the waste and biological treatment (anaerobic and/or aerobic digestion). MBT plants are very flexible and can be built on a modular basis (IPPC, 2006b). The mechanical process can be configured to further separate the non-biodegradables into clean fractions for recycling. The remaining material can be combusted and so is referred to as Refuse Derived Fuel - RDF - (Juniper Consultancy services, 2005).

2.2.4 Disposal: landfills

Landfill is the site where waste is disposed; controlled landfills - areas subjected to a permit system and to technical control procedures in compliance with the national legislation in force (OECD/Eurostat 2000) – have to be distinguished from illegal landfills - areas where dumping is not authorized, causing severe environmental and health problems.

Having illustrated the pyramid, in the next paragraphs we will see in practice the quantities of waste produced, incinerated and landfilled overall in Europe, Italy and in Campania, to demonstrate that the problem in Naples did not explode because of the quantity of waste generated but because of a management failure, therefore in the implementation of the policies.

2.3 Waste production and treatment at European, National and Local level

Using the EEA/APAT data (2007) the below graph helps to compare Italy and some other

EU countries on waste management:

Graph 2: Waste Management in EU 2007



Source: adapted from APAT/EEA 2007

As we can see in graph 2, Italy is not among the worst countries in terms of waste production - which is 550 kg per capita, less than Denmark (801) and Netherlands (630); however, Italy increased its national production between 2000 and 2006 by more than 3,5 million tons, whereas Belgium, Bulgaria, Czech Republic, Poland, Slovenia, Finland witnessed a decrease in the same period of time (WWF 2008).

As Eurostat (2009) states, landfilling has been the predominant option in EU for several years - in 1995 it accounted for 62% on average but decreased to 42% in 2006; however, it varies greatly among the countries, for example Denmark presents 40 kg per capita, Ireland 503 and Italy 253. Variation also is found for incineration, where we can find countries like Denmark

(425), Luxemburg (326), Sweden (243), and countries like Italy (61) to end up with Greece, Ireland, and Romania which do not incinerate at all. Looking at separate collection, Germany presents 259 kg per capita, Denmark 193, Greece 63 and Italy 61. Although Italy has continuously decreased its landfilling in the North incineration is a more common practice than in the South; the same happens for separate collection overall.

We see in graph 3 that for 2007 (APAT 2007) Campania produced 2.800 thousand tons of MSW, almost like Veneto (2.400 thousand), Tuscany (2.500 thousand), Emilia Romagna (2.900 thousand), less than Lazio (3.500 thousand) and Lombardia (4.900 thousand). However, none of them suffered a waste crisis like Campania. It is important to notice that almost the totality of waste (2 millions) ends up in landfills, since there are no functioning incinerating and composting plants as a consequence of the failure of the waste plan (as we will see in the next chapter). Also recycling did not attain good results (390 thousand) compared to Northern regions, such as Veneto (1.200 thousand) and Lombardia (2.200 thousand).





Source: adapted from APAT/EEA 2007

Focusing on Campania we can however see in graph 4 that for 2007 waste has been mainly produced in Naples, probably because it is the most populated city in the region, with over 3 million inhabitants, followed by Salerno, 1 million, and Caserta almost 900 thousand, whereas the least populated provinces are Avellino and Benevento, with 440 and 290 thousand inhabitants respectively – (Istat 2006).



Graph 4: Waste management in Campania 2007

In 2007 Naples produced 1.700 thousand tons of waste out of which 1.300 thousand was landfilled and only 172 thousand tons were recycled. The weak facilities and equipment might be one of the causes for which landfills were overfilled.

It is interesting to point out that Salerno, where in 2007 almost all waste was landfilled now stands out as a case of excellence. Recycling patterns are in fact improving considerably since the mayor has strongly fought for a separate collection plan with the involvement of citizens, using a widespread awareness-raising campaign (Salerno differenzia)² and severe fines for illegal dumping; the interview to the assessor to the environment Gerardo Calabrese reported by De Santo (2009) - shows that in Salerno separate collection is currently 45%, and in the three districts where it started is as high as 80%.

Source: adapted from APAT/EEA 2007

² In Italian it means both separating and distinguishing itself

We can conclude that waste problem in Naples is probably not due to the quantity of waste produced but to other elements to be analyzing in the next chapters.

CHAPTER 3: WASTE MANAGEMENT: FROM THEORY TO PRACTICE

3.1 Waste management directives and decrees

The EU integrated waste strategy lays the basis for the Italian waste management regulations. In 1993 the Council and the Representatives of the Governments of the Member States approved the 5th EAP, whose strategy covers waste management as a targeted area; the program stresses the integration of the environmental dimension in all major policy areas, recognizing that environmental protection targets can only be achieved by involving the policy areas causing environmental deterioration (EU 2005).

The summary of the legislation relevant to waste management will be conveyed via the Eionet factsheet of Italy (2006). The Italian national framework law on waste dates back to 1997 (law 22/97, also called Ronchi law), which introduces the integrated waste management policy set up by the European hierarchy, transposing the European Waste Framework Directive 75/442/EEC (amended by Directive 91/156/EEC), the Directive on Hazardous waste 91/689/EC and the Directive on packaging and packaging waste 94/62/EC; law 22/97 underlines the principle of waste prevention, and requires incineration plants to be equipped with energy recovery system; it also defines quantitative targets for MSW separate collection of and packaging waste, although no targets were set for prevention yet. Moreover this law defines the roles of the different bodies involved in the waste management cycle (to be explained in the next sub-chapter).

With Decree 22/97 the National Packaging Consortium (CONAI) was established for the recovery of aluminum, glass, paper, plastic, steel and wood. This consortium receives financial contributions from packaging producers and users for the packaging waste to be managed. CONAI counts 14,000 industrial and commercial firms (as members) and integrates three EU main principles of "shared responsibilities" - among companies, administrations and citizens - "polluter pays-principle" - the polluter bears the expenses of implementing policies and measures for the protection of the environment - and "producer responsibility principle"- demanding the producers to be responsible for the whole cycle of the product (Ecologic 2002).

Decree 22/97 ceased to be in force when Legislative Decree n.152/06 was issued (Environment Act), consolidating and improving the provisions of the previous Decree; in particular the tax on municipal waste was replaced by the tariff on waste, for which citizens no longer paid to municipalities according to the floor area of their homes, but according to the amount of waste produced, in compliance with the EU "the polluter pays principle" (as we will see in the next section the tariff is not applied in Naples yet and the citizens pay the highest tax on waste in Italy). The transposition of Directive 2004/12/EC aimed at upgrading MSW separate collection and recovery, also according to the principle of "shared responsibility", pointing at redesigning the packaging waste management system.

The waste landfilling Directive 1999/31, transposed into Italian legislation in 2003 (Decree 36/03), addresses the operational and technical aspects of landfilling (localization, construction, monitoring, controlling and financial plans, closure and after closure procedures), preventing the pollution of surface water, groundwater, soil and air, permitting only pre-processed waste. Landfills are of three types: those for hazardous waste, for non-hazardous waste, and those for inert waste. Decision 03/33/EC sets leaching limits for each landfill; the

Ministerial Decree 3 August 2005 (amended M.D. 13 March 2003) lays down the requirements and procedures for landfills according to the leaching behavior of waste.

Decree 133 of 11 May 2005 transposed the Directive 2000/76/EC on waste incineration, replacing Ministerial Decree 503/1997 (transposition of directives 89/369/EEC and 89/429/EEC for municipal waste and not hazardous waste incineration) and Ministerial Decree 124/2000 (transposition of directive 94/67/EC dealing with hazardous waste). The Decree sets operational criteria and emission limit values for waste incineration plants; plant permissions are granted provided that the design meets the set requirements and preventive measures against environmental pollution.

In Campania waste management is set by the regional law n.4, 28 of March 2007, replacing regional law n.10, 10 February 1993; the region is under the Extraordinary Commission for waste management, which means under special laws, for which only one Commissioner - presently Guido Bertolaso, Undersecretary at the presidency of Ministers' Council - is responsible for all the waste management in Campania (Rifiuti 2008).

Having described the directives regulating waste management, we will now move to evaluate how these regulations are implemented. It is EEA (2001,a) which defines the notion of effectiveness of a policy as follows: a judgment about whether the expected objectives and targets of the policy measure have been achieved, which requires comparing the effects of the measure with its intended objectives. Janicke (2002) suggests three main categories to evaluate environmental policy outcomes, namely actors, strategy and structural framework conditions. The following section depicts the case of Naples, and, using Janicke model, the actors involved in waste management process, the instruments used to manage waste and the context where the actions took place will be depicted.

3. 2 How waste management is implemented in Campania

As reported at the beginning of this chapter Decree 22/97 set the criteria for the waste management cycle, for which the relevant plans had to be developed at regional and provincial level. According to the Decree a regional self-sufficient management had to be attained, for which the ATO (Optimal Management Area) was established - made up of a set number of municipalities, usually coinciding with the province's territory. According to Bartolomeo Abbate, Mayor of Santa Maria La Fossa (province of Caserta), interviewed as part of the study, the responsibilities among the bodies are distributed as follows:

- The regions issue the regulations on waste according to the national laws. They elaborate regional waste management plans for which waste collection, treatment and disposal are to be carried out within the ATO. They set the guidelines for the separate collection and the relevant financial tool and for reducing the use of landfills. They grant permissions for the treatment, management and disposal facilities to be built.
- The provinces elaborate their waste management plan according to the regional laws. They coordinate municipalities in complying and harmonizing with waste management programs. They can help in the implementation of separate collection practices.
- Municipalities deal with municipal collection and disposal; they set municipal regulations and targets.

In principle this is the structural system which assigns tasks and functions among the bodies; but the waste emergency in Campania of 1994 resulted in the establishment of an Extraordinary Commission, coping with the severe situation; but, instead of being a short and targeted interlude, the commission has lasted up until today. Reporting the words of the Mayor: The commission operates in derogation, justified by the emergency; therefore it does not comply with the existing rules and procedures. In these circumstances the mayor cannot assert his rights; his role is debased. In principle the mayor should be the manager of the territory, since he knows the territory, but the superstructure distorted the ordinary functions. Because of the Commission, the municipality, the province and the region, became external organs.

The structure of the Commission itself demands high costs, which include the salaries of executives and consultants. The *Commissione Parlamentare*³ report (2007) points to significant amounts of money assigned to sub-commissioners, not exactly selected following "a careful evaluation, comparing the many available experts in the market, but on a personal basis. The parliamentary report states that the commission and the emergency seemed to respond to targeted needs, such as employing "workers socially useful", opening up environmental call centers (apparently inactive and unknown even to institutional interlocutors of the commission) rather than facing real environmental problems. The Extraordinary Commission, that has been functioning for fifteen years with nine commissioners in succession, five prefects, the head of civil protection, the chief of police, and three governors, and is still active, presents major flaws; as the report states "its structural inefficiencies turned out to be, over the years, so deep to jeopardize the operation and the efficacy of the structure irreversibly".

Another important element of the structure in charge of waste management worth explaining, is the so-called "consorzio di bacino"⁴ responsible for the following services: street sweeping, separate and not separate waste collection, transport to the plants. They were later absorbed in the structure of the Extraordinary Commission. The employees of these consortia were recruited from lists of unemployed and the so called "workers socially useful" (mainly composed of ex convicts) whose temporary contract became permanent after a given period. The words of Catenacci (2005) are self-explanatory: "*it is a miracle if out of these 2.316 people 200*

³ Parliamentary Commission enquiring on waste cycle and the interlinked illegal activities set up 20 October 2006

⁴ The regional law n. 10 of 10/02/1993 established 18 consortia for solid waste management

work. Mostly, they do nothing". On June 2007 Roberto Barbieri, senator and president of the commission, submitted to the presidency of the two Houses the Territorial Report on Campania⁵, where he stressed the dangerous involution of the waste cycle in Campania, also presenting severe health risks for the citizens. He added: "*to call an emergency a situation which has been lasting for 14 years is an oxymoron in its own terms*".

3. 3 Chronology of events

What is the origin of the problem in Campania? In order to understand the reasons of the unfulfilled plan for a regular waste cycle we should go back to 1994, when an Extraordinary Commission was set up. Starting with the words of Daniele Fortini (Managing Director of Asia⁶), interviewed in Naples as part of the research.

In 1994 the waste emergency in Campania officially began on the 11th of February, when the then President of the Council of Ministers, Carlo Azeglio Ciampi, issued a Decree taking cognizance of the environmental emergency in various cities of the region. The problem was that the regional plan, issued the previous year, did not work; waste ended up in landfills which were close to the exhaustion. The government appointed the prefect of Naples as the Extraordinary Commissioner to the emergency of the waste; the offer of a contract for tender was called in 1998 and ended in 2000; the then president of the region and Extraordinary Commissioner, Antonio Bassolino, signed the contract with the winning company, FIBE - a consortium made up of different companies, among them Impregilo. Technically the project of FIBE scored only 4.2 less than half of the competing company, Elettroambiente – owned by ENEL⁷ - which scored 8.6.

⁵ Relazione Terrioriale sulla Campania

⁶ The firm in Naples responsible for municipal waste collection

⁷ Ente Nazionale per l'Energia Eettrica, National Body for Energy, the biggest Italian energy provider and the second largest energy provider in the world.

But the low prices and the short timeframe offered were the winning factors, therefore the emergency was read in time-terms rather than in quality terms. The integrated disposal plan of the MSW consisted of two incinerators producing energy - where RDF should have been burnt - and seven plants for the production of RDF and SOF. The incinerator proposed was outdated and did not offer good energy outputs; these plants would receive urban waste (undifferentiated); the biologic stabilization would separate the humid fraction from the dry fraction; the latter would be processed through a rotating shredder unit for chopping and grinding.

The report by Gribaudi (2008) explains the developments of the events: FIBE was supposed to deliver the incinerator by 31^{st} December 2000. But by that date there was neither plant nor the permissions to build. The timing proposed was indeed not workable. A series of clauses were later added allowing - for reasons beyond the ordinary control - extensions to the delivery without penalties. One of the clauses provided that the site would be chosen by the winner, without any consultation with the local institutions or with the citizens; without therefore taking into consideration the problems and the characteristics of the territory. The two incinerators were planned in two places next to each other (Acerra – recently opened - and Santa Maria La Fossa – only planned) with a high impact on the environment; and because of the powers of derogation of the Extraordinary Commission EIA was not requested. As a result, this area which produces 70% the of the famous cheese *mozzarella di bufala*, would be invaded by trucks arriving from hundreds of kilometers away bringing the waste of the whole region.

The seven plants planned for producing RDF should have given out a product to be afterwards burnt into the incinerator; but those plants, which grind and package waste, do not differentiate the product and do not produce RDF or SOF; the components resulting from the process are such as they enter the plant⁸; The incinerator of Acerra has been recently inaugurated (27th March 2009) but the eco-balls – which are against regulations - cannot be burnt there (Parliamentary Report 2006). Traces of arsenic - exceeding the allowed limits - have been found, as well as whole pieces of products. The calorific value of this product is lower than it should be and the rate of humidity is too high to be processed in an incinerator. The volume of the outgoing garbage is bigger than the one at the entry, because of the additives. Hence the need to find new caves to dispose waste; additional million Euros needed to ship the balls to North of Italy or abroad. In this context, speculations and criminal infiltration could easily find their way.

Actually the emergency was not a new event in Campania – as also Alberto Grosso, officer at ARPAC (Regional Agency of Campania for the Protection of the Environment), revealed during the interview - it had erupted on different occasions - as in 2001 and 2003 - as a consequence of the exhaustion of the existing landfills managed by the consortia. At that time each municipality had to open temporary storages, which are still in use and fall within the reclamation plan; ARPAC counted more than 200 of them. In 2004 another severe emergency exploded, this time because the storages for the eco-balls were overly filled; and finally the 2008 emergency, which spread far and wide.

3.4 Field trip in the province of Caserta and in Salerno

The interview with the Mayor of Santa Maria La Fossa, Bartolomeno Abbate, and the trip to the field - accompanied by Massimiliano Mollo - Executive of the local health office at the veterinary department, in Ferrandelle and Santa Maria la Fossa - provided a key to grasp the scale

⁸ "tale quale": this expression became a buzzword in the waste environment

of the problem. In an area of ox-farms and lands used for agriculture, landfills have been installed, justified by the fact that the area was scarcely populated. Appeals were made to the regional administrative court, for the sake of environmental and health protection. Many firms failed, whereas others left the region. The so-called temporary stocking sites at Ferrandelle caused severe environmental damage: leachate seeped into the ground water, as a consequence of the erosion of the clay soil, which gave in under the weight of rain water.

The first landfill plant was opened in 1996; at that time there was the system of the "consorzi di bacino", each of which located the relevant landfills, therefore the impact was limited and controlled. However as some landfills were exhausted and others closed, the emergency urged the use of the next landfill; Ferrandelle should have received 320,000 tons, but the actual amount received is not computable. The landfill does not comply with safety standards, in spite of continuous requests; Mollo adds: "ARPAC made analysis of the soil, since dioxin was found in the milk: breeders give ground wheat to the animals, but if crops are next to one or more landfills wheat grows contaminated" (Annex VII). Stories and reports of the severe situation are revealed by the documentary Biùtiful cauntri⁹ (2007), which shows dramatic scenes, such as breeders witnessing their sheep dying from dioxin.

As we already saw in the second chapter poor waste management did not characterize the whole region; there are indeed cases of excellence, as I could see during my visit to the municipality Salerno. This town boasts an efficient managed waste cycle, as the assessor to the environment Gerardo Calabrese comments (De Santo 2009): the actions of local administration complied with the criteria of efficiency and efficacy, implementing an integrated waste cycle according to EU directives, focusing on prevention, reduction, and recycling, explained in the second chapter.

⁹ This is how Neapolitans would pronounce the English "Beautiful country".

3.5 How the last Commission exited the emergency phase

On May 23rd 2008, with the appointment of the undersecretary of state in the chair of the commission, the situation was the following: 35.000 tons of MSW is abandoned the region and 90.000 tons of old stocks is stored in temporary municipal sites.



Map 1: daily production of MSW in Campania in 2009

The map 1 describes the production of MSW in Campania. The five provinces produce about 7.000 tons daily; of which 4.000 in the province of Naples. Since there is no complete cycle of waste treatment yet - allowing processing and re-using the different components of the waste - the interventions of the new commission aim at disposing waste through appropriate landfills, incinerators out of the region and improving separate collection.

The army watches the sites and, together with the Fire Brigade, it monitors waste entering the landfills. The army, in agreement with the municipal administrations, is committed to the extraordinary collection operations in Naples and the municipalities of the province.

Source: Presidenza del Consiglio dei Ministri, Sottosegretario per l'emergenza rifiuti 2009¹⁰

¹⁰ Council of Ministers - Extraordinary Commission of Campania

The Region Campania, as Donato Madaro explained, established a working group in order to facilitate the process of terminating the emergency phase - due at the end of the year - transferring the competences of the Extraordinary Commission and returning them to the ordinary bodies, also through trainings of the personnel. As Fortini reassured, in Naples ASIA is starting-up the separate collection - area by area - and intervening accordingly (currently it accounts for 15% / 16%). Also information campaigns will help to accelerate the process; in cooperation with CONAI the region will launch of the project called "Clean Campania" whereby citizens disposing less waste (kg) will get a prize. The next action will be to pass from fixed common tax (tarsu) to a tariff favoring the citizen who operates a good separate collection – according to EU regulation. The regional plan is currently being drafted; trucks carrying waste will be monitored by gprs, tracking their route, thus impairing the transports monopoly dominated by a few.

Is the situation solved? Contrasting opinions revolve around this crucial point. When visiting the recycling plant in Caivano (province of Naples) Giuseppe De Gennaro, managing director of the De Gennaro SPA, stressed the positive results achieved by the last Commission, whose clear sign is given by the fact that waste is not in heaps in the streets anymore; but, for example, the standpoint of Mollo is rather different, saying that, certainly, citizens no longer see anymore the garbage next to their doors; but dust was swept under the carpet, meaning that waste has simply been moved somewhere else.

Having outlined the case within its technical and legal context, the hypothesis put forward in the first chapter will be analyzed in the next chapter.

CHAPTER 4: ANALYSIS OF THE HYPOTHESES

In the previous chapter waste management technical methods and legal regulations framed the case of Naples; this chapter will specifically focus on the analysis of waste management problems in Naples, comparing the interviews carried out with experts and officers, the population's perceptions on the issue and with the literature review.

4. 1 Analysis of the results

In the first chapter four possible hypotheses were put forward, suggesting the possible reasons for the environmental disaster in Campania. In this section, the live interviews (Annexes I and II) and questionnaires made with 27 citizens in Naples (Annex III), combined with the existing literature on the case will steer towards a thorough analysis, proving the hypotheses. The answers of the citizens will be compared with an already existing opinion poll conducted by a local NGO, RCSA - Health and Environment Network of Campania - (surprisingly local administrations did not produce any), where 684 citizens in the historic areas of Naples were given a questionnaire.

Hypothesis 1. Waste management is inefficient in Naples because of the lack of the political will to properly enforce and comply with waste management regulations.

As explained in the previous paragraphs the waste management cycle was not implemented according to the EU and national regulations (as shown in the second), in spite of the governmental initiative to create an external Commission aiming at properly enforcing waste regulations, which clearly resulted in a failure. Indeed, as we can see from the declaration of the European Commission (EP 2008), it is the commissioner for the environment Stravos Dimas who openly denounces the lack of political will in taking effective measures, which is also confirmed in the enquiry by the prosecutors Noviello and Sirleo (Chiariello 2008) and reiterated by the "Bassolino - Impregilo" court case (2008) who point out the negligence and the inefficiency of the commissioners in tackling waste problems. Likewise experts/officers interviewed in Naples - during my field trip convey the same message, meaning the cultural delay in the leading class in a democracy where the responsibility pertains to the government (Fortini, Buonuomo Costarella, Scialdoni, Diaz del Castillo). However Grosso softly puts it: *"this is what the facts say, but we cannot know the intentions"*; but Mollo emphasizes the political connivances with the underworld, for which a number of politicians are on trial, including Bassolino.

Some experts, like Varriale and Avoletto question the good intentions of the political will: was it really an emergency solvable only through the establishment of a commission? Was it a political will to extend the emergency endlessly to make profits from it? Turning to the citizens, corruption stands out undisputedly; surprisingly the citizens did not place lack of political will as the first reason - unlike the experts assuming corruption is an independent and uncontrollable force. This is most probably due to the fact that citizens are insufficiently aware of the environmental processes which fall within political maneuvers; from their words mostly feelings of discouragement, resignation and sense of abandonment from the political bodies emerged. From the data collected by RCSA it emerged that citizens mostly blamed politicians/companies/organized crime for the failure of the separate collection however they do not absolve themselves.

Based on this information, we can undoubtedly state that lack of political will has a major responsibility affecting on the one side the capabilities of governmental system in the implementation of waste regulations and, on the other side, it leaves the door open to personal interests. We can therefore confirm the first hypothesis stressing the lack of the political will in implementing waste policies.

Hypothesis 2. The lack of clarity and overlapping of competences of different public organs jeopardize the efficiency of environmental management in Naples.

As we can read from the *Commissione Parlamentare*¹¹ (2007) the entanglement of institutional competences and the non-compliance behavior of some local institutions caused an institutional and managing paralysis; in particular it stresses that the overlap of competences among different bodies involved in the process - the Extraordinary Commission, the Ministry of the Environment, the Presidency of the Region Campania - created confusion in the interventions and in the roles. The report says:

When the question 'who does what' remains unanswered, the consequence is inaction, weak responsibility in the pursuance of the institutional prerogatives; the outcome is deficiency in the decision-making process for the integrated cycle, indulgence in clientelism and infiltration of organized criminality.

Madaro, Fortini, Buonuomo, Grosso reiterate: "the responsibilities of the commission were not clear; local organs were deprived of their role, the problem was tackled fragmentally". In addition, the failure in appointing technical capable experts, the deficiency in the facilities, in providing plans to the municipalities on how to operate the separate collection, and the difficulty in locating plants (Madaro and Costarella). Moreover, Costarella adds: that there was an excess of personnel and no door to door waste collection, except rare cases. During the TV program *Report* (2005) - by Milena Gabanelli - a journalist from RAI¹², Bernardo Iovene, (broadcasted in November 2005) entered the office of the consortia, and looking at the employees smoking cigarettes and

¹¹ See footnote n 3

¹² Italian state owned public service broadcaster

playing cards he asked how they spent their time during the working day; but they simply answered that they were not doing anything since they were not provided with equipment and were not told what to do.

Hearing the voice of the citizens overlapping of competences is not perceived as the primary reason at all. The clear feeling, when posing this questions to them, was an insufficient knowledge of the roles of the Commission in relation with the different bodies involved in the system, for which only the local government was regarded as the main culprit; which explains the absence of the citizens in the local political management. As we saw in the success case of Salerno, the efficiency of local politics is strongly related to the involvement of citizens. A system dominated by confused political roles entails confusion also in the role of the citizens, jeopardizing in the end the overall efficiency. We can therefore confirm that the lack of clarity and overlapping of competences of different public organs jeopardized the efficiency of environmental management in Naples.

Hypothesis 3. The lack of controlling and monitoring of entities in charge of waste collection facilitates corruption in waste management at public and private levels.

Low environmental and technical performances - as sustained by the same Alessandro Panza (2007) - failed to meet EU, national and local standards. In his book about Naples Chiariello (2008) explains it clearly: Catenacci was the first to reveal the contractual violations of Impregilo: the eco-balls had been checked until that time by ARPAC in the laboratories of the same FIBE, which means that the controller made the controlled certify that the work was well done. The testing was then assigned to ACEA (Municipal Firm for Electricity and Water), which found that the eco-balls were everything except ecological.

The banal answer of the then commissioner Antonio Bassolino - during his inquiry on the 19th of July 2006 - was puzzling: "I never read the contract I signed although I took up the responsibility with signing the start up of the administrative course"; apparently he signed contracts of million EUR without knowing their content of them. Because of the establishment of the Extraordinary Commission functions and legal responsibilities of the local officers were loosened; at the same time external consultants were contracted, for which the regular control – within the framework of the public service - could easily be overlooked. The lack of monitoring from the EC for the compliance with waste regulations - Italy being a Member State obliged to abide by the EU directives (as shown in chapter 3) - is another component: Diaz del Castillo from EU Commission, acknowledges the responsibility of the institution, for the fact that EU normally "trusts" the Member States; EU officers were sent to check only when the scandal broke out. We can therefore conclude that there is lack of surveillance tools from the supra-governance to make Members comply.

Puzzling are the answers from the citizens: during the questionnaire the word "monitoring" had to be repeated and articulated different times, sometimes even had to be explained, as if this word were not part of their mindset and out of their vocabulary; again there is evidence that the slow and occasional participation of citizens in the decision making processes weakened the watching civil tools. All this considered, the third hypothesis putting forward monitoring and controlling deficiency can be confirmed as one of the major elements affecting the correctness of governance in the waste management in Naples.

Hypothesis 4. The lack of involvement of citizens in the waste management decisionmaking process at public levels deters the identification of community concerns and needs regarding life conditions.

According to the Local Agenda 21 (UNDESA 2004) a democracy requires the participation of its citizens; local bodies are responsible for providing tools to meet their needs in identifying technical, energy, infrastructural policies through different tools (negotiations, public hearings, referenda, opinion polls). Their involvement is therefore pivotal in preventing frustrations and disagreements in the development of plans, particularly in those that deal with environment. However this is not the case that occurred in Naples. According to the experts inquired, citizens were affected by the unclear information provided by the authorities. Landfills were perceived as a punishment, therefore local communities opposed to any kind of plant (Madaro).

Therefore a general feeling of distrust towards the government and a loss of authoritativeness of the state were experienced (Grosso); indeed Mollo says "*Bassolino is investigated on many issues by the magistracy, but he never resigned. People are exasperated*". But there is also the belief that citizens are responsible themselves, as suggested by Mollo because of their wrong mentality and life style and deficiency in education. According to the questionnaire given to citizens, their own cultural mindset and attitudes related to waste separation are considered among the main reasons, after which life style is also mentioned; the lack of involvement of citizens is mainly recognized but not perceived as a priority, most probably due to the fact that citizens

show quite a passive attitude towards the decisions and the actions of the institutions; they are not particularly informed about the processes either: for example when the 3 R were presented they knew very well what recycling was, but were quite lost when asked about reducing and reusing. As to the integrated cycle, again they apparently wavered in the answers, since they knew that garbage has to be collected, but they had vague or no idea about other phases. Surprisingly few associate waste with health risk, for which the annoyance is mostly due to aesthetic reasons.

As we have shown citizens were scarcely involved at any level: they were insufficiently informed, trained or taught about waste processes, and were mostly marginalised from the political level; as a consequence, they did not feel involved in the processes, and were not even motivated to be involved. It resulted in a gap between what is planned and what is actually needed; a blurred perception of the roles of the citizens themselves - presenting a passive attitude - and of their needs and concerns clearly emerged - for example it's not uncommon that they fail to associate health risks like tumours, and poor waste management (WHO 2007). Accordingly, we can also confirm the fourth hypothesis ascribing to the lack of involvement of the citizens one of the main causes of waste problem in Naples.

4.2 From the analysis to the conclusions

In the light of the points discussed, it is now possible to identify the factors that determined the waste problem in Naples, which are the lack of political will, overlapping of competences and confusion of roles, scarce monitoring and controlling, limited involvement of citizens in the political processes of waste management. The complex analysis originates the waste crisis in Naples to one key concept: political inefficiency.

The literature dealing with political efficiency is quite abundant, specially dealing with democratic deficits and democratic revitalization (at national and EU levels), on institutional reforms, on local empowerment, new public management or on capacity building in civil society (ECPR 2006).

In the next chapter solutions will be suggested, recommendations and the relevant conclusions will be formulated, in order to wrap up the results displayed in this chapter.

CHAPTER 5: RECOMMENDATIONS AND CONCLUSIONS

The previous chapter focused on the analysis of the factors determining waste management disruption in Naples and answered the first question raised at the beginning of this research. Following the thread, the second still open question which is how municipal waste management can be more efficient in order to improve the life conditions of the population of Naples. In order to formulate suggestions, the four hypotheses will be the starting point to offering solutions. The existing literature, together with the opinions given by experts via interviews, will be the support structure for building concrete recommendations.

5. 1 Recommendations

Recommendations on encouraging political will to properly enforce and comply with waste management regulations.

As we saw in the previous chapter, the lack of political will undermined the implementation and therefore the overall efficiency of waste regulations in Naples, allowing private interests to gain ground in the public arena. For achieving real results, a strategic plan should be developed targeting both the short and the long term, both at political and technical level. The short term solutions should be introduced to immediately start the process of correcting and repairing the damage produced by years of waste mismanagement. But long term measures are necessary to address the problem at its core. Solutions should be aimed at improving the performance of the political class - primarily the actions of local administrators - and at devising technical measures to improve waste management.

The short term plan should be structured with outputs and outcomes: local administrators should be committed to these steps. Moreover, incentives and punitive actions should be set, considering meritocracy as the core element of a functioning system; bonuses should be given for good performances, but rather as awards granted to individuals (which might create resentment and obsession to attain the goal) team bonuses should be designed to reward therefore groups, promote cooperation and encourage exchange of information (Osborne 1993). In this framework, it should be guaranteed that the private interests do not push and influence the decisions of political administrators, therefore, as Alberto Grosso remarked, politics should not interfere in the public administration (Bassanini law¹³ indeed envisaged the separation of roles between executives of the public administration and politicians); should an officer fail to reach the goals, he should incur a serious penalty, which depending on the seriousness of noncompliance can be physical - such as prison - and/or financial indemnification; at the same time trainings for building capacity of the executives and the decision-makers should be made compulsory. Specifically the staff of the "consorzi di bacino" should be dismissed, aiming at having real experts in the waste management body.

Looking at the technicality of waste management, increase of separate collection, recovery of materials, decrease of waste in dumps are main goals of the regional strategy for the development of "Mezzogiorno"¹⁴ 2007-2013 (Relazione programmatica 2007); in practical terms the distribution of throw-away objects in the market should be reduced. Actions on the prevention should be strengthened; EU regulation did not set yet any prevention targets, which indeed would be needed for better guidance of the member

¹³ Law 15 March 1997, n°59

¹⁴ Southern Italy

states; existing RDF plants should be revamped, the eco-balls should be re-processed, the contaminated areas swamped with an unaccountable amount of waste dumped indiscriminately should be reclaimed. As Mayor Bartolomeo Abbate claimed, it would be necessary to create small composting sites in each municipality with the purpose to combine the composting sites with integrated plants for the agriculture, where the humid fraction can be used for agriculture (in Viareggio, a province of Florence, it is successfully applied). In some cases such as seaports, airports, and markets, where considerable quantities are produced - in order to reduce the impact caused by the transport of waste - small plants should be created to treat it *in situ*. Incinerators do not match the separate collection; mechanical and biological treatment plants can be a sound alternative.

As Donato Madaro suggested, the tax on garbage, which is still set according to the size of apartments, should be soon replaced by the EU tariff (as explained in chapter 3), set according to the quantities of garbage produced by individuals/families. Moreover, in order to promote separate collection, the local administrators should simplify the collection process for citizens, who are often puzzled by the number of bags and the rigid picking-up times they are obliged to comply with.

The long term solutions revolve around the concept of an anticipatory government, acting rather than reacting and presenting rather than responding. The government should invest in the new generations, therefore pupils should be made aware of the respect for the environment, and should be taught how to comply with regulations. Educational campaigns for children should be promoted as follows: introducing at primary and secondary schools one/two classes per week on sustainable development - waste management would be one topic; the local government should organize training modules - free of charge - delivered by scholars and experts for graduates and undergraduates of technical universities, who in their turn should teach to school children, achieving cascading effect. At the same time cartoons for children and scientific documentaries for adults should be broadcast in the evenings.

In August 2007 the Regional Council of Campania approved a resolution adopting Green Public Procurement method for the purchase of goods and services; the concept which should be spread and get rooted is the change towards a sustainable economy, redesigning and re-thinking the whole process and creating new jobs at different levels. An interesting DVD, "The Next Industrial Revolution" explains the sustainable principles designed by the architect William McDonough, and the chemist Michael Braungart, which have already been applied by individual companies, such as Nike, Ford Motor Company, and Herman Miller Furniture. It stresses the transformation of the relationship between commerce and nature, namely human industry from a system that takes, makes, and wastes to one aligning natural, economic, and cultural abundance.

The book by the same authors "From Cradle to Cradle" (2002) points at the outof-date industrial framework which our society is still based on, conceived around the use of fossil fuels and chemicals, relying on one-way manufacturing flow - what is known as a "cradle to grave" lifecycle, producing massive amounts of waste -, ignoring the diversity and the transformations of our modern life. Mario Avoletto puts forward simple solutions. For example in California, Canada or Australia, where there are no landfills, and all the products that cannot be recycled are re-planned, separate collection amounts to 70%/80%. Plastics should therefore be slowly replaced by bio-products (made from corn). Successful examples from the business sector show that reducing waste means also a reduction of costs. For example, Hewlett Packard in Roseville reduced its waste by 95% and saved around 900 thousand dollars in 1998. Epson in Portland has reduced its waste to zero and has saved \$300,000 (Zero Waste Alliance 2009).

Simultaneously government should provide incentives for traditional industries promoting the move toward new environmental friendly industries. Another action from the government should be the allocation of funds to research (which unfortunately during this government has been significantly reduced) on the best technologies for managing waste in an environmentally sound and economically efficient manner (thus creating more jobs). As we might see, this trend is also advised by OECD (2007) in the manual on Environmentally Sound Management, specifically aiming at promoting the transfer and application of the best technologies for improving MSWM.

How to tackle the lack of controlling and monitoring of entities in charge of waste collection?

According to OECD (2007), despite various standards, compliance and enforcement are weak. Strong and independent monitoring mechanisms should be devised to ensure compliance with the standards and requirements laid down by legislation and permits; among OECD (2007) recommendations: the legal framework could consist of environmental instruments, such as emission limit values, environmental performance standards, technology standards or other regulations applicable to waste management. The enforcement mechanisms could consist of such tools such as the verification and compliance with legal instruments and standards carried out by governmental officers or appropriate bodies. In some instances, issuing authorizations or permits might be appropriate.

The 6th environmental action programme of the European Community strongly refers to the need of an "ex-post evaluation on the effectiveness of existing measures in meeting their environmental objectives". Such evaluations require a better understanding of policy measures and an examination of the mechanisms that lead to their observed effects; therefore the following indicators should be considered: what measures have to be implemented in response to the given directive, their effects and the national context in which they are supposed to operate (EEA 2005). EPA has also emphasized the importance of regular inspections and monitoring to detect noncompliance, and has responded to violations with swift and appropriate sanctions; in particular, introducing performance measures to work. This means measuring results, in particular process measures is necessary; as Truett Degeare (EPA) explained, in US the staff of the firms in charge of waste collection, transportation and disposal, receives regular inspections from the local administrators. For this purpose both quantitative and qualitative analyses are needed, implying not only checking numbers but also making physical inspections, observing the implementation processes, talking to the staff in charge of the execution of the activities (Osborne 1993).

The European Commission should regularly send officers to check; installing local agencies would probably represent additional financial burdens and an additional red-tape apparatus, therefore ad hoc missions should be part of the regular tasks of the EU officers. It was also Massimiliano Mollo who advanced the idea of an impartial monitoring, with no ties to the territory, in order to prevent corruption.

The words of the chair of EEA Management Board, Mr Liljelund, urge the enhancement of the evaluation phase of policy effectiveness: "*we must be able to demonstrate that environmental policies are delivering real results in an effective way*" (EEA 2001). For a proper evaluation of environmental policies a clear understanding of goals, tools, and outcomes have to be identified. For each policy a set of indicators should be set measuring the implementation of the policy and the impact (Osborne 1993).

It clearly emerges that the legal framework to control and monitor is already designed, but what is missing again is the political need to implement it.

How to clarify roles and competences of the different public organs in charge of municipal waste management in Naples?

As stated by EEA (2005) specific features have to be introduced in response to the objective of the directives; the distribution of responsibilities among the different actors and the cooperation between public authorities and various stakeholders is needed to ensure the efficiency of the system. OECD (2007) states that when several governmental levels are involved in the development and/or implementation processes, good coordination is crucial to effective enforcement.

Applied to the case of Naples, the Mayor Bartolomeo Abbate strongly emphasized the need to return to the ordinary system, suppressing the Extraordinary Commission: each municipality has to solve the problem locally; the conditions according to which the ordinary bodies can go back their normal functions and performances should be restored; it is also stated in the *Commissione Parlamentare*¹⁵ (2007), which also puts in that the region not only should be in charge of regulating, planning, coordinating, but its tasks should be extended to management activities, such as allocating funds to public bodies for

¹⁵ See footnote n 3

the implementation of the waste management integrated system. The province should have monitoring functions, whereas municipalities should suggest the identification of areas suitable for the disposal and treatment plants – besides the usual functions of health protection, waste collection and transport – since they know their territory the best; institutional cooperation among the different levels requires concerted actions within a holistic approach, combined with a simplification of the institutional framework, eliminating the bodies of bureaucratic intermediation; as Massimiliano Mollo suggested, one single subject should be responsible for the full waste cycle (collection, transportation, processing, disposal, final destination).

How to encourage citizens' involvement in the waste management decision-making process?

The social element is crucial in the waste management problem. As Osborne (1993) suggests if results are demonstrated public support can be won. Proving accountability for performance will bring voters positive response. Therefore when spending is conditioned to results, voters will back the relevant initiatives. The institutional context provides meaning as well as enabling capacities to individual actors, transforming not just the strategic behavior of actors, but also their goals and abilities (Hall and Taylor 1996). With a view to increasing political participation, this notion is linked to the hypothesis which states that people are not born as citizens. Rather, democracy must be learnt, which is ensured only through corresponding institutional frameworks. Projects of capacity building, for example, are supposed to enable civil society to play a more active role in democratic self-governance. Consultation exercises are hoped to regenerate public trust in representative politics and to tap civil society as a

resource helping to improve the quality and legitimacy of public policy decisions (ECPR 2006).

When interviewing citizens, the impression was that their careless attitude to waste issues was not deliberate but a consequential resignation, as if they were neglected by the process; but they also expressed hope and willingness to learn, should they be involved. Hence the assumption is that with local administrations' right attitude citizens would be positively contributing to the process (through surveys, phone hotlines, ombudsmen, focus groups).

Regular roundtables could be organized with leaders/representatives of neighborhoods for them to actively assist local administrators in the implementation of waste policies. As suggested by the Asian Development Bank (2007) it is important that the design of annual programs and activities be driven by the country's needs and aligned with its own priorities. This will ensure that the programs and activities are relevant, have immediate impact and are sustainable. Only citizens can give clear inputs in this direction, since they themselves know what the community needs. The words of the President of Legambiente, Michele Buonuomo, reinforce this standpoint:

I would launch positive messages to the citizens; environment is a resource, democracy is an element sine qua non for a sustainable development.

From the four hypotheses already proved, the relevant recommendations focus on designing concrete strategic plans – short term and long term – affecting the political and the technical structure of waste management in Naples; building the capacity of waste managers, introducing motivational and punitive schemes preventing corruption; monitoring actions should be implemented starting from the reinforcement of political

will; moreover the local responsibility has to be enhanced, involving citizens in the waste decision-making process.

5.2 Conclusions

The research has demonstrated that there are four factors hampering the correct functioning of waste management in Naples. Throughout the six chapters the problem of waste management in Naples has been put within its technical, legal and political context and an analysis of the reasons of the crisis provided answers to two research questions, namely the causes and the solutions of the waste problem in Naples.

In conclusion we may say that the lack of political will, combined with different elements, as neglecting the monitoring phase, creating confusion with installing external organs, caused the waste disruption in Naples. Recommendations aim at improving waste management in Naples, emphasizing the concept for which governance should be re-defined according to the needs of our society. For this institutions need to be more flexible and adaptable. The political class dealing with waste management needs to be driven by experts adopting a holistic approach; inspecting schemes have to be regularly implemented within a user-friendly system, empowering citizens through a participatory democracy steered by an anticipatory government. As Alvin Toffler (1978) observes in "Anticipatory Democracy" "the political technology of the industrial age is no longer appropriate technology for the new civilization taking form around us. Our politics are obsolete". Therefore the new direction should be to make public safety a community responsibility, transforming the police officer from an investigator and enforcer into a catalyst in a process of community self-help (Osborne 1993).

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ANNEX I : LIST OF INTERVIEWEES

Avoletto Mario, RCSA, Rete Campana Salute e Ambiente, Expert Abbate Bartolomeo, Mayor of Santa Maria La Fossa Buonuomo Michele, Legambiente Campania, President Costarella Fabio, CONAI, Supervisor for Southern Italy De Gennaro Giuseppe, De Gennaro spa, recycling company at Caviano Grosso Alberto, ARPAC, Waste Division, Expert Degeare Truett, EPA, Office of Resource Conservation and Recovery, Environmental Engineer Diaz del Castillo Jose Jorge, EC, DG Environment, Waste Unit Fortini Daniele, Federamabiente, President; ASIA, Managing Director Madaro Donato, Region Campania, Environmental Division, Waste management Area, Executive Marconi Carlo, ASIA, Director Strategic development Masullo Andrea, WWF Lazio, Head of the scientific area Mollo Massimiliano, ASL, Veterinary Division, Director for the province of Caserta Pirone Enzo, Willy Brandt Foundation, Waste Expert Scialdoni Raffaele, ISAT – Environmental and Technological Institute, Expert Szlezak Jozsef, Regional Environmental Center for Central and Eastern Europe, Sustainable Consumption and Production, Environmental Policy Directorate, Senior Expert

Tondi Camillo, Ministry of Defense, Executive

Varriale Massimiliano, WWF Lazio, Energy/Waste Expert

Missed meeting

The National Department Civil Defense (Fabrizio Colcerasa) could not be met because fully committed in the emergency of Abruzzo.

ANNEX II: QUESTIONS TO THE STAKEHOLDERS

Questions:

Waste management comprehends different elements involving a range of actors coming from national, local, private sectors. Which is the element which failed to work properly?

Why illegal dumping is a common and long-time practice in Campania?

Why landfills are still the most widely used method to dispose waste in Campania?

Which results the Extraordinary Commission achieved?

Should you be assigned a recovery plan to solve the waste management problem in Campania, which measures/actions would you introduce?

ANNEX III: QUESTIONNAIRE WITH THE CITIZENS

From 1 (totally agree) to 4 (totally disagree)

 Which one do you reckon are the reasons for the waste problem in Naples? Life style
Cultural mindset and attitudes
Consumerism
Lack of environmental awareness
Deficiency in technological efficiency/infrastructures
Lack of governmental actions/initiatives
Poor monitoring in the implementation of the policies
Lack of involvement of the citizens
Overlapping of competences among the organs charged for waste management
Corruption
Others (.....)

From 1 (totally satisfied) to 4 (totally unsatisfied)

2) How do you assess the efficiency the different stages of waste management

Waste separation Collection Transportation Treatment

From 1 (totally aware) to 4 (totally unaware)

3) To which extent you apply the 3 R? Reduction Recycle Reuse

From 1 (substantially) to 4 (at all)

4) To which extend the waste problem affects your life?

Health problems Esthetical problems (heaps of bags piled up in the streets) Annoyance (smell, difficulties in walking/driving in the streets)

5) How many bags of waste do you produce per week?

Gender

Age

ANNEX IV PHOTOS

Garbage still in Naples (April 2009)



The below photos show landfills and waste abandoned next to agricultural lands (April 2009)

