



Biogas Research Center



Generating scientific knowledge and competence for advancing sustainable biogas solutions

Transdisciplinary competence center where co-production of new knowledge is developed in cooperation



Sustainability challenges

Air pollution

Urbanisation and
congestion

Climate change

Soil fertility in
agriculture

Amount of waste
grows

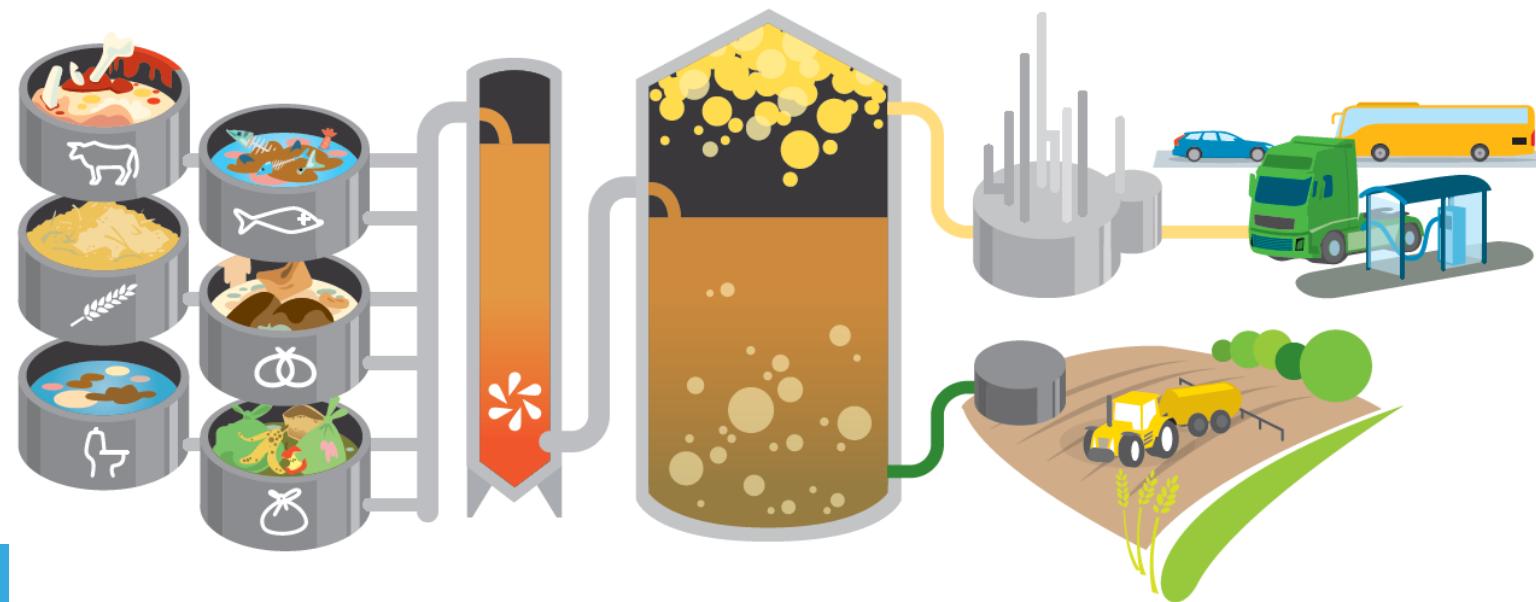
Not enough jobs

Biogas solutions can address
them all, at the same time

Water pollution

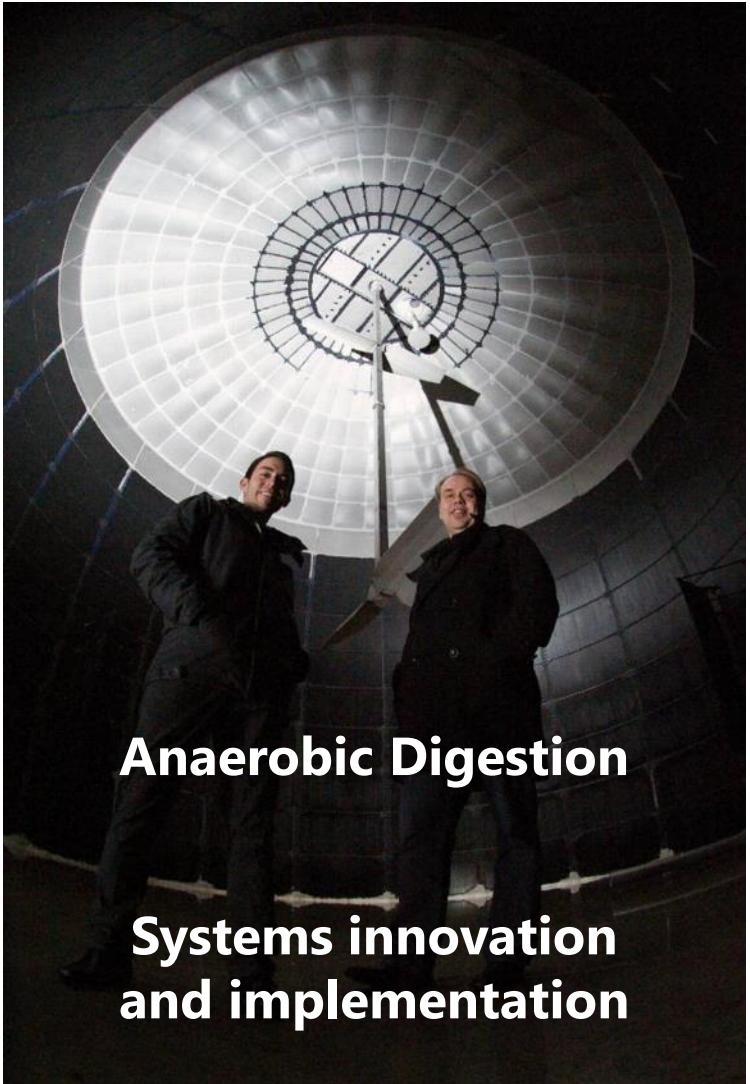
Fossil energy
dependency

Energy security



Biogas-
the Swedish model

Scope



**Anaerobic Digestion
Systems innovation
and implementation**



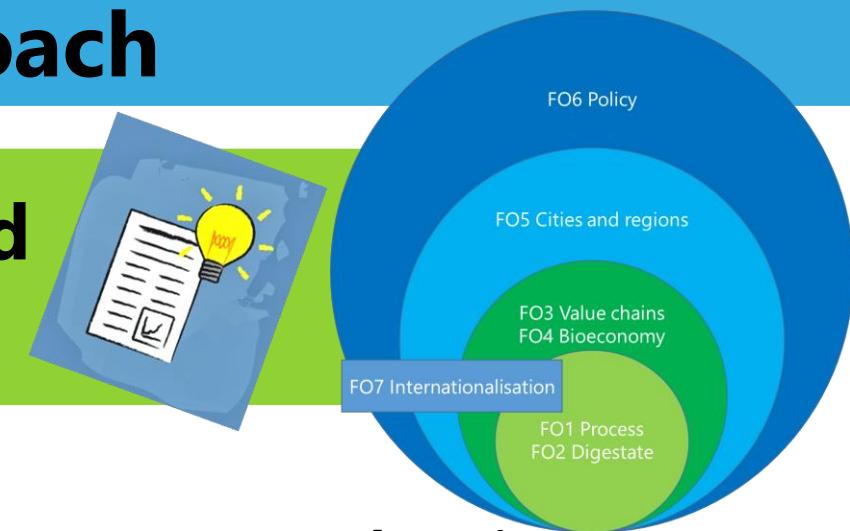
Sustainable cities and regions
Integrated solution for wastewater treatment, waste management, transport and nutrient recycling with global relevance.



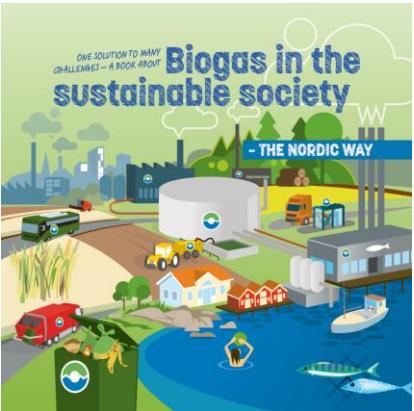
Sustainable bioeconomy
In a fossil-free world, biomass must be used efficiently and cascaded from high to lower value applications. Biogas solutions improve resource efficiency in the entire bioeconomy – agriculture, forestry and aquaculture.

Co-creation of knowledge with an explorative and transdisciplinary approach

Long-term research and innovation areas



Communication & Networking



Internationalisation



Education

Biogas solutions PHD COURSE, 6 HP (6FIE09)

Biogas solutions can play role for sustainability in societies, that looks to manage organic waste, renewable energy and reduce its fossil fuel imports. Implementation of these solutions is complex and involves many different stakeholders and requires a multidisciplinary approach.

This PhD course focuses on Biogas solutions – from science to society to policy perspectives and societal effects, involving both researchers, informed persons and public officials etc., the course mainly focuses on these, research and implementation of biogas solutions in developing countries, making use of the local network of researchers and institutions of the Biogas Research Center.

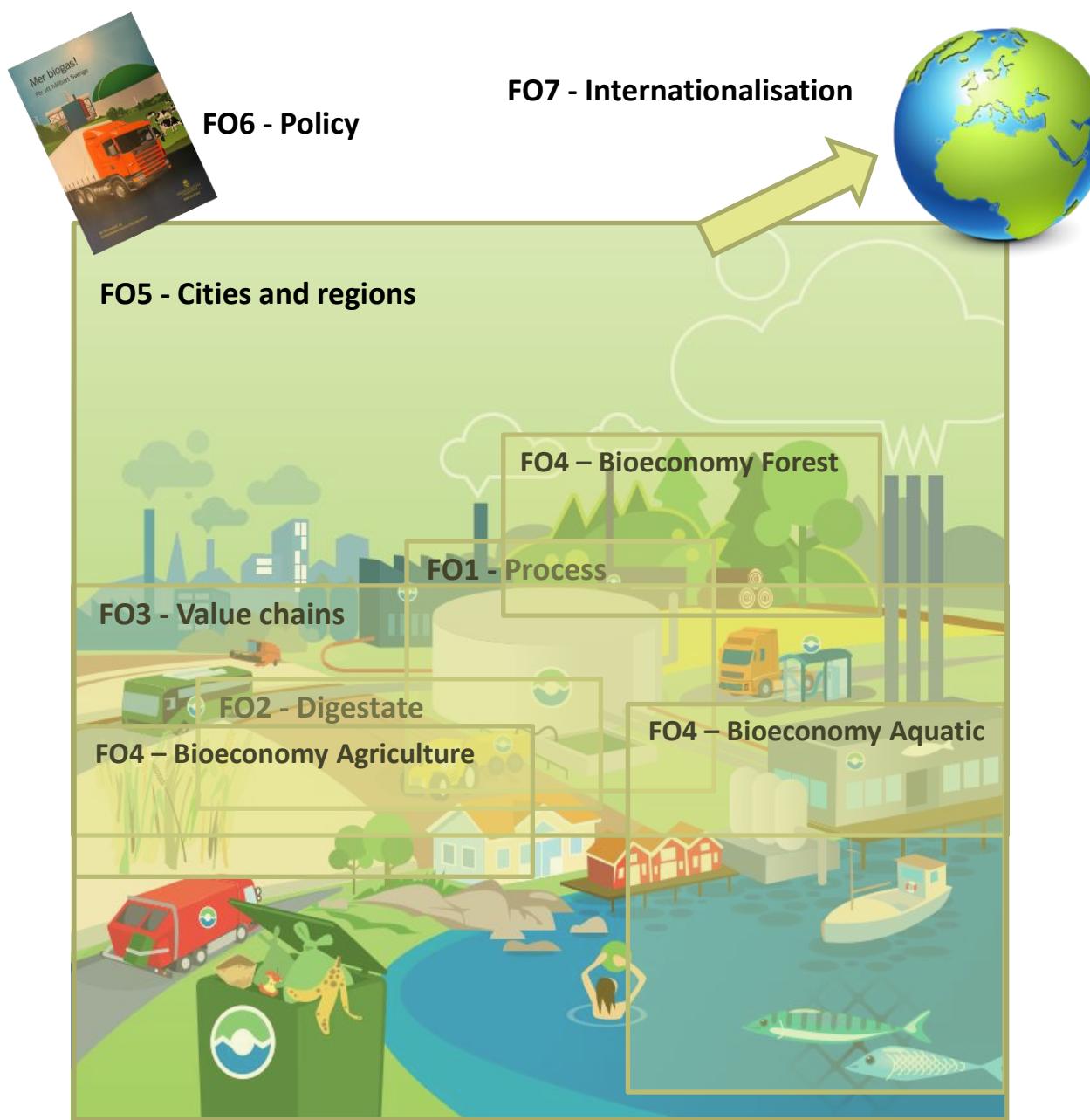
TOPICS AND ACTIVITIES

- Biogas solutions – research themes and implementation
- Biogas solutions – from science to society and model the biogas solutions
- Production of biogas solutions – process, management and methods
- Biogas solutions and climate change
- Biogas solutions and power and transport vehicles
- Biogas solutions and food security
- Biogas solutions and water management
- Biogas solutions and environment and climate change – general literature during lectures and exchange, and a project work when biogas is used in local applications

TARGET GROUP AND PREREQUISITES

PhD students with an interest in topics of biogas solutions can take the course. There are no prerequisites other than formal entry PhD studies and having an interest in the field.

For more information visit the webpage
<https://www.slu.se/biogasresearchcenter/biogassolutions/phd/>



Research areas

- FO 1** Development and evaluation of more efficient digestion processes
- FO 2** Improved valorisation of digestate
- FO 3** Resource efficient value chains for biogas
- FO 4** The role of biogas solutions in the bioeconomy (agriculture, aquatic and forest)
- FO 5** Cities and regions developing sustainable biogas solutions
- FO 6** Evaluation scenarios for national and international policy
- FO 7** Internationalisation of the Swedish model for biogas solutions



"BRC is a unique research arena for the exchange of experiences and knowledge between different actors in society, together jointly develop and test new ideas for sustainable biogas solutions."

Annika Björn, Researcher - Dep. of Thematic Studies Environmental Change at Linköping University

"...Due to the active involvement of researchers and companies in the BRC, we have been able to reach a dynamic balance between the various interests and also learn a lot through the interactions between academia, industry and policy makers from around the world..."



Wisdom Kanda, Researcher - Environmental Technology and Management at Linköping University



"As a researcher who strives to bring interdisciplinary thinking into my work, the BRC provides is a fantastic opportunity to continually combine knowledge from all areas of the biofuel life cycle."

Nancy Brett, PhD-student – Dep. of Thematic Studies Technology and Social Change at Linköping University



Thomas Prade, Researcher – Biosystems and Technology at Swedish University of Agricultural Sciences (SLU), Alnarp

"It is very exciting to contribute to BRC which is a unique mix of researchers, entrepreneurs and representatives for municipalities and regions..."

"For a doctoral student such as myself, BRC offers a great opportunity to find research questions, discuss ideas and co-create knowledge with many different societal actors and researchers from other academic disciplines..."



Axel Lindfors, PhD-student - Environmental Technology and Management at Linköping University



"Smartare lösningar för att göra biogödsel och hållbart drivmedel från avfall och gödsel i Jönköpings län."

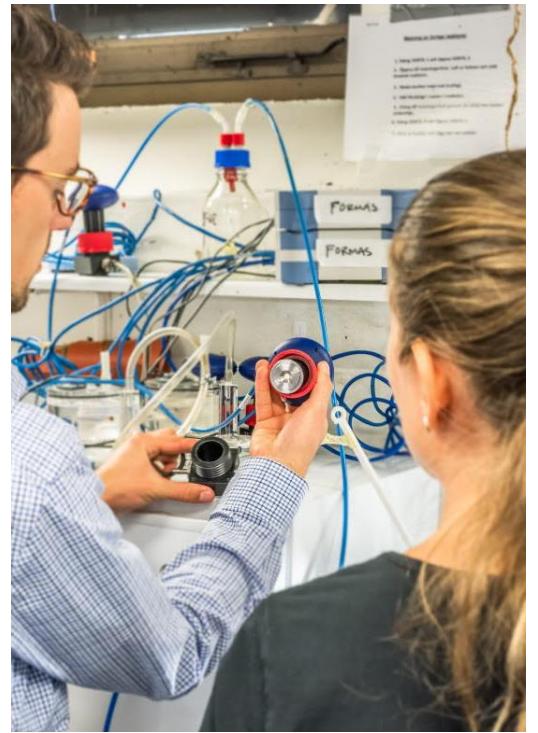
Gunilla Nilsson, Energikontor Norra Småland - Region Jönköpings län



Johanna Norup, Purac AB

"...Tillsammans når vi långt och Purac kan bidra med sin erfarenhet av att driva projekt med design och uppbyggnad av biogasanläggning är samtidigt som vi fördjupar och breddar vår kunskap inom andra områden."

"One of many positive effects with BRC is that it has resulted in a knowledgeable business network for the involved professionals. With good and productive relations between partners, competitors and academia."



Jan Moestedt, Tekniska verken i Linköping AB



"...Då vi är en väldigt lite organisation med ingen tidigare kunskap inom rötning i företaget så har kontakten med de oerhört kompetenta och hjälpsamma människorna i BRC varit till stor hjälp för att vi har kunnat optimera biologin i vår rötningsanläggning. Det är för oss väldigt kul att få vara en del av detta."

Rickard Olsson (th), HEMAB



Jannica Schelin, Norrköpings kommun

"Inom BRC ges utrymme för kommuner, regioner, näringsliv och akademien till gemensamt samspel och möjlighet att samskapa kunskap som ger oss nycklar till ett hållbart och fossilfritt samhälle."

Members and Partners

Biogas production and distribution



Technology Providers



Agriculture and Horticulture



Municipalities and public bodies



Academic institutions



Environmental
Change

Environmental
Technology &
Management

Technology & Social
Change

Business
Administration

Molecular
Biotechnology

Energy Systems

Project, Innovations
& Entrepreneurship



Molecular
Sciences

Biosystems and
Technology

Energy and
Technology

Knowledge



- Scientific contribution – publications
- New empirical case studies
- New tools, methods and approaches
- Promoting a transdisciplinary scientific culture

Competence



Resource efficiency



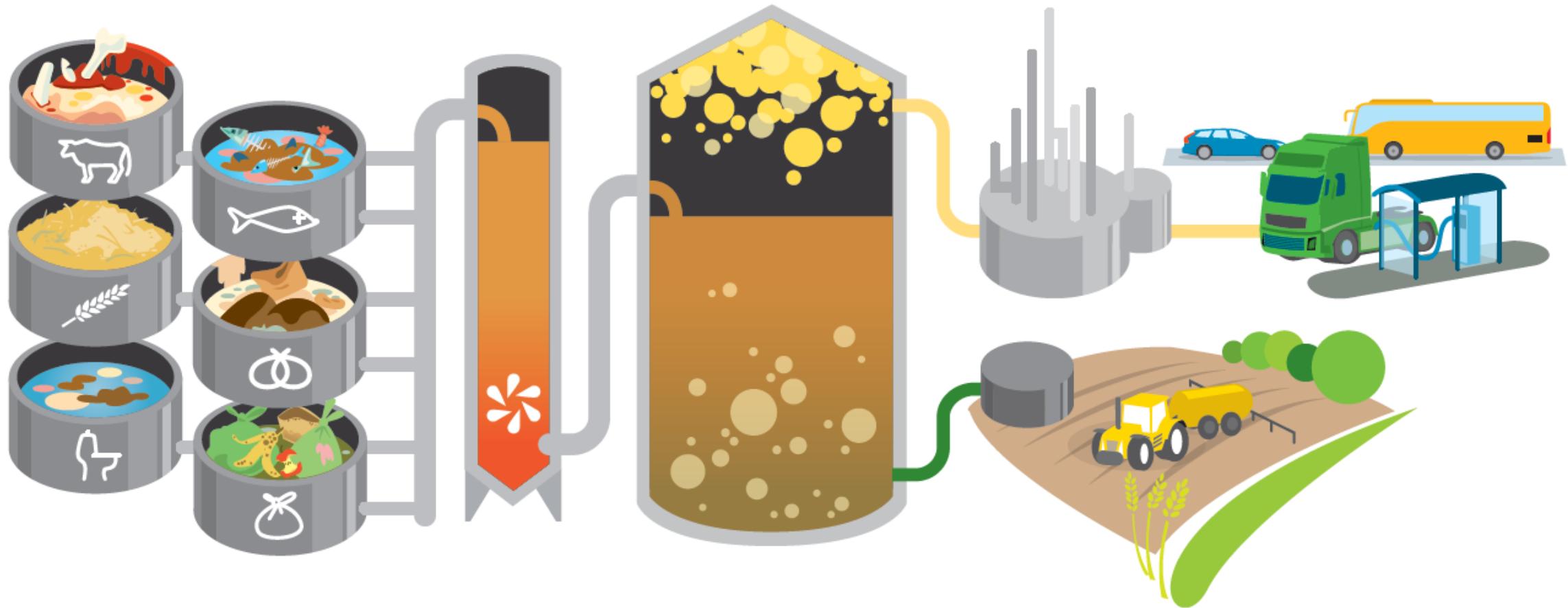
- Tackling specific challenges for improving system performance
- A knowledge resource pool for the biogas sector
- Providing knowledge on resource efficiency for the sector

Sustainability



- Supporting sustainable development through popular communication
- Contribute to societal discourses about climate, agriculture, regional development etc.
- Providing knowledge that influence decision-making in public organisations

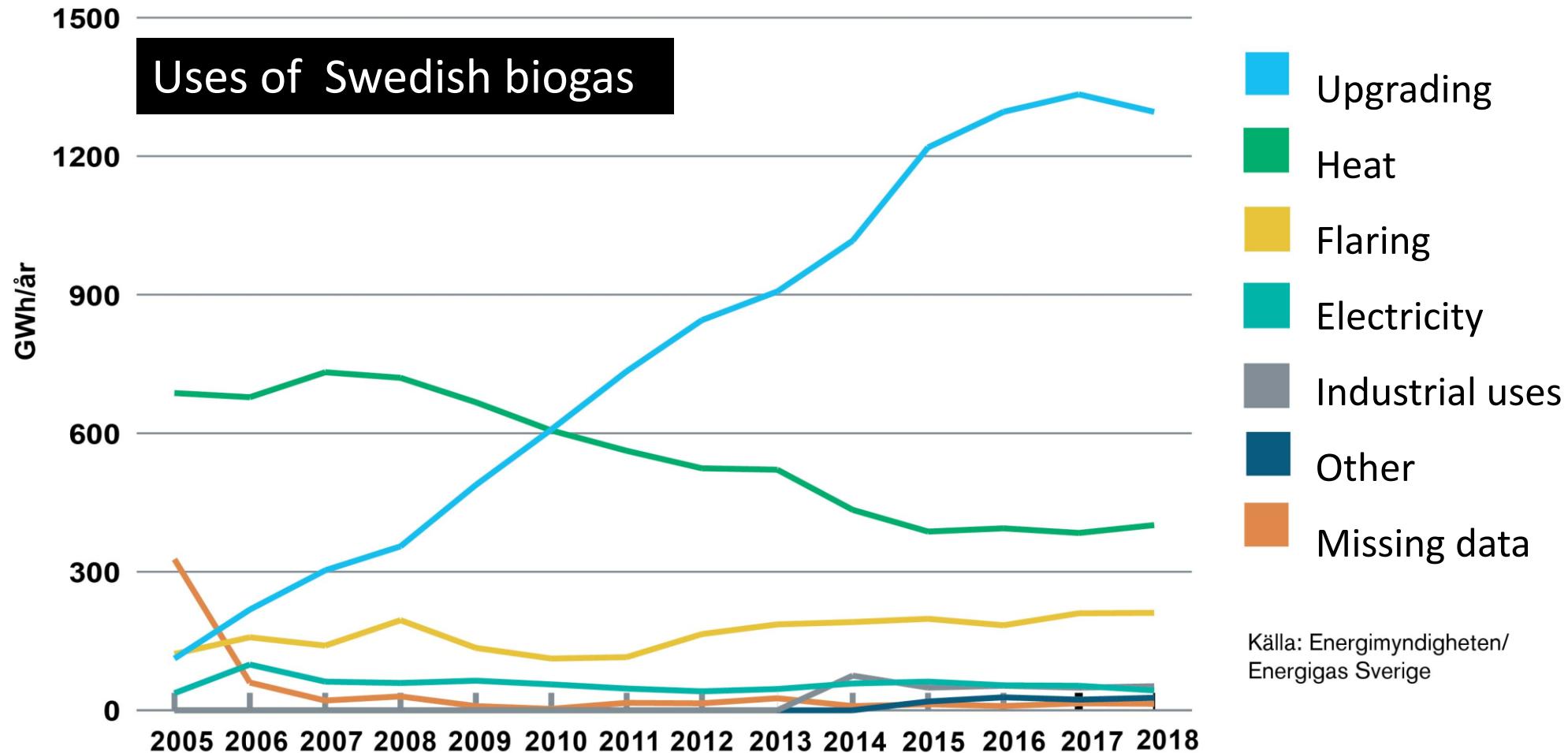
Conditions for development of biogas solutions - Sweden



20-06-08

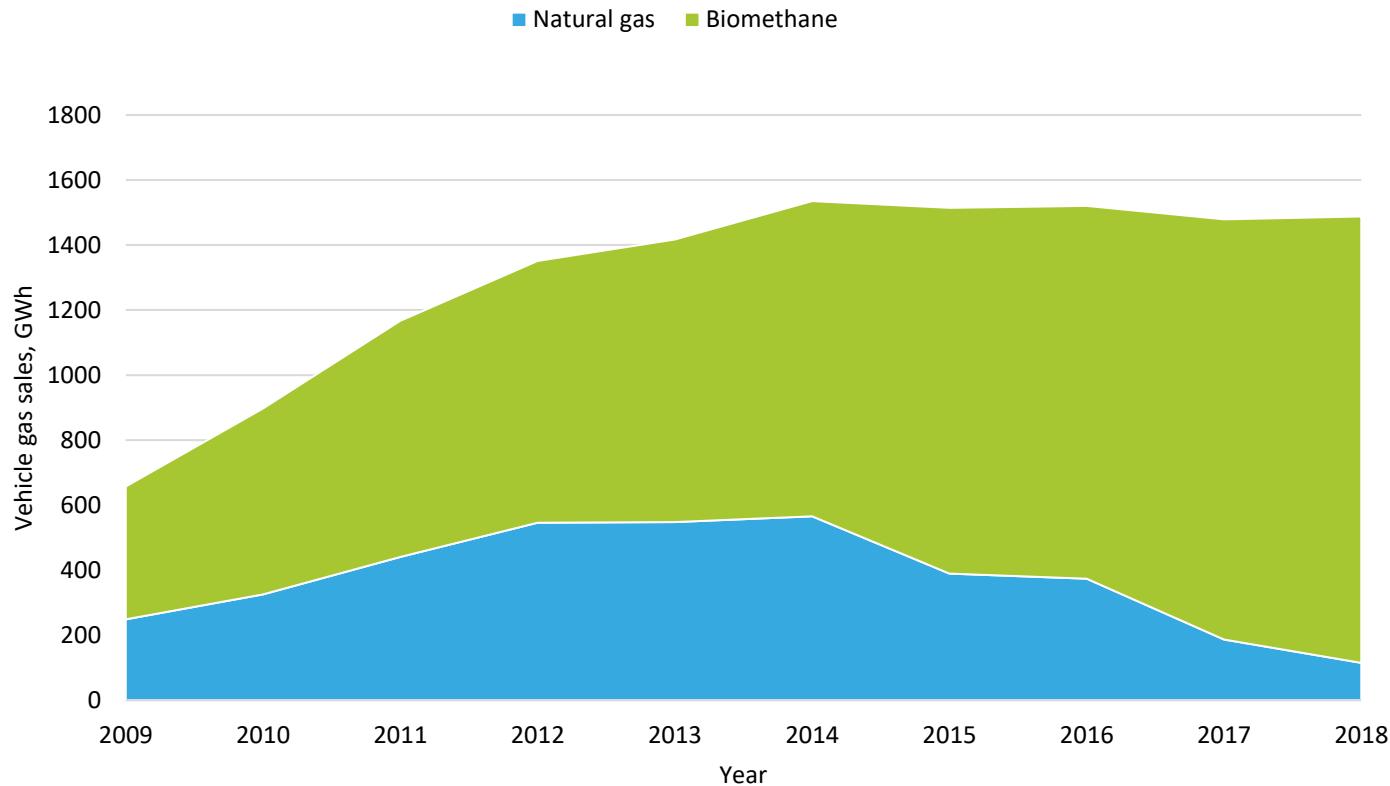
Distribution of natural gas and biogas





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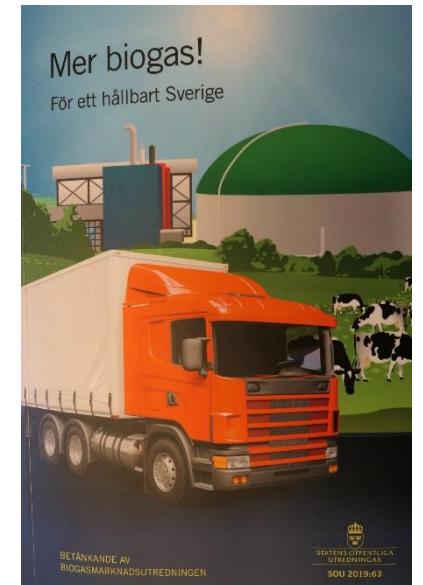
Share of biomethane in vehicle gas – 94%, 2019



20-06-08

Examples of policy interventions

- Long-term climate and energy goals
- Climate investment program and LBG (Bio-LNG) demonstration grants
- Bonus-malus for cars
- Uncertainty about tax exemption
- No national biogas registry
- National enquiry proposes production related grants (EU harmonization)
- Production goal from 2 to 10 TWh in 2030



What is needed for "take-off"?

- New vehicles (trucks, buses and cars)
- New markets (industry, shipping)
- Cross-sector sustainability policy
- Clear policy messages
- Private investments in production and distribution

10.00-10.20 Welcome, introduction to BRC and conditions for development of biogas solutions in Sweden.

10.20-11.20 How biogas solutions can make our planet great again

11.20-11.40 Comments and panel discussion based on previous presentations

11.40-12.00 Break

12.00-13.40 Poster conference presentation of research at BRC with three parallel sessions

1) Session Process-Technology

2) Session Systems

3) Session Society

13.40-14.00 Break

14.00-16.00 International outlook with five short reports from India, Italy, South Africa, Cuba, Brazil and some following reflections.

16.00-16.10 Concluding remarks and end

10.20-11.20 “How biogas solutions can make our planet great again”

Lorie Hamelin, Toulouse Biotechnology Institute

Henrik Dahlsson, senior advisor sustainable transport and

Erik Hansson, sustainability manager buses and coaches, Scania

Panel discussion including:

Frank Scholwin, Institute for Biogas, Waste Management & Energy, Germany,

Sandra Esteves, University of South Wales, United Kingdom,

Thomas Prade, Swedish University of Agricultural Sciences,

Caroline Steinwig, The Swedish Waste Management Association.



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www.biogasresearchcenter.se