

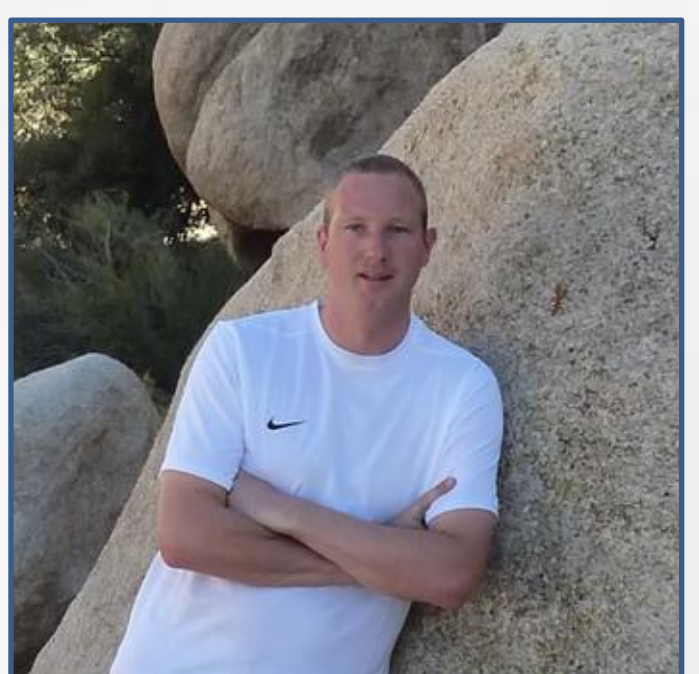
Modeling biogas chains

FLEXIGAS

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Within the Flexigas project a model has been constructed which can analyze the efficiency, carbon footprint and environmental impact of anaerobic biogas production chains.

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Research duration:
➢ Start, July 2011
✓ End, December 2015

HanzeResearch
University of Applied Sciences
Energy

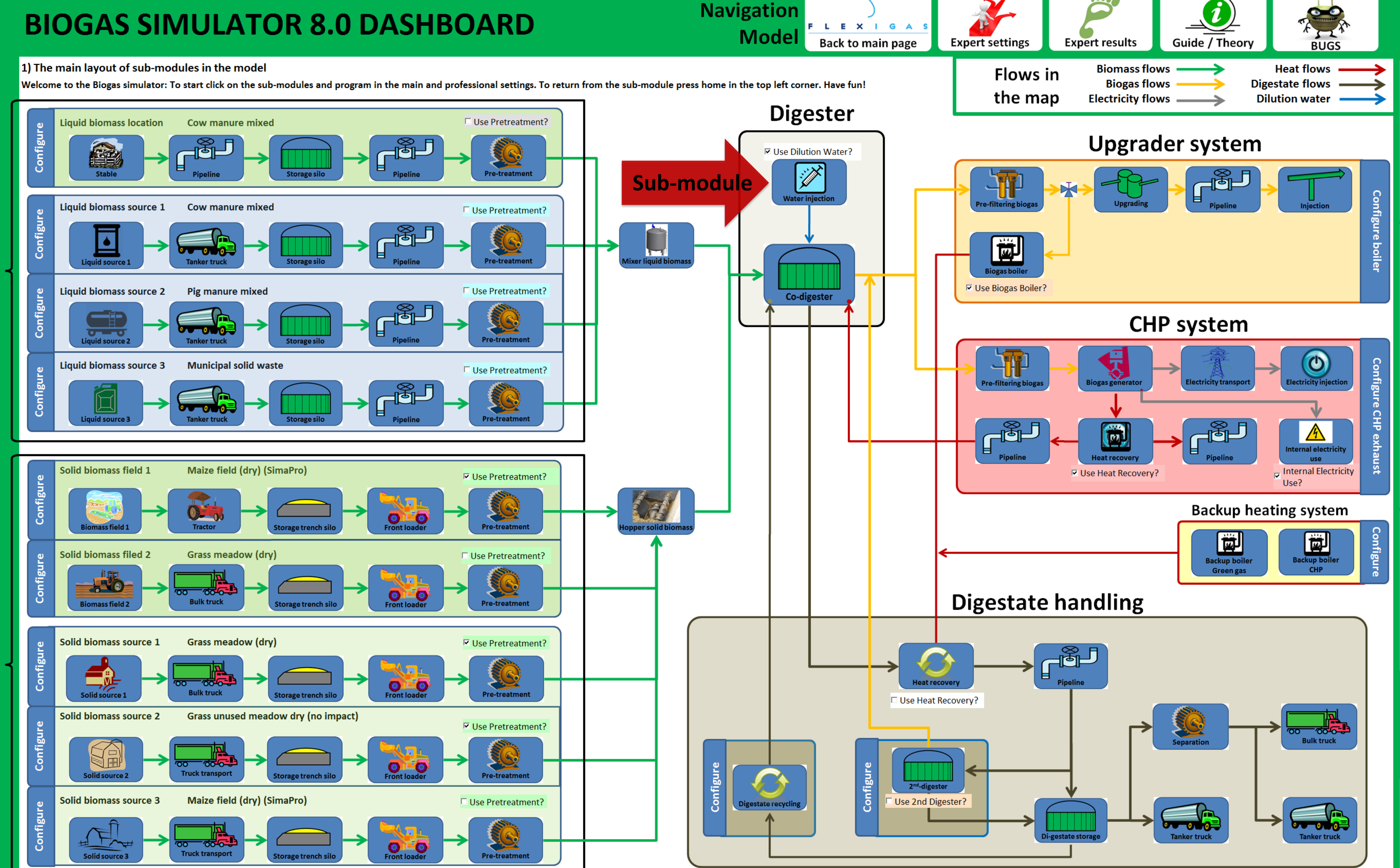
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BIOGAS SIMULATOR 8.0 DASHBOARD

Navigation Model | FLEXIGAS | Expert settings | Expert results | Guide / Theory | BUGS

1) The main layout of sub-modules in the model
Welcome to the Biogas simulator: To start click on the sub-modules and program in the main and professional settings. To return from the sub-module press home in the top left corner. Have fun!



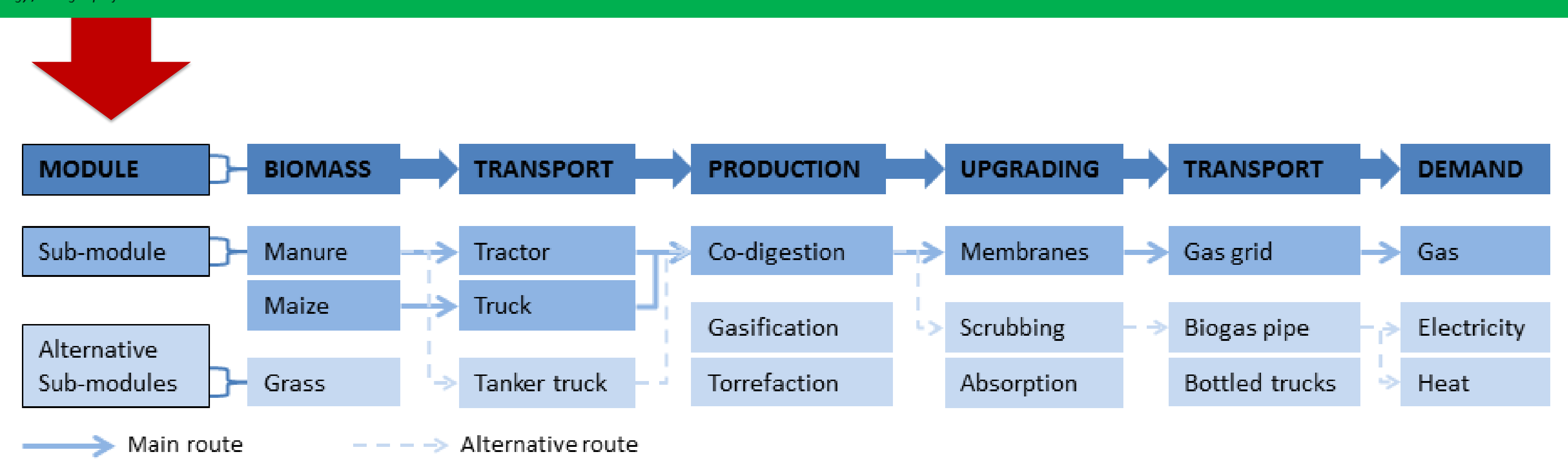
Flows in the map: Biomass flows (green), Biogas flows (yellow), Electricity flows (blue), Heat flows (red), Digestate flows (purple), Dilution water (grey).

DATA: BIOMASS DATABASES, IMPACT DATABASES, SOURCES DATABASE, VALIDATION OF MODEL.

Model version 8.0 - current sub-modules in use 107 - ©HanzeResearch - Energy / Flexigas project
Database version 4.0 - current sub-modules in use 4 - ©HanzeResearch - Energy / Flexigas project

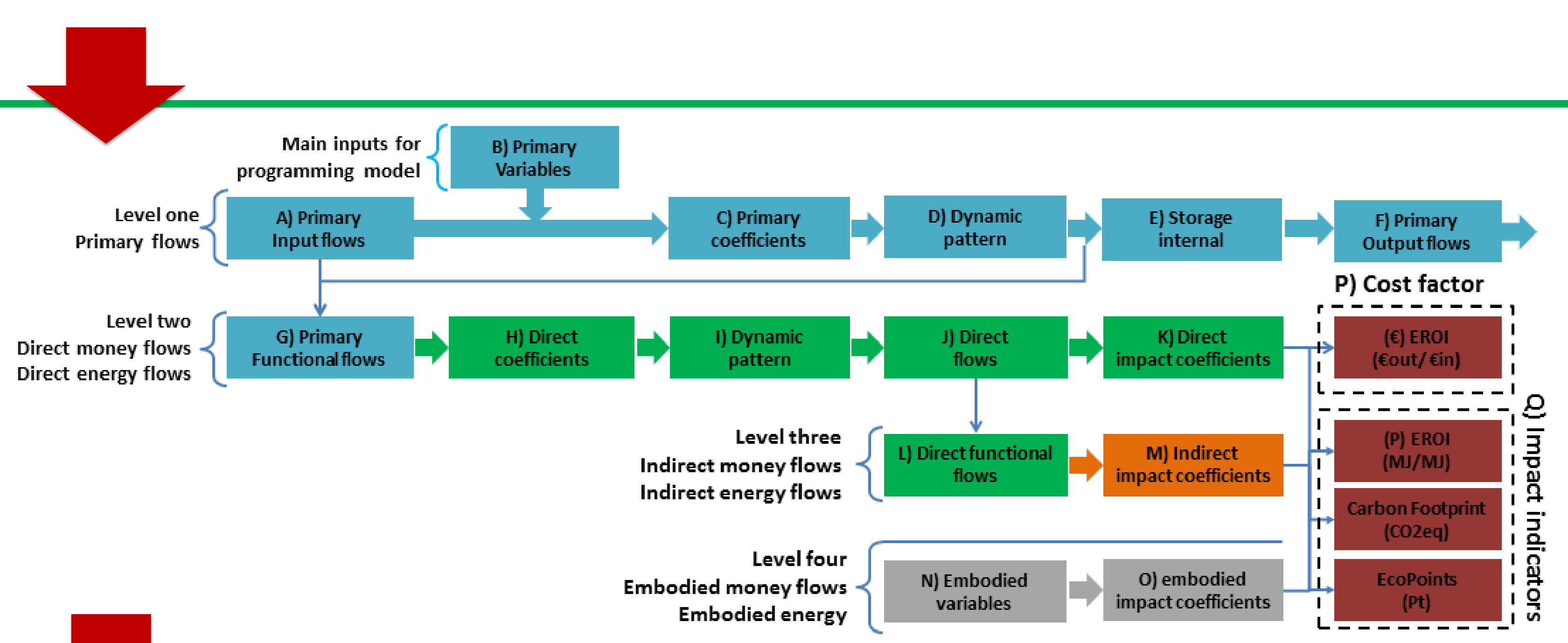
Modular approach

The biogas production pathway in the model is built up of a succession of sub-modules in logical order forming a chain. The modular approach can be used to design the optimum production pathway to suit particular cases, by changing, adding or removing individual sub-modules during the modeling process.



Methodology

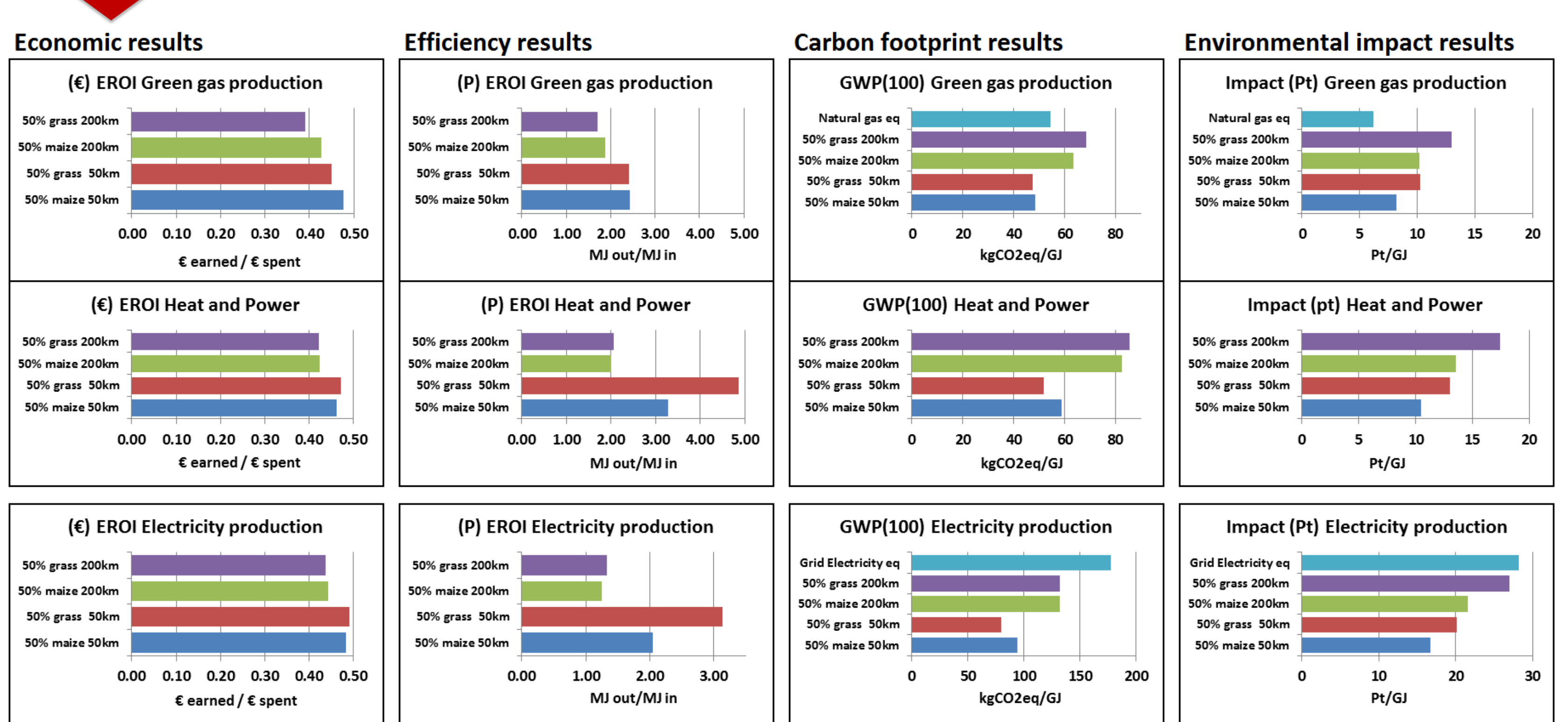
Within each sub-module, one main physical process of the biogas production pathway is described. The model is based on the industrial metabolism concept described by the Material & Energy Flow Analysis (MEFA) method and extended by attributed Life Cycle Analysis (aLCA).



First results from the model

An analysis was performed on four different scenarios, namely:

- 1) 50% Energy maize transported over 50 km and 50% manure over 5km
- 2) 50% Meadow grass transported over 50 km and 50% manure over 5km
- 3) 50% Energy maize transported over 200 km and 50% manure over 5km
- 4) 50% Meadow grass transported over 200 km and 50% manure over 5km



Need more information on the results and the build-up of the scenarios? Come visit our stand TNO / Flexigas

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