

Setting Up Municipal Local Action Plans for Waste Management Involving the Use of ICT Tools

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Waste management planning has become a permanent element in public planning efforts in all EU Member States as legislation requires the competent authority in each Member State to draw up one or more waste management plans in accordance with relevant EU directives. The formation of a plan allows taking stock of the existing situation, defining the objectives that need to be met, framing suitable strategies, and identifying the necessary implementation means. In this sense, establishing Local Action Plans for waste management has become the latest years a priority for many municipalities in Europe.

At the same time innovation, has become vital to European competitiveness in the global economy. The EU is intensively implementing policies and programmes that support the development of innovation in order to increase investment in research and development, and to better convert research into improved goods, services, or processes for the market. Applying innovation in waste management procedures is a part of this philosophy, and addresses the modern needs for information and communication technology (ICT) compatibility and use within the cities.

Innovation and ICT tools may play a major role in waste management action plans especially in optimizing waste collection and lead waste management systems to a more sustainable model. Furthermore, new technologies, social web platforms, and mobile tools, can increase citizens' awareness and promote e-democracy, and citizens' participation in waste prevention and recycling programs.

Under the above framework, the aim of this paper is to highlight the potential and the benefits of new ICT tools to optimize waste management, with emphasis to municipal waste collection and recycling, and to promote their wider adoption across Europe in local action plans for waste management.

More specific, the paper examines and analyses the benefits deriving from the development of ICT tools in waste management practices of cities and regions, and investigate the barriers and opportunities for their implementation through the examples of two pilot European cities, namely Seville (Spain), and Chania (Greece).

Under the life EWAS project (2014-2016), these two pilot cities have introduced innovative waste collection and recycling methodologies using low invasive technologies based on software & hardware technologies, to modernize municipal waste management. In order to achieve this a combination of different technological elements and communication interfaces have been introduced (Figure 1) including a sensing infrastructure installed on waste containers in order to be able to monitor the fulfilment level of the containers, a waste manager platform that allows waste managers to visualize the status of every container on real time and that provides reports for an optimal route planning, a citizen platform that provides the citizen a solution in recycling with extra added value services related to waste management in its city and cloud hardware infrastructure needed be able to provide the services offered both to host all the databases. In addition, several environmental, social, and economic factors have been developed to monitor the performance of the applied methodologies on waste collection and recycling.

The paper describes in detail the above pilot action plans in terms of implementation and results, and presents how the applied ICT solutions have helped improve waste management in the pilot areas, the key aspects which have been taken into account for the implementation of the solutions, for which fractions and cities this solution have been most convenient, the reduction of the cost of waste management and of GHG emissions achieved, and other results related to collection times, separate collection, recycling rates etc.

Finally, conclusions of the paper provide several suggestions to other Municipalities which are interested in including ICT tools in their cities' waste management practices.

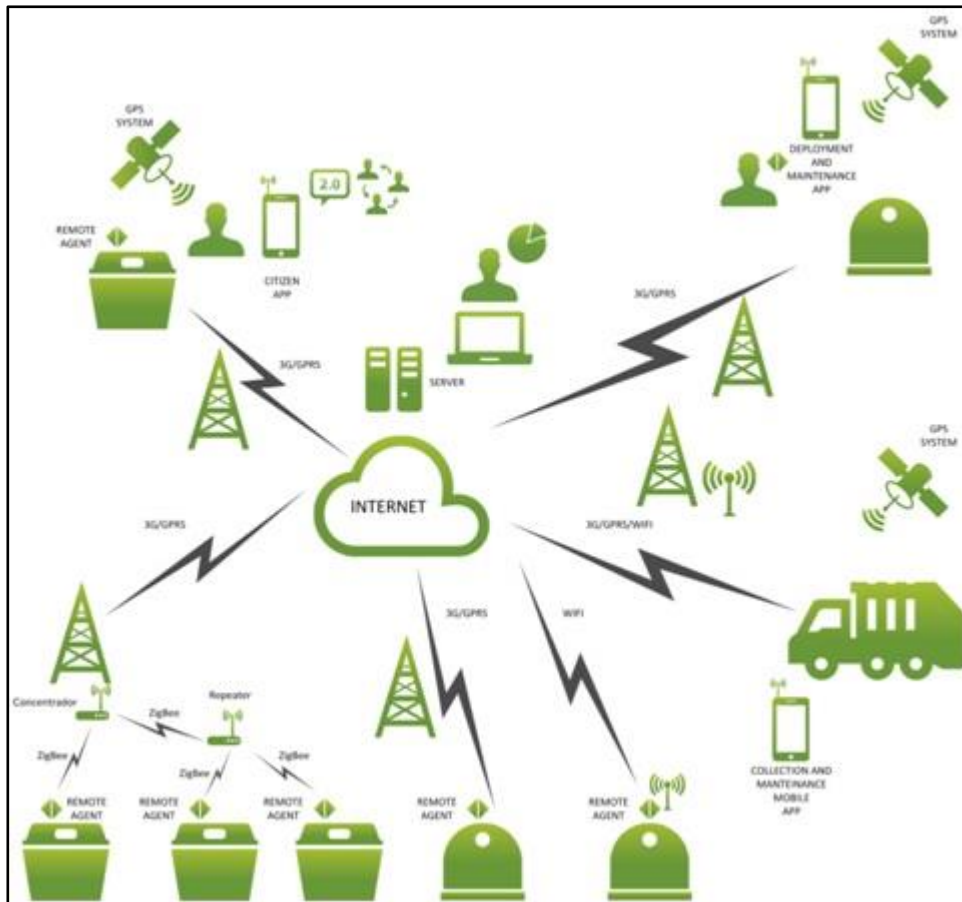


Figure 1. A combination of different technological elements and communication interfaces to be included in local action plans for waste management (LIFE EWAS, 2016)