

GroenGas – Sub-project I-AM

Integrated assessment and modelling

Partners

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Groen Gas - Grünes Gas

Presentation Outline

- Aims
- Two methods and approaches
 - a. Sustainable Supply Chain Management – regional and transnational*
 - b. Performance analysis and benchmarking of biogas plant types*
- Sketches of preliminary results
- We need you – How to integrate your results for the benefit of the whole GroenGas programme

Aims

- I-AM develops, takes and supports actions to
- integrate and synthesise results of the individual sub-projects
 - assess innovations and improvements along the GroenGas supply chain
 - implement powerful GroenGas options

Methods and Approaches

Sustainable Supply Chain Management

SSCM

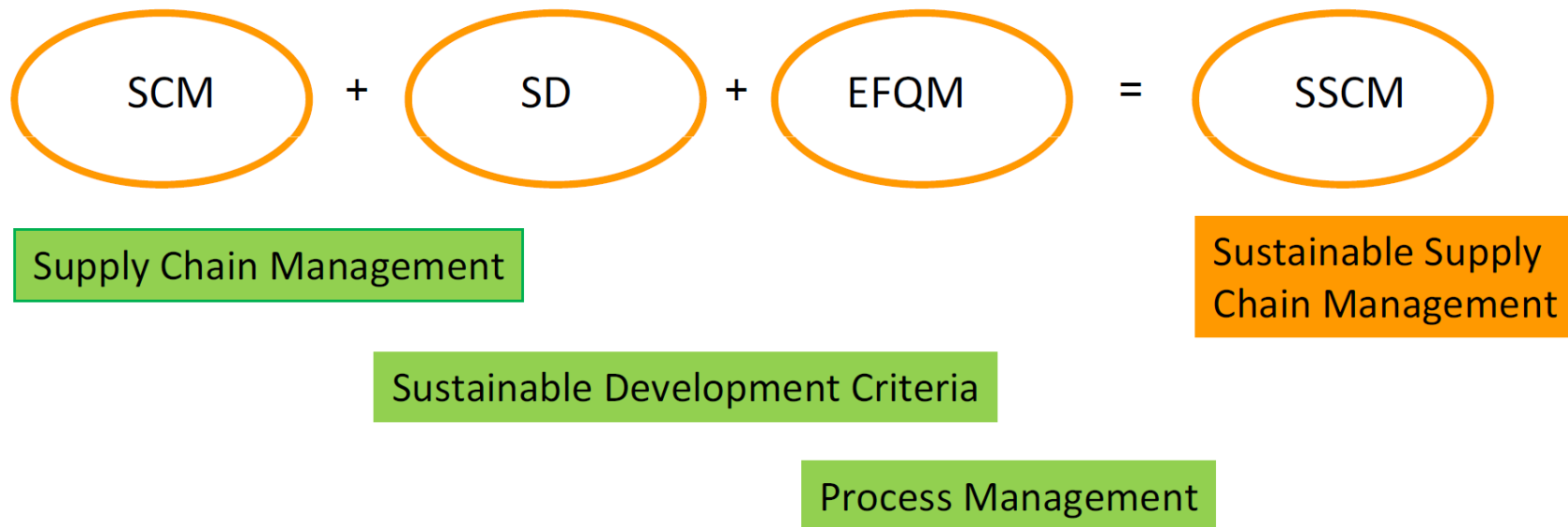
- Generic approach to analyse framework, targets, actors, enablers and performance indicators of regional or transnational bioenergy supply chains

SSCManager

- Software tool to analyse biogas supply chains and to rank options according to stakeholders' preferences and aims

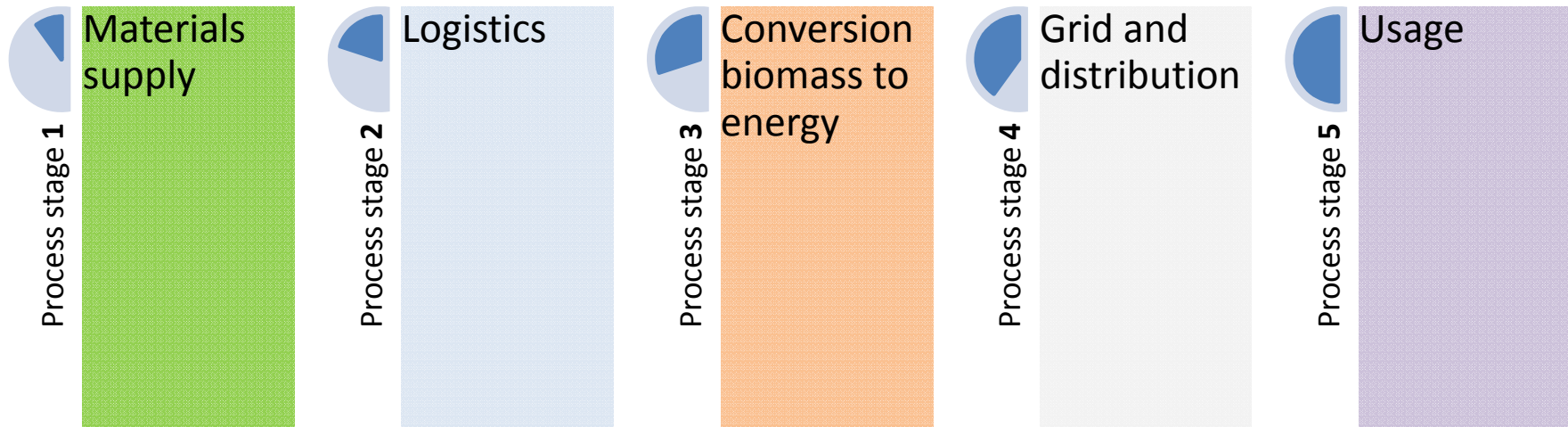
Methods and Approaches

Sustainable Supply Chain Management



Methods and Approaches

Sustainable Supply Chain Management



Methods and Approaches

Sustainable Supply Chain Management

SSCM Analysis "Dike Biomass"

Process Stage 3: Production

| Targets | Enablers | Indicators | Level units |
|----------------------------------|--|---|--|
| Minimize operational costs | Technology | Costs per production unit | €/kwh equivalent, |
| | Financing | | €/a |
| | People/staff | | |
| Assure high materials efficiency | Process technology | Energy performance | m ³ CH ₄ /kg input |
| Reduce health risks | Safety precautions | Effects on health | No. of persons at risk |
| Minimize environmental impact | Minimize air emissions, | C02 equivalent | C02/m ³ /kwh |
| | Land use, Waste quantities and recovery | Size of facility Quantities per waste type | m ² t/a/waste code (EWC) |
| Ensure social acceptance | PR/information campaign | Positive image | > 80% rating (questionnaire) |
| | Noise and smells reduction | | |
| Provide and secure employment | Cost/benefit calculation | Employment | No. Staff/ qualification level |

Methods and Approaches

Performance Analysis and Benchmarking

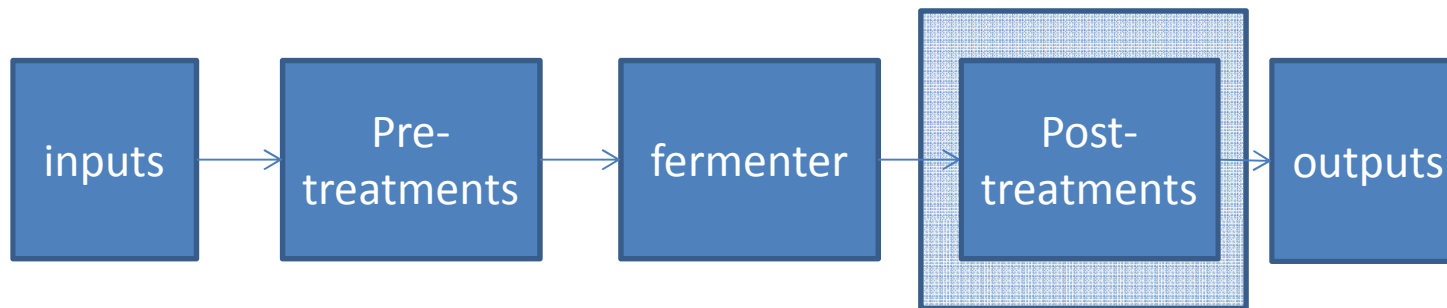
GazMo (previous Bio BEM)

- Goal
 - support economic viability of individual ventures; existing and new ones
 - in relation with Groen Gas: assessment of expected individual pilots and of the project as a whole

Sketches of preliminary results

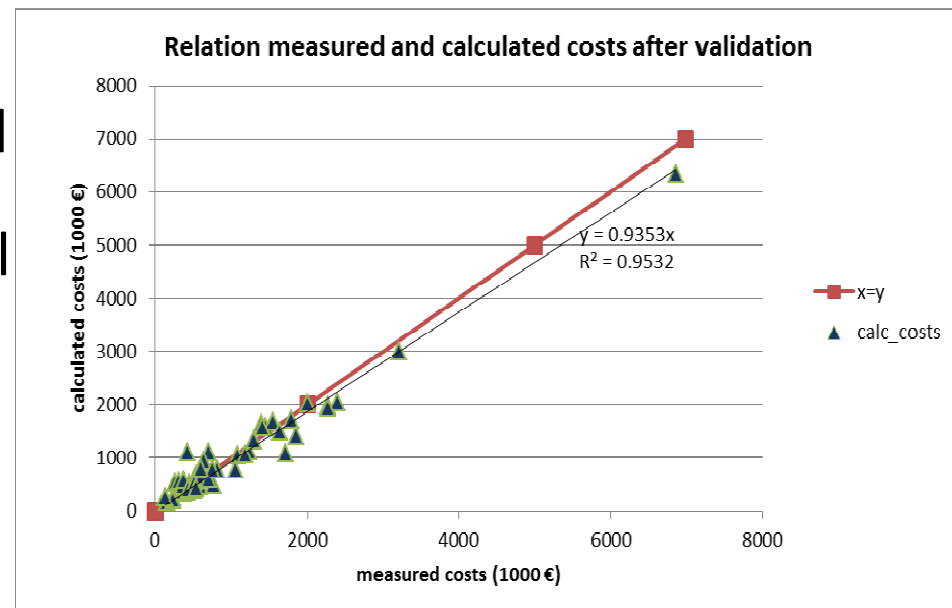
Performance Analysis and Benchmarking

GazMo (previous Bio BEM)



October 2013:

- For now, gas converted to heat and/or electricity in the model
- Model validated with Dutch 2011 data on ~100 fermenters



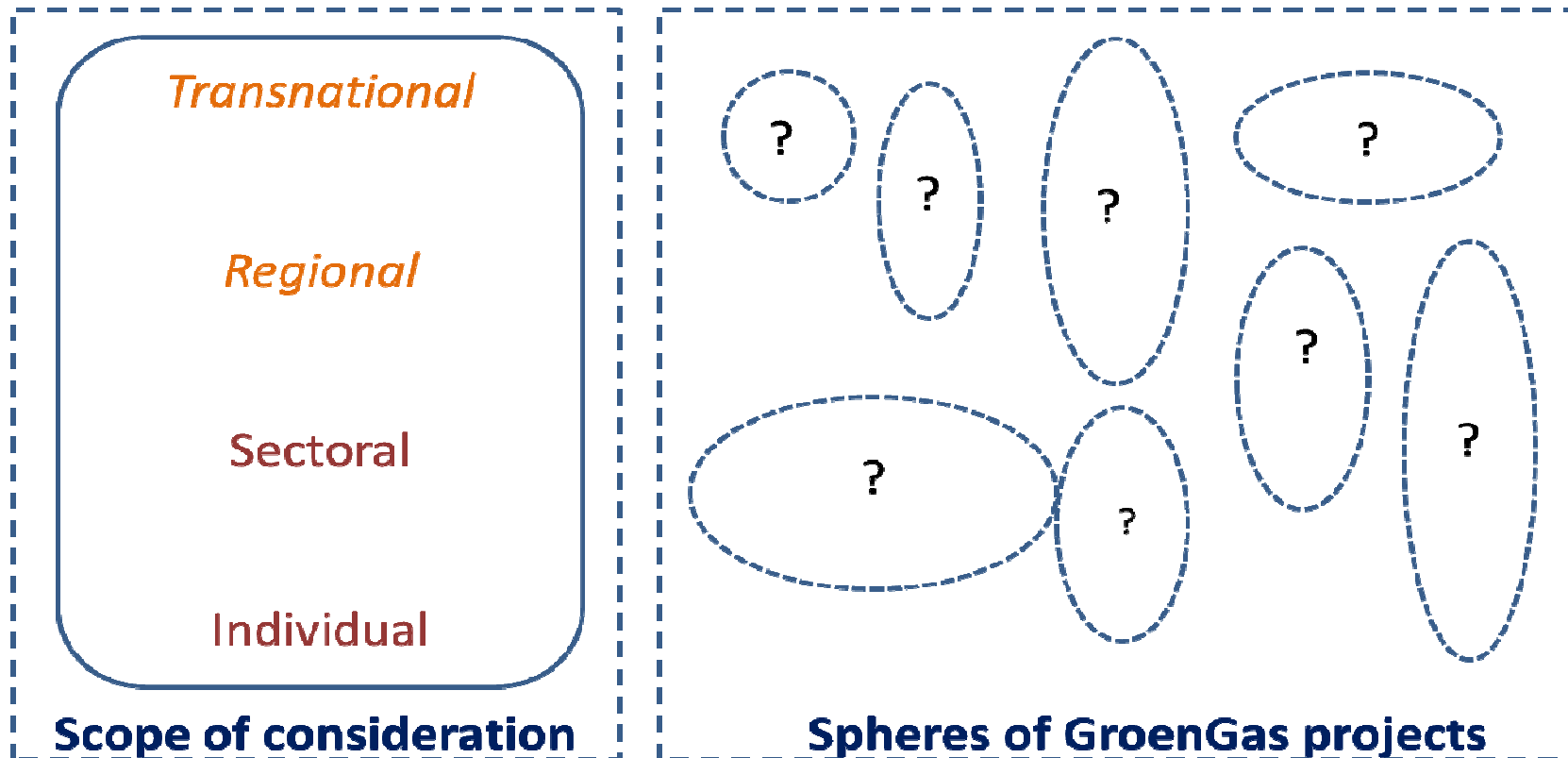
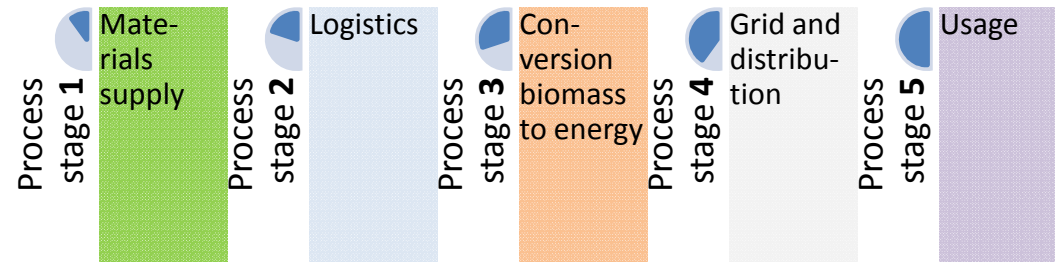
How to integrate your results

Performance Analysis and Benchmarking

GazMo development 2014:

- modelling green gas production (besides heat and electricity)
- webversion of the model
- benchmark other green gas projects including Interreg projects

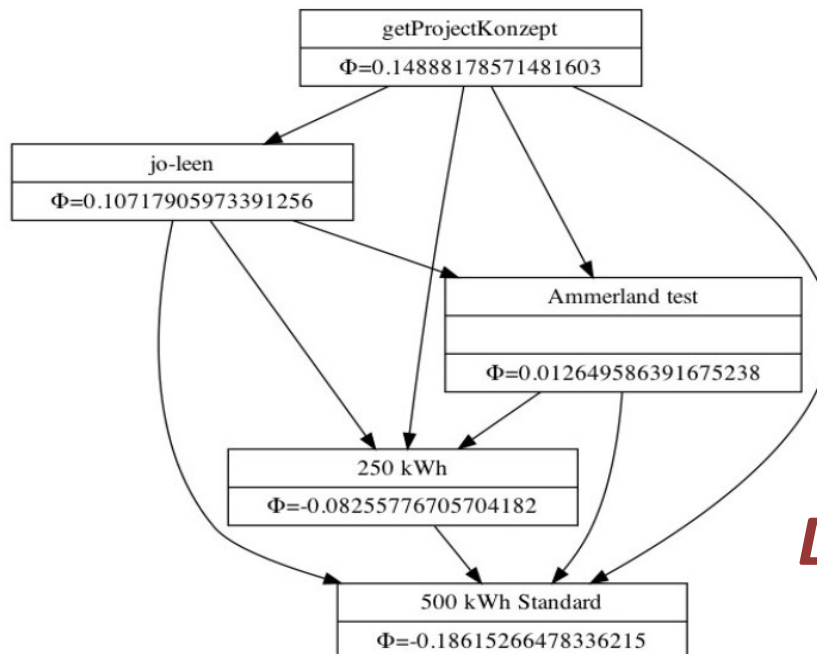
How to integrate your results



How to integrate your results

Transnational
Regional
Sectoral
Individual

Ranking Graph



SSCM Analysis "Dike Biomass"

Process Stage 3: Production

| Targets | Enablers | Indicators | Level units |
|----------------------------------|--|---|--------------------------------|
| Minimize operational costs | Technology | Costs per production unit | €/kwh equivalent, €/a |
| Assure high materials efficiency | Financing People/staff | Energy performance | m3CH4/kg input |
| Reduce health risks | Process technology | Effects on health | No. of persons at risk |
| Minimize environmental impact | Safety precautions | Effects on health | No. of persons at risk |
| | Minimize air emissions, | C02 equivalent | C02/m3/kwh |
| | Land use, Waste quantities and recovery | Size of facility Quantities per waste type | m2 t/a/waste code (EWC) |
| Ensure social acceptance | PR/information campaign | Positive image | > 80% rating (questionnaire) |
| | Noise and smells reduction | | |
| Provide and secure employment | Cost/benefit calculation | Employment | No. Staff/ qualification level |

DELaND case studies

How to integrate your results

Your information needed as food for thought and fuel for the overall assessment:

1. achieved aims of your project
2. localities and involved stakeholders
3. numbers/data in relation to the process stages of the supply chain, in particular
 - performance of different types of biogas plants
 - biomass (producers, availability, energy content)
 - usage (consumers, modes, prices and return on investment)
4. barriers to implement innovations



Thank you for your attention.

Questions,
Suggestions,
Criticism?

