

Many large (medium) polluted areas involve agricultural activities. From this point of view, the social acceptance of phytoremediation suffers from a dilemma. A choice has to be made between:

- (i) a faster remediation using hyper accumulator crops, with no (or even a negative) income during this period because the harvested biomass is very low, but on the other hand realizing an earlier re-establishing of the clean soil with corresponding higher revenue opportunities,
- (ii) a slower remediation using crops with higher biomass which can be valorised e.g. as a base for renewable energy, but reaching the clean soil situation (and the corresponding higher revenues) with much more delay.

An optimum will involve a mixture of (I) and (II). To find this solution we develop a 'blueprint' model involving the most important strategic variables.

The case study considered applies to a large area in the eastern part of Belgium in which diffuse heavy metal pollution forms a heritage from the historical zinc smelters in the region. As a reference to evaluate the income effects of phytoremediation we use the net present value (NPV) of the actual labor income of the average farm (36 ha) earned by cultivating roughage (grassland and maize for dairy cattle rearing). Two phytoremediation crops are considered: (i) rape (*brassica napus*), and (ii) willow (*salix* spp.) in 'short rotation forestry'. An initial yearly cultivation scheme then looks as follows: 8 ha of rape (in 4 year rotation); 4 ha of willow (with harvest every 4th year); 24 ha of roughage (to continue the cattle rearing). The reclamation activity aims at removing on average 1,9 kg Cd/ha.

The NPV over a period of 40 years of the gross labour income resulting from the mentioned phytoremediation cultivation scheme is 4,5% higher than the NPV of continuing the actual land occupation. The sensitivity of this result is investigated by changing the proportions between the surfaces of the crops. Increasing the ratio of willow versus rape remarkably shortens the calculated remediation period from 38 to 21 years, but the NPV is now only 2% higher than the reference. Using realistic values for strategic variables, Monte Carlo simulations calculate the probability of the outcomes for the labour income.