

Circular economy and waste management in the Mediterranean region: From innovation to upscaling

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Abstract

The 21 countries bordering the Mediterranean and 529 million peoples with over 70 percent of the population living in urban areas., Therefore, this growth of Mediterranean cities is closely linked to an exacerbated pressure on natural resources and energy, thus leading to an increase in the production of waste and coastal pollution. The waste generation spans all communities, from large megacities to small towns and villages in the Mediterranean. In almost all cases, communities are the primary decision-makers in local waste management. Indeed, the discharge of raw wastewater and the accumulation of plastic waste as well as the large number of landfills of municipal waste in coastal cities make the Mediterranean Sea the most polluted sea in the world. Developing new strategies to convert waste into valuable materials using sustainable technology is become needed, this affects different sectors; for example, plastics waste valorization and household waste as well as sewage sludge management which requires significant costs, both in economic and environmental terms. Given this situation, this paper aims to compile the latest research on the topics of waste valorization in the context of circular economy and sustainable development at local, national and regional levels. Concretely, this paper examines the measures involved in the development of a circular economy, CE Settings for upscaling at the Mediterranean basin level. However, many eco-innovated technologies exposed: Nature-based solutions for waste treatment and composting/co-composting of organic and human waste. Restoring value to plastics via pyrolysis as a relevant solution. Recycling organic waste into soil amendments and more sustainable circular waste management in the Mediterranean area. Moreover, encourages CE development measures and contribute to the adoption and diffusion of CE within s all communities are an essential part of the strategy. These sustainable technological innovations piloted during a local project selected according to their potential viability for scaling up will be described as well as the different parameters necessary to enable scaling up in terms of capacity and space. Finally, energetic valorization of organic matter, composting and effective selective sorting for waste solutions as case study in Algeria and Lebanon will be discussed.

Keywords: Eco-innovative technology, wastewater, plastics waste, landfill, circular economy, settings for upscaling