



IEA Bioenergy - Task 37
"Energy from Biogas and Landfill Gas"

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Country Report
Norway

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Framework and tools for stimulating the development of biogas in Norway

The Norwegian Government aims that 30% of livestock manure in combination with 600 000 tons of food waste to be treated in biogas plants within 2020

In Report to Parliament. No. 39 (2008 -2009), Climate change - part of agriculture solution), it is stated that biogas is the single measure that holds the greatest potential to reduce emissions of greenhouse gases in the agricultural sector

Framework and tools for stimulating the development of biogas in Norway

- **Within agriculture** there are few governmental incentives to develop facilities for biogas production.

- **In the waste management industry**, biogas production based from sewage sludge and food waste take place to some extent.
 - This is partly because of the ban on landfilling of biodegradable waste (effective July 1, 2009)

- **Political goal**; within 2020 Norway should produce 14 TWh from bioenergy.

Sørheim et al. 2010. Biogass - Kunnskapsstatus og forskningsbehov, Bioforsk Report Vol. 5 Nr. 16.

Framework and tools for stimulating the development of biogas in Norway



Economy and regulation:

- No tax on bioenergy/biogass

- 3.5 % of liquid fuel should come from bioenergy
 - 5 % in the future

- New buildings
 - Parts of the energy usages should come from renewabel energy sources

Framework and tools for stimulating the development of biogas in Norway



Innovation Norway

- Bioenergy program
 - Target: farmers / forest owners
 - Budget:
 - 35 million NOK agricultural agreement
 - 15 million NOK from state budget
 - Supports activity within:
 - Construction of heat sales
 - Farm Heating
 - Greenhouse
 - Biogas
 - Preliminary studies / pilot projects

Innovation Norway promotes nationwide industrial development profitable to both the business economy and Norway's national economy, and helps release the potential of different districts and regions by contributing towards innovation, internationalization and promotion.



Framework and tools for stimulating the development of biogas in Norway

ENOVA

- Support: only to manufacturer
 - Industrial scale, at least 1 million kWh per year
 - Investment - up 30% of the investment amount and 8% monetary return

- Top priority projects (competition)

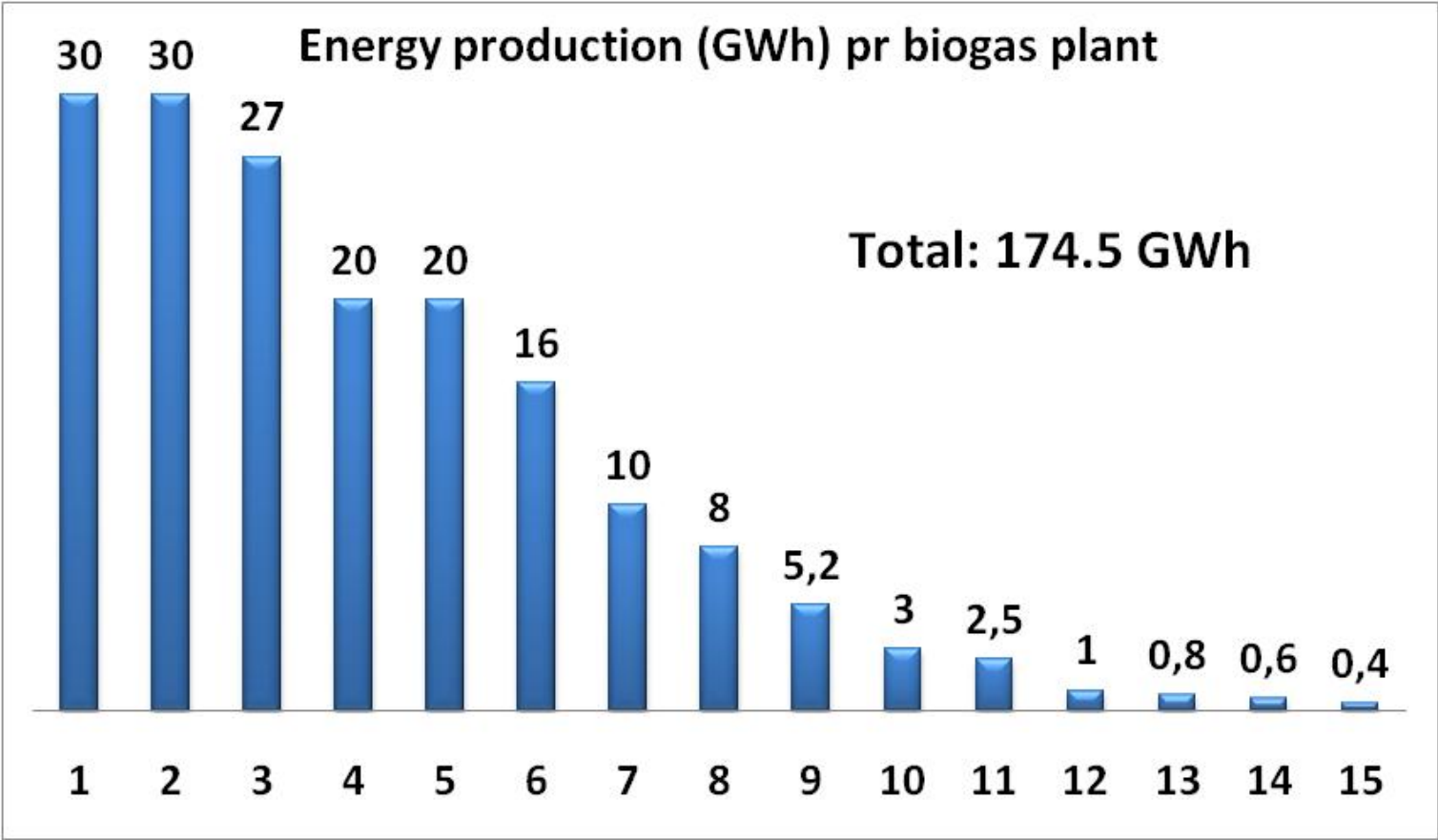
ENOVA is owned by the Ministry of Petroleum and Energy. It was established to take a leading role in promoting environmentally friendly restructuring of energy consumption and energy generation in Norway. Enova's goal is to make it easier for public and private enterprises to choose simple, energy-efficient and environmentally correct solutions.

Transnova

- Transnova 2011 - a program that aims to reduce CO₂-emission from fossile fuel

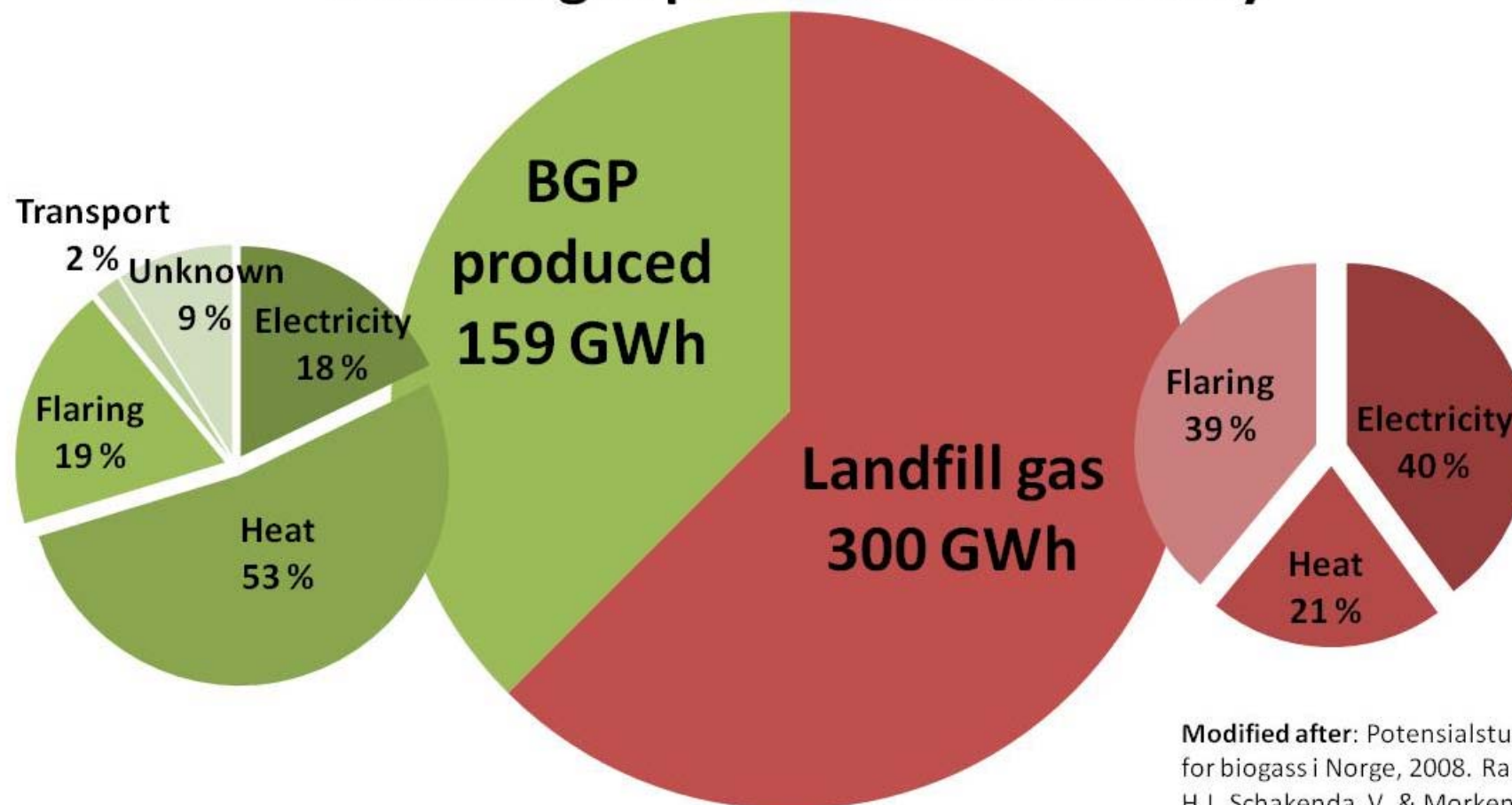
- Support projects that aims to introduce new and environmental friendly transport systems and technology
 - 45 % of total cost, but
 - Max 4 mill Nok/yr (500 000 €/yr)

Biogas production at BGP in Norway 2010



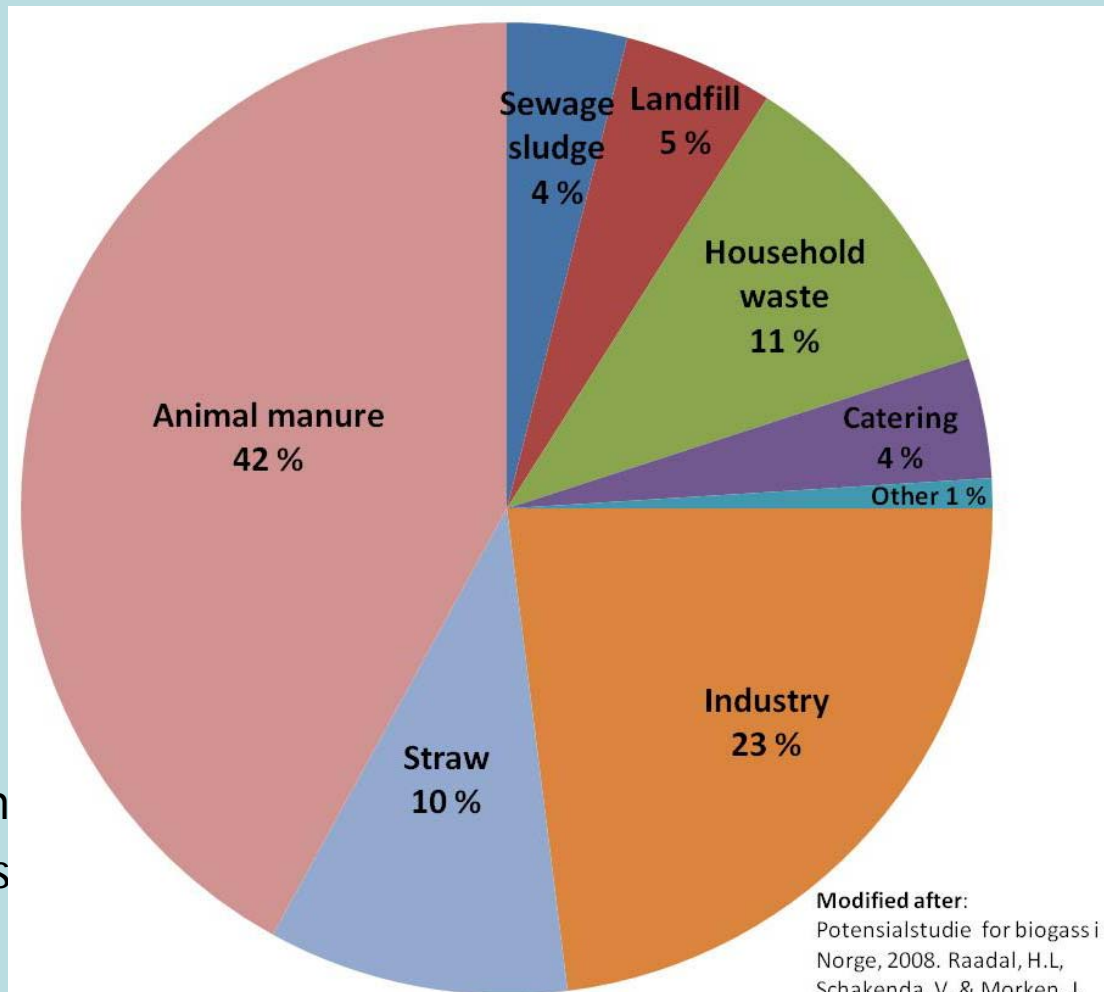
Biogas utilization

Total biogas production in Norway



Modified after: Potensialstudie for biogass i Norge, 2008. Raadal, H.L, Schakenda, V. & Morken, J. Report, 55 p. ISSN: 0803-6659

Distribution of theoretical energy potential of different resources in Norway



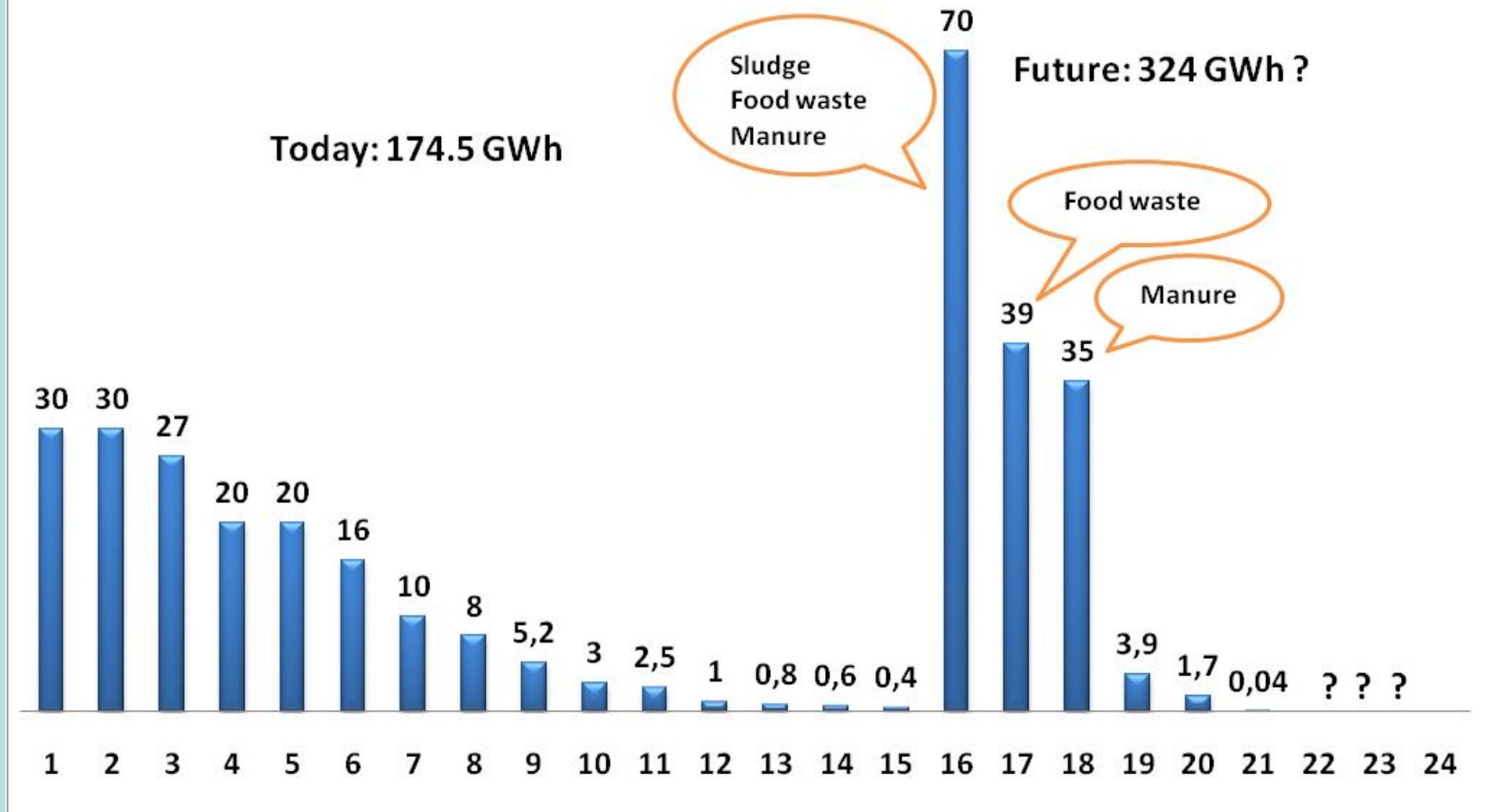
Potential energy production from waste and by-products is estimated to 6 TWh

Modified after:
Potensialstudie for biogass i Norge, 2008. Raadal, H.L, Schakenda, V. & Morken, J. Report, 55 p. ISSN: 0803-6659

Future - Utilization of resources for biogas



Biogas production (GWh) at BGP in Norway today and in the future



Biogas utilization - the future

- Large biogas plants are planning to upgrade the biogas to fuel
- Small biogas plants utilizes the biogas on farms
- Digestate
 - a valuable fertilizer in agricultural and horticultural production

Research (2010-2014)

National Research Council funded Biogas projects

Program at NRC:

- **Natur og Næring (Nature-based Industry):** 6 projects
 - Total value: 33,9 mill NOK (4,1 mill €)
- **Renenergi (Clean Energy for the Future):** 5 projects
 - Total value: 37,1 mill NOK (4,5 mill €)
- **Matprogrammet (The Food Programme):** 2 projects (digestate utilization)
 - Total value: unknown

February 2011
Report:
Biogas production on
animal manure

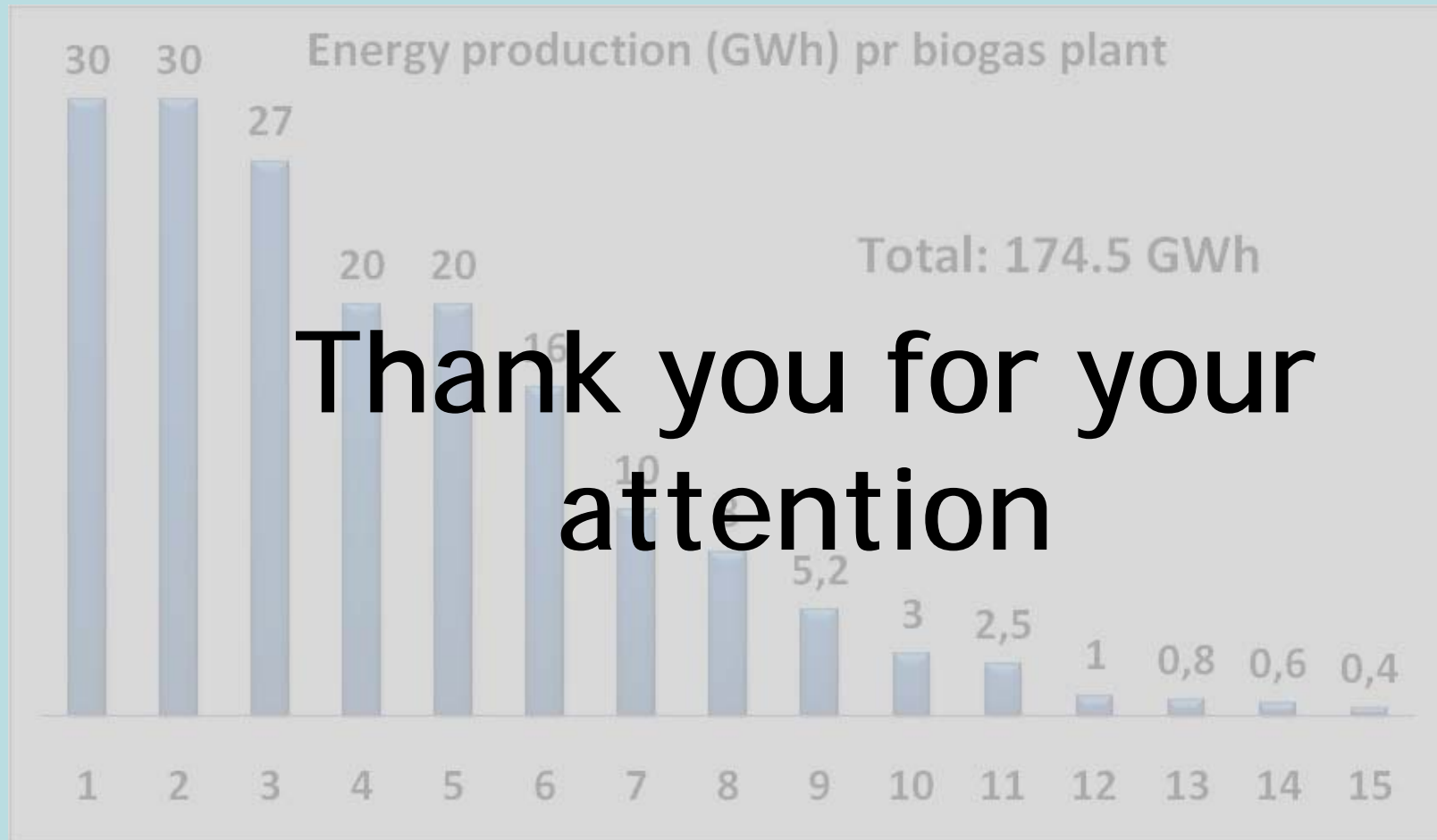
In Norwegian

Biogasproduksjon på basis av husdyr-
gjødning – rammebetingelser, økonomi og
virkemidler

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Februar 2011



Thank you for your
attention