Regional circular economy models and best available technologies for biological streams

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Abstract

According to the Circular Economy Packagepublished bythe European Unionat the end of 2015, regional actions are needed in order to move towards circular economy. A key factor in creating green growth and eco-innovation is to develop new products and services. In volume terms, biological materials are among the largest material streams in Europe. Biomaterials,i.e. materials based on biological sources, include among other foodwaste, municipal and industrial sludge and agricultural residues. These materials have shown multiple eco-innovative possibilities: processing bio-waste for fertilizing products, bioenergy, biogas production and biofuels,bio refinery etc. In view of their renewability,bio-based materials appear advantageous compared to fossil based products and energy.

The transition to a circular economy requires systematic changes, so regions may play a central role in the process due to the fact that economic benefits from closing the loops of various biological streams are essential when thisis carried out locally. In this context, local ecosystems and networks have to be considered. Best available technologies and servicesare another prerequisite for achieving circular economy. Hence, there is a need for a suitable approach of best practices of ecosystems, networks, technologies and services related to circular economy of biological streams. Regions are well advised to create regional models of the transition towards circular economybased ona holistic perception.Resource efficiency leading to circular economy and closing the loops will boost the competitiveness through creating new business opportunities and innovative ways of producing andconsuming.

Several European regions have developed expertise in the field of circular economy. There are several good models of ecosystems and networks as well as best available technologies for biological materials which are inaccordance to the requirements of the EU Circular Economy Package. However, these best practices are often created by separated actors or companies and are known only locally. Even in the same region the knowledgeabout these practices may not reach all potential actors. For example, municipal and industrial sectors may produce similar sewage sludge withoutadopting the same treatment option. Moreover, closing the loopsmay result in a sensible reduction of food and agricultural waste streams. Hence regional authorities are in a positionto transfer knowledge and promote the transition to circulareconomy through changes in policies.

This paper focuses on the regional circular economy models and best available technologies for biological streams in Europe and how the policy platforms in each region can be steered towards promoting good practices.

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