

AN ANALYSIS OF THE DUTCH PAPER RECYCLING SYSTEM

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Introduction

About five years ago a semi-governmental firm, the VAM (Vuil Afvoer Maatschappij) formulated plans to extend their efforts to convert domestic waste to compost to a real recycling industry. The idea was to instal equipment to extract secondary paper pulp from domestic waste and sell it to paper and board industry. The Union of Old Paper Merchants opposed strongly: abundancy of low grade secondary paper pulp could ruin the old paper market and times were bad just after the oil crisis.

A study was started to investigate possible consequences of the VAM plans. In the four following years a System Dynamics model was built to show the most important mechanisms of the problem.

The Model

Demand for (new) paper, the desired recycling percentage and the availability of pulp are exogenous variables. The model describes the quality of produced paper, upgrading capacity and upgrading and material losses. Depending on market forecasts and old paper stock of paper industry old paper is ordered on the old paper market. This free market is structurally unbalanced by hysteresis on the supply side: schools, churches and citizens are sensitive to increasing old paper prices but rather insensitive to decreasing prices. The skill and experience of old paper merchants is needed to maintain the necessary social contacts and to select and allocate the 200 odd types of paper to the right paper manufacturing plants.

Supply of paper pulp from domestic waste is contra cyclic and might increase existing instabilities.

Conclusions

- a. Increase of recycling percentage without investing in upgrading technique and capacity is not recommended.

- b. To stabilize the socially important old paper market and to develop experience in extracting paper pulp from domestic waste for future use new applications should be found for this pulp and abundant low grade old paper.
- c. Governmental subsidies should concentrate on the supply side of the old paper market and not on increasing industrial old paper stock.

Implementation

Suggestion b. was followed in a joint between the VAM and the Union of Old Paper Merchants. A project is started to convert secondary paper to fuel pellets.

Appendix

The major structure of the Dutch Paper Recycling Model is described in the following diagram:

