



# Biogas technology transfer perspectives in Estonia: policy analysis on sustainable innovation

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# SPIN - Sustainable Production through Innovation in SMEs

Lighthouse project of Baltic 21  
Flagship project of  
Strategy for the Baltic Sea Region

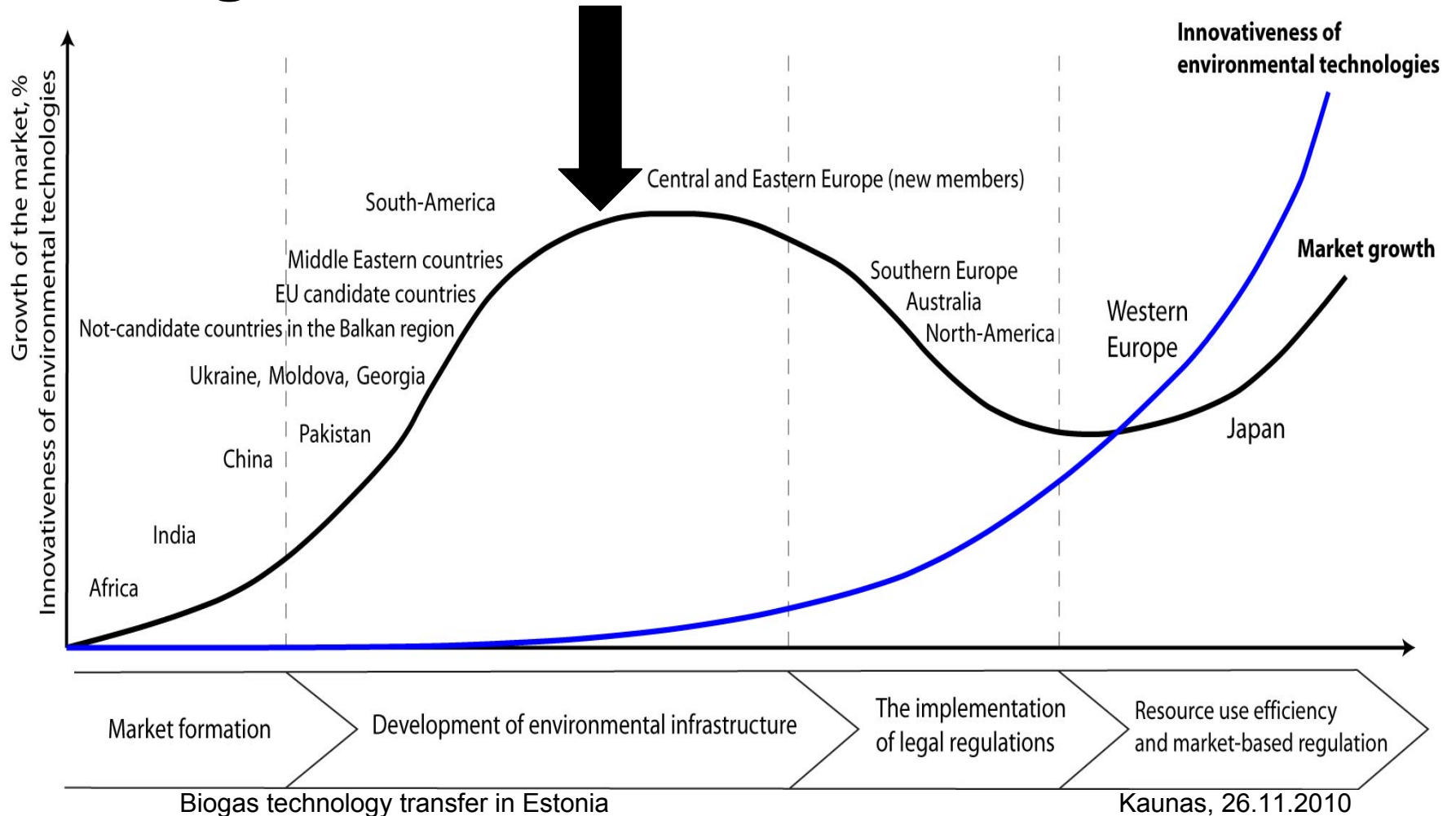
Matching supply and demand  
cross-regionally:

- Promoting highlights
- Addressing SME needs
- Collecting & disseminating support tools





# Background for eco-innovation in Estonia





## Policy framework for biogas sector

- Biogas sector is multidimensional, it has interactions with
  - Waste management
  - Nature protection and landscape management
  - Regional, rural socio-economic SME development
  - Technology and knowledge transfer, R&D
- Waste should be considered as secondary source for renewable energy, not as externality with extra cost
- Current legal and social circumstances do not support biogas sector development in Estonia



## Biogas resource inputs

- FEASIBLE **Potential 5-8%** of total electricity consumption or **50-84 MW<sub>el</sub>** installed capacity of electricity production
- ACTUAL USE The energy produced from biogas in 2007 accounted for: **0.16 %** of the heat energy used **0.14 %** of the total electricity consumption.
- The amount of Estonian biogas production is only **around 11 million Nm<sup>3</sup>** of gas originating from landfills, sewage sludge and slurry (liquid manure)



## Technology needs – steps to address

- SPIN supports knowledge transfer of technologies
  - relating to **pre-treatment of biomass** for biogas production to increase efficiency
  - of biogas plant (digestion process) **control and automatic technologies, accounting** regional climatic and resource-based differences
  - in **dry fermentation** technologies available
- GasHighWay introduces
  - the usage **conditions of bio-methane** (incl. issues with safety),
  - EU legislation and **bio-methane quality requirements,**
  - and **disseminates corresponding know-how.**
- Technology transfer of waste timber, straw, reed and other cellulose-rich waste for gasification, e.g. **pyrolysis**



## Technology needs – soft+hard

Missing or insufficient local know-how available in

- Design
- Construction
- Construction supervision
- Operation



of biogas plants

Steps to address: TRAINING

The management of biogas stations' work and corresponding training in Estonia has so far taken place **only according to the requirements of the supplier of the technology**, and within its competences and possibilities.

SPIN: to promote the transfer of know-how in the following areas: **design, construction, quality requirements, standards, norms, legislation, and construction supervision of biogas stations** and the training of biogas station operators.



## The creation of legislative framework, strategic vision and financial support system

- **Feed-in-tariff** for renewable electricity is flat rate of **7 €/kWh<sub>el</sub>**
  - Corresponding only 25% of feed-in-tariff of Germany and Latvia
  - Feasibility studies indicate that for **market driven development** it should be double of current rate: **13 €/kWh<sub>el</sub>**
  - Estonian Government intends **to decrease** the feed-in-tariff for renewable electricity down to **6 €/kWh<sub>el</sub>**

SPIN: to examine, which have been the **most efficient support mechanisms** (best practices of different types of subsidies and support mechanisms that might be transferable to Estonia) for bioenergy + dissemination





## Biogas, agriculture and rural development

- Investment **subsidy** support **limit** is a clear **obstacle** for farmers to become active in producing biogas
- Export support schemes: joint actions via **bioenergy cooperatives**
- Small towns and regions are unable to invest in the transfer to bio-energy - there is need for incentives that would encourage smaller boiler houses to shift to using bio-energy.



## Conclusion (1)

- Biogas sector is not profitable in current economic situation in Estonia, differently from Latvia, where it is profitable
- But it has clear public needs and advantages, because its multidimensional character and huge potential as renewable energy source

To become profitable, it needs:

- Eco-innovation, knowledge transfer and testing and piloting sustainable production technologies and
- Improving legal, attitudinal and social conditions to become favourable for biogas sector development



## Conclusion (2)

Estonia has potentially emerging market for biogas, which:

- needs public awareness and support
- needs political strategic agenda, consensus and support
- needs technological, social, legal, economic and social knowledge transfer
  - tested and adopted to Baltic conditions
  - sustainable production principles
  - SME involvement