The roadmap for implementation of bioenergy in the Netherlands

Kees W. Kwant, Ir.
NOVEM, Netherlands Agency for Energy and the Environment
Postbox 8242, NL 3503 RE Utrecht, Netherlands
Fax: 31-(0) 30-2316491; k.kwant@novem.nl

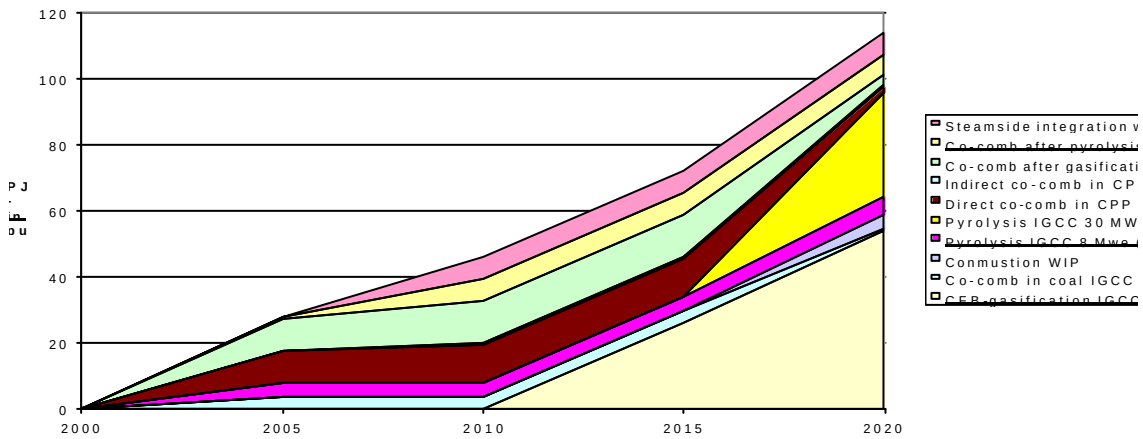
In the Netherlands ambitious goals have been formulated to achieve a contribution of 10% renewable energy by the year 2020. Given the small land area and densely population it will be hard to realise a substantial part with bioenergy. To achieve a roadmap for the development of the biomass availability and technologies a study was carried out.

The first part of the study deals with the availability of biomass from agriculture, forestry, residues and the organic part of the waste fraction. Scenario's show that the composition of waste will alter in the coming decades, which makes it more applicable as a fuel for conversion to energy. Prices of the different biomass flows will be given.

The second part of the study deals with the different technologies to convert the different biomass and waste flows to energy. An estimation of costs and efficiencies and a prediction of its possible development is presented in a concise way.

The third part of the study matches the different biomass and waste flows to the available technologies in the coming decades. Matching is performed with two different criteria: Firstly the most economic match and secondly the most energy efficient match.

From these studies the following roadmap evolves:

1. Cofiring of high calorific biomass and waste streams in existing coal fired power stations
2. Cofiring of gasified biomass in existing natural gas fired power plants
3. For waste incineration a shift to pyrolysis processes if foreseen for more separated waste streams.
4. Wet organic waste streams can initially be anaerobically digested, with reuse of the effluent as a fertiliser, but in case the reuse is hampered for health reasons it can be thermally treated and be converted to gas and or electricity.
5. Finally the availability of biomass in the Netherlands will be limited and import of biomass will be required, where conversion in large scale gasification plants seems to be attractive.

This roadmap will develop in a competing renewable energy market with fiscal support. In this market the main competitor will be offshore wind energy and eventually biofuels in the heat and transportation market. The trade off, given different policies will be presented.