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Usage of building-rubble and rubble-fractions as supporter substances or additives for soil remediation, soil improvement and recultivation of contaminated sites

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The main object of this research-project was the development of a schedule to reduce significantly the costs of dismantling of buildings, of disposal and recycling of building-rubble.

Therefore a new recycling conception was developed, which uses certain fractions of building-rubble as additives during biological remediation-procedures of soils contaminated with organic pollutants or as substrates for soil improvement and recultivation measurements. The suitable additives were identified by a screening of the relevant rubble-fractions resulting during controlled dismantling of buildings. The screening included the listing of the relevant rubble-fractions, their physico-chemical and toxicological properties, the actual disposal- and recycling-options (state of technological development today) and the related costs.

To show the immanent potentials of cost-reduction in the field of housing construction, normal striking, dismantling and recycling techniques (state of technological development today) were compared with the developed, integrated dismantling- and recycling concept (controlled dismantling; use of suitable rubble-fractions for biological remediation of contaminated soils).

The worked out integrated dismantling- and recycling- concept facilitates a cost-reduction in comparison with the normally

practiced striking- and recycling-procedures up to 45%. The costs for rubble-disposal and recycling can be reduced up to 80%.

Therefore an enormous cost-reduction potential could be shown in the field of building-dismantling. Subsequently the implementation of the worked out measurements should be accelerated.

For the application of the integrated concept on running pulling down measurements a handbook was developed, which enables the client or the planning engineer to transfer the results of the studie into concrete measurements as easy as possible.

With the help of this application-tool it is possible to identify the technical and legal procedures for dismantling, disposal and recycling of the rubble-fractions in an easy way and at least enables the user to calculate the related costs.

In addition, the legal frame for the usage of the relevant rubble-fractions was worked out. This contains the guidelines for rubble-analysis, legal aspects of mobile on-site remediation facilities and regulations concerning health and safety at work.

The so far developed integrated recycling schedule, containing controlled dismantling and optimized recycling of the resulting rubble-fractions, serves the basis for a cost-minimized and sustainable application. The calculated cut down on costs has now to be verified during a real dismantling project. This leads to a fast transfer of the results into the normal dismantling practice.