

Science for Environment Policy

Good potential for the sustainable re-use of demolition waste

Europe produces around 450 million tonnes of construction and demolition waste every year, representing a quarter of all waste materials. A recent study of construction and demolition waste suggests that, with the right policies in place, there are good opportunities to ensure sustainable practices through re-use and recycling.

One challenge associated with sustainable brownfield redevelopment is how to deal with old buildings and infrastructure. Demolition of buildings and other manmade structures generates large volumes of [waste](#) and its environmentally-friendly disposal or re-use is vital. Concrete, brick and cement are the main constituents, along with smaller amounts of impurities, such as metals, glass and sulphates. Once the waste has been crushed to a suitable size and contaminants have been removed, it can be used as valuable aggregate, needed for the production of concrete.

In this study, researchers examined waste management practices across EU Member States and identified successful strategies developed by individual countries that could be adopted elsewhere. The Netherlands was highlighted as particularly successful in this area. 90% of construction and demolition waste in the country is re-used or recycled. Such high rates can be attributed to targeted environmental policy which requires reduction in the production of waste, separation of waste to prevent contamination and provides incentives to the construction industry for use of materials reclaimed from waste.

This study suggests that such re-use can have multiple benefits. Firstly, the need for quarried stone is greatly reduced. For example, in Spain alone 7.7 million tonnes can be saved per year by substituting 20% of the natural aggregates used in concrete production with recycled waste. This conserves non-renewable resources and prevents environmental impacts, such as damage to natural habitats or groundwater pollution, caused by quarrying.

Secondly, if 20% of natural aggregates are replaced with aggregates recovered from concrete, the resulting concrete mix is of the same, or even higher, structural quality. Higher percentage substitutions do lead to a loss of quality, but the researchers highlight that there is great potential for use where structural strength is less important, such as paving or roof tiles. However, challenges to the sustainable re-use of such wastes remain. For example, to ensure waste is of a high enough quality to be used as aggregate, materials must be separated as much as possible during the demolition process to prevent contamination, a process which can increase costs.

The study concludes that construction and demolition waste has a high recycling potential and the best method of ensuring high recycling rates is to create a coherent waste management plan. They recommend that measures include legislation to ensure the correct treatment of waste, so that it can be effectively recycled, promotion of the use of recycled and re-used materials in the construction industry, and rigorously enforced waste disposal laws and clear identification of the responsibilities and obligations of each participant.



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