

Science for Environment Policy

Greater participation and technological innovation may improve waste management in Naples

A participatory approach to waste management has been tested in Naples, Italy, a city which has experienced ongoing problems with the collection of municipal waste. This study tested a toolkit, which uses stakeholder engagement to improve waste-management decision-making. Residents and other stakeholders supported the use of a technological innovation to develop biomass fuel from municipal waste.

Waste can have potential negative effects on the environment. Despite Directives to reduce land filling and increase recycling^{1,2}, the EU as a whole incinerated 27% and landfilled 28% of solid municipal waste in 2014³. Waste management is therefore a significant challenge and can place considerable demands on resources. The EU aims to make Europe more resource efficient, which contributes to the increasing complexity of waste management.

This study used Naples as a case study to develop a waste-management strategy using a participatory approach to decision-making. This study developed a toolkit, which emphasises stakeholder engagement, for improved and more integrated waste management. The toolkit is designed to identify the range of factors related to a waste-management problem. This includes technological solutions available (i.e. producing Refuse Recovered Biomass Fuel⁴ (RRBF) in a new waste-treatment plant). As well as testing and monitoring the impacts of different approaches (for example using Life Cycle Assessments) and an analysis of potential conflicts.

For the Naples case study, stakeholder consultation was carried out through questionnaires and follow-up interviews to find out how residents felt about current waste management and the new technology to produce biomass fuel. Stakeholders contacted included representatives from the local waste-management authority, companies in charge of collection and recycling, the waste-emergency commissioner, local and national government, environment associations, academics, research institutes and local residents. The majority of stakeholder responses came from the local authority (29%), the local waste-management authority (26%), local residents (15%) and academic and research institutes (24%).

In Naples and the Campania Region, Italy, continued problems in waste management since the mid-1990s led to a crisis in 2008 when solid waste was not collected by municipal workers. The researchers outline a number of factors that led to the waste crisis in Naples, including lack of separate waste collection, insufficient number of biological treatment plants, the large amount of hazardous organic and inorganic substances sent to landfill illegally, and inadequate communication with the public from the administrative authorities, contributing to lack of trust. The main reason given by respondents for the waste-management emergency was government management of the issue. Respondents were also concerned about the impact of waste-collection problems on the city environment and the potential loss of tourism and investment. There was therefore a high level of support for use of the new technology, due to widespread dissatisfaction with the current management system.

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1. Waste Framework Directive (2008/98/EC):
<http://ec.europa.eu/environment/waste/framework/>

2. Landfill Directive (1999/31/EC):
http://ec.europa.eu/environment/waste/landfill_index.htm

3. Municipal Waste Statistics, Eurostat:
<http://ec.europa.eu/eurostat/documents/2995521/7214320/8-22032016-AP-EN.pdf>

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Greater participation and technological innovation may improve waste management in Naples (*continued*)

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4. A proposed technological innovation for Mechanical Biological Treatment (the main technology used in waste treatment) uses an improved biological treatment process to produce dry fuel, known as Refuse Recovered Biomass Fuel (RRBF), from the solid waste. This innovation, developed as part of the [MARSS project](#) (part funded by the EC under the LIFE+ Programme (2007–2013), now LIFE (2014–2020)) can potentially contribute to the recycling of solid waste.

The researchers suggest that using the toolkit led to real participation by stakeholders in Naples, thereby providing a means for policymakers to survey stakeholders and evaluate responses in order to develop solutions, avoid conflict and maintain community trust. They say that the waste-collection problems in Naples means that it is necessary to include stakeholders in decision-making and that the toolkit may be useful in other situations where management decisions can lead to conflict.

The researchers add that certain waste-management problems can often require a combination of solutions and possible trade-offs in management effectiveness. Involving residents and other stakeholders means they can be made aware of, and be encouraged to accept, any necessary compromises. The researchers also caution that the faith in the new technology may be overly optimistic and it is likely that more than one solution will be required in complex situations such as that of Naples.

