Cristiano Ciappei – Satu Rintanen

WASTE MANAGEMENT IN URBAN SETTINGS

Editrice | UNI Service

Cristiano Ciappei – Satu Rintanen, *Waste Management in Urban Settings*

Via Verdi, 9/A – I-38122 Trento
www.uni-service.it – editrice@uni-service.it

First Edition: october 2011 – *Printed in Italy*
ISBN 978-88-6178-749-0

Cover Image:
St. George and the dragon, Novogrod school, Tempera on wood,
58.4x41.8x3.5, State Russian Museum, Sankt Petersburg, late XV

Cover Design: ecru

Contents

Index of Figures and Tables

WASTE MANAGEMENT IN URBAN SETTINGS

Preface

Tuscany is one of the Italian regions that produce more waste. Families, businesses and governments in 2006, according to the report by the regional resource recovery (Arrr) than for the Environment (Arpat) and of the regional waste, have produced 2,562,000 tons well. In addition there are special waste, most of them categorized as hazardous waste. A complex situation, which contribute to factors such as the significant tourist flows hosted by the Tuscany – over 40 million people every year – and the presence of an economy made up of many small and medium-sized businesses, whose waste is often treated as waste urban. Cycle management of waste in Tuscany is entrusted to three Ato interprovincial: Ato Center of Tuscany (Florence, Prato, Pistoia), West Tuscany (Lucca, Pisa, Livorno, Massa Carrara), South Tuscany (Arezzo, Siena, Grosseto).

The recycling has increased, but still a good result to improve. About 12% of waste from Tuscany (the same percentage to almost 10 years) is burned in incinerators in one of 8 currently operating in Tuscany. The rest ends up in one of 22 landfills. The largest are located in Terranuova Bracciolini, and Peccioli Rosignano. It is estimated that these plants will be exhausted between 2010 and 2011. The objective of this report is to provide an image of the state of affairs in the waste sector and the role of waste-to-energy in it. This report can inspire work with waste management by mapping out opportunities for and barriers to the use of waste incineration with energy recovery in local waste management systems. The emphasis is placed on the study of the Florence plain waste-to-energy plant project that was already started in the beginning of 2000, but is still waiting to be executed. According to the local government, this project is necessary and legitimate, but some local inhabitants, supported by environmental associations, have opposed it mainly for two reasons. Firstly, because waste incineration with energy recovery draws attention away from the real priorities of the sector (waste prevention and

reduction). Secondly, because the plant will excessively degrade the environmental quality of the area in which it will be located. The waste sector is highly regulated and influenced by the EU's strategic guidelines. Waste quantities are growing and, at the same time, waste is being diverted from landfills. In the first chapter of the report is defined what is waste today. Different meanings can be attached to it, as it is quite common to try to fit the definition to the purpose it is used for. A legal definition is needed to give meaning to operations within the waste sector, i. e. to regulate, enable, and limit them. Although the European Commission considers the definition of waste still substantively valid, it has perceived a need to set clear boundaries for when a waste has been adequately treated and should be considered a product, i. e. when a waste ceases to be a waste and becomes a secondary raw material (capable of economic reutilization). The Commission proposes to establish waste-stream-based environmental criteria to be added in the frame-work directive to fill this conceptual gap. With this amendment, it intends to enhance the market of recycled products and to facilitate recycling activities, in harmony with the priorities set for the sector (CEC, COM 2005, 666 final, Annex 1, p. 13). Adequate and safe waste management has become an issue of great international interest, and therefore the European Union's regulator has provided such a definition in the sector's frame-work directive: "waste refers to any substance or object in the categories set out in Annex I which the holder discards or intends or is required to discard" (Directive 2006/12/EC, article 1, point a). In the second chapter of the report is defined the European Union's approach to waste management.

In the EU's strategic approach, the avoidance of waste is placed at the top of the list of activities, in conformity with the objectives agreed internationally and laid down in the OECD's definition of waste minimization. The concept of waste minimization is based on a model known as waste hierarchy, according to which waste minimization covers activities from waste avoidance and resource recovery to environmentally sound treatment and disposal, in the stated order of preference. The waste hierarchy provides strategic guidelines for the organization of activities. The selection and mix of components that form a waste management system should be based on careful planning that guarantees technically, economically, and environmentally sustainable outcomes. The long-term goal for the whole Community is to become a recycling society, where the avoidance of waste and resource recovery take priority over other options. The Sixth Environment Action Programme of the European Community 2002-2012 (6th EAP) sets out the framework for envi-

ronmental policy making and identifies four priority areas: climate change, nature and biodiversity, environment and health, and natural resources and waste18. Seven thematic strategies form the framework for action at the EU level. "Taking Sustainable Use of Resources Forward: A Thematic Strategy on the Prevention and Recycling of Waste" is the strategy that concerns natural resources and waste: it sets out guidelines for the improvement of waste management (CEC, COM 2005, 666 final). The strategy intends to contribute to the achievement of overall aims, which are preventing climate change, protecting natural resources, contributing to the high quality of life, and decoupling waste generation from economic growth (6th EAP, article 2).

In the third chapter, the report analyze, theoretical perspectives on waste policies and waste service providing. Governance refers to the exercise of power by executive bodies in public (the EU, state, etc.) or private (corporate) contexts (see CEC, 2001a, p. 8). It deals with rules and processes needed to negotiate a range of interests in society. It differs from the traditional top-down government models, basically in its approach to stakeholders, which are given a more active role in decision making and in the implementation of public policies. In fact, decisions that policy makers and public authorities make on the basis of expert statements have been questioned along with their legitimacy. This lack of trust can lead to manifestations of dissatisfaction with current institutions and to demands for direct participation (Spash, 2001, p. 475).

To overcome legitimacy problems, a broader range of stakeholders are allowed to participate in the decision making process and to scrutinize the performance (Gouldson, 2004, pp. 136-149). Governance practices develop in parallel with the persistence of the top-down approach. In a typical top-down approach, public authorities conceive a policy and professional staff develop it, with no or limited stakeholder involvement because the role of politicians (like that of leaders in private sector and civil society) is to provide leadership and promote strategies in the public interest. In any case, public authorities (from national to local level) are responsible for policy implementation: they allocate financial resources, provide information for dealing with problems, and ensure the compliance of action oriented plans with the legislation in force (OECD, 2002, p. 98). The waste sector provides a good example of global problems that need to be faced with local solutions. The EU has taken the leading role in many environmental governance issues, like climate change, energy sources, and waste management, which are interdependent and need to be addressed globally. Within this higher level framework, poli-

cy implementation takes place locally, on the basis of effective needs. Direct public participation may offer opportunities to incorporate local experiences and knowledge, community values, and concern in specific issue political decisions, alongside scientific information, which quality, relevance, and limitations must be assessed. An alternative to science-based (or risk-based) assessment, which relies on probabilities and numeric values, is precaution-based assessment, based on prudence in uncertain situations (Klinke and Renn, 2002, p. 1074).

It can be expected that a participative approach to decision making at local level tends to shift the focus from scientific rationalism toward discursive reasoning (Spash, 2001, p. 480). The EU has established a strategic and regulatory framework for the waste sector, but the shaping of policies at the local level depends on evaluations based on effective needs, values, and priorities. Both compliance and strategic importance affect problem solving, but decision makers must first recognize their implications. Waste policies and their implementation through the building of adequate management systems can be examined from the viewpoint of ethical and strategic issue diagnosis. In the same way that corporations empowered to carry out waste management activities evaluate their courses of action. The fourth chapter defines the Florence plain waste-to-energy plant project. In the region of Tuscany, a WTE plant must have its rationale in the regional waste infrastructure requisite analysis. It is the task of regional and provincial councils to establish which waste management facilities are needed and where, and to ensure that all projects are part of a coherent system. The role of municipal executive bodies is to put the decisions into practice. The project has laboriously moved ahead, with long intervals, due to the impossibility of the local government to make final decisions relative to the plant, especially to its siting. During the process, the local executive bodies have experimented with some forms of stakeholder participation with the aim of enforcing public consensus, but the results obtained have been quite barren.

Today, the project is about to take a step forward from the preliminary planning stage to executive operations, which include, among other things, the nomination of the operator in charge of the plant's engineering design. As soon as the design is ready, it will be submitted for the process of environmental impact assessment and permitting. The relative procedures are established in Directives 1985/337/EC and 1997/11/EC (the EIA directives), and in the Directive 1996/61/EC (the IPPC directive). Finally, in chapter five will be exposed to the conclusions of the report.

Executive Summary

The objective of this report is to provide an image of the state of affairs in the waste sector and the role of waste-to-energy in it. This report can inspire work with waste management by mapping out opportunities for and barriers to the use of waste incineration with energy recovery in local waste management systems. The emphasis is placed on the study of the Florence plain waste-to-energy plant project that was already started in the beginning of 2000, but is still waiting to be executed. According to the local government, this project is necessary and legitimate, but some local inhabitants, supported by environmental associations, have opposed it mainly for two reasons. Firstly, because waste incineration with energy recovery draws attention away from the real priorities of the sector (waste prevention and reduction). Secondly, because the plant will excessively degrade the environmental quality of the area in which it will be located. The waste sector is highly regulated and influenced by the EU's strategic guidelines. Waste quantities are growing and, at the same time, waste is being diverted from landfills. Priority is given to material and energy recovery. The following main conclusions can be drawn from the findings:

- There is a need to establish a meaningful dialogue and problem solving between local policy makers, public authorities, and stakeholders.
- The role of waste-to-energy plants in the achievement of strategic objectives should be clear and well-founded.
- More attention should be paid to the skills and competences of local waste operators to enhance public trust and the credibility of policies.
- Waste-to-energy plants should be evaluated on the basis of their contribution to the local system and the compensation of harm to the local community should be assured during the preliminary planning.
- Effective information dissemination at the grassroots level is necessary to encourage citizen engagement in beneficial practices.