



# Biogas Development in Eastern Europe

## Lessons Learnt for Turkey



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Izmir, Turkey, 20 October 2011

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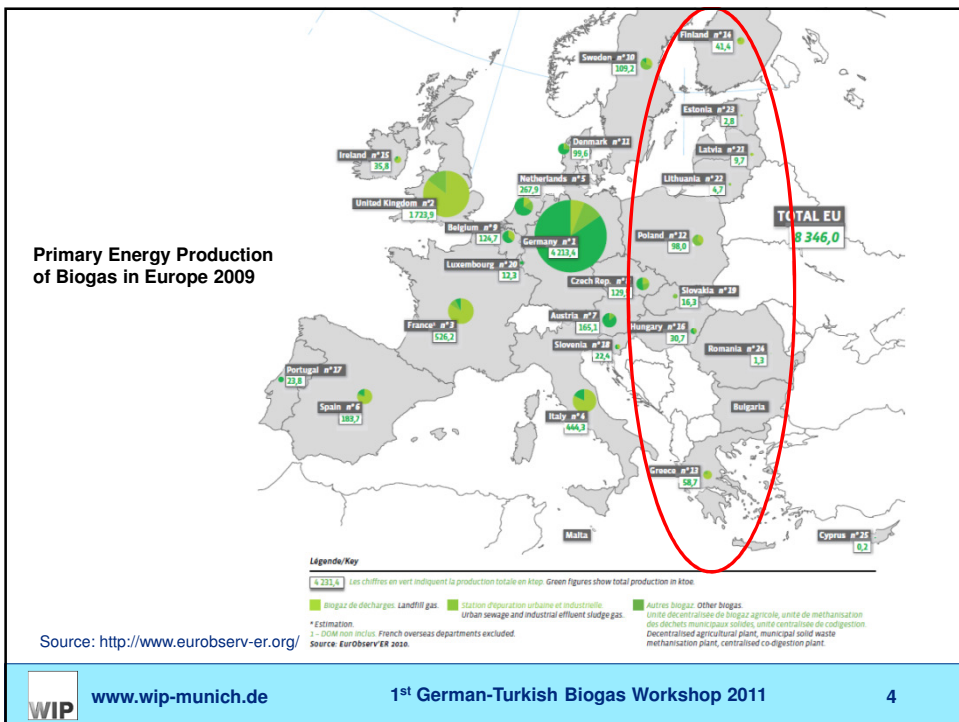
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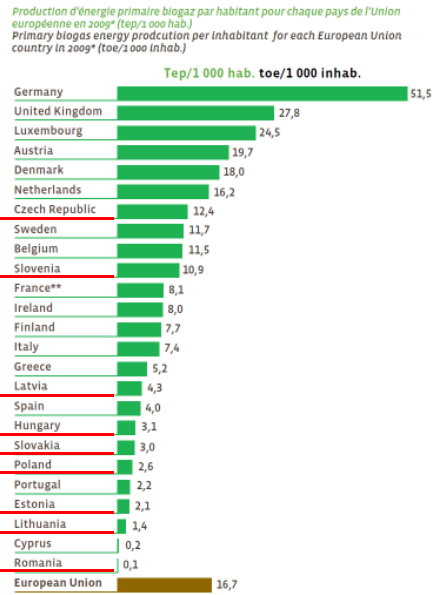



## 1. Biogas Market in Eastern Europe


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### Primary Energy Production of Biogas per 1000 habitants in Europe 2009



Source: <http://www.eurobserv-er.org/>



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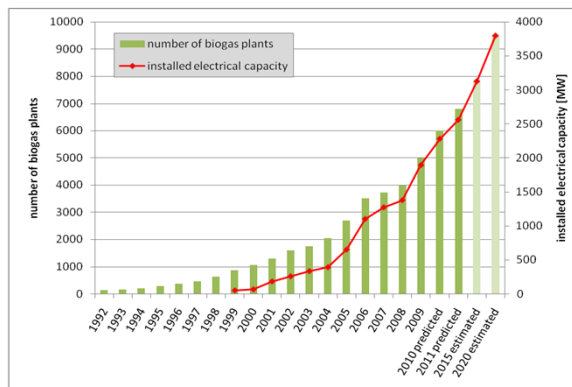
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## Biogas in the German nREAP

Estimated development of biogas plant installations according to the National Renewable Energy Action Plan (nREAP)



Source: Fraunhofer IWES after FNR, FVB 2010 and on basis of estimation of the nREAP

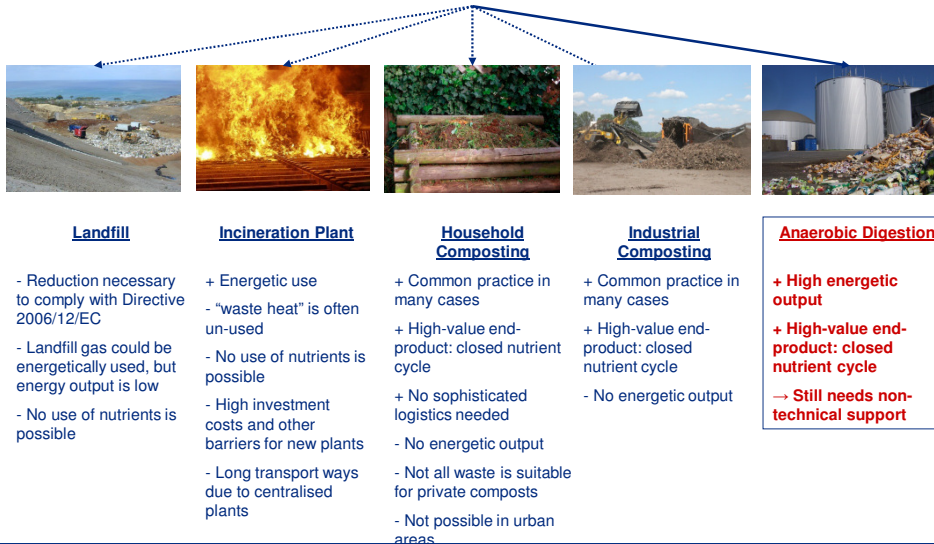


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## Options for Organic Waste Treatment



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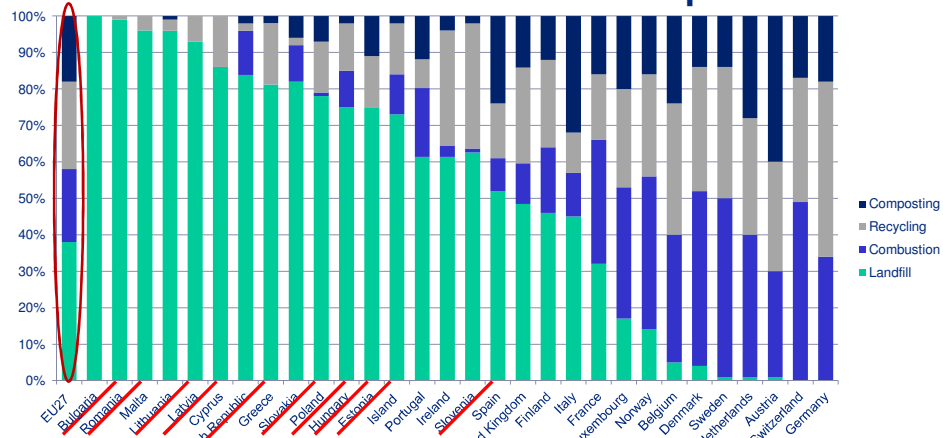
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## Treatment of MSW in Europe



Source: WIP, Data: EUROSTAT, 2009  
MSW = Municipal Solid Waste  
includes also non-organic waste!

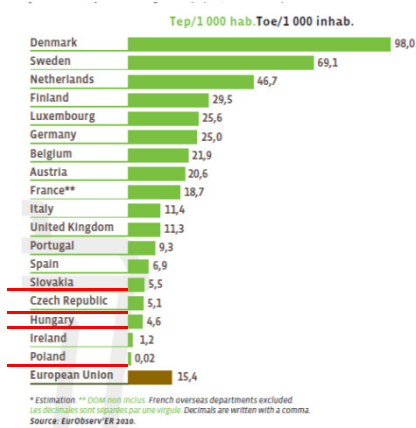


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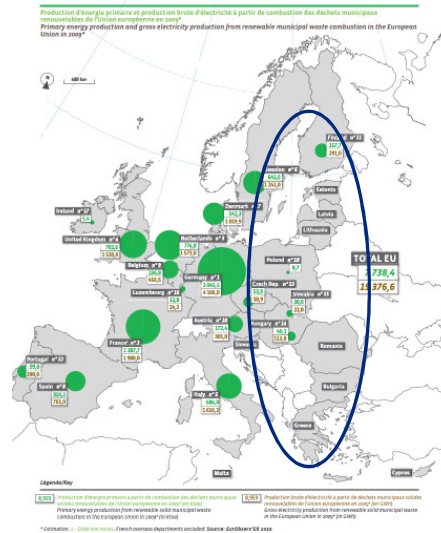
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### Energy Production from Municipal Solid Waste per 1000 habitants 2009



### Energy Production from Municipal Solid Waste 2009



Source: <http://www.eurobserv-er.org/>



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## 2. The BiG>East, BiogasIN and UrbanBiogas Projects



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**BiG>East**  
Biogas for Eastern Europe

- Training for Farmers & Mobilisation of Decision Makers
- Sept. 2007 to March 2010
- [www.big-east.eu](http://www.big-east.eu)

**BIOGASIN**

- > 80 Events (trainings, conferences, etc.) to address policies & facilitate permitting procedures and financing
- May 2010 to October 2012
- [www.biogasin.org](http://www.biogasin.org)

**URBAN BIOGAS**  
[www.urbanbiogas.eu](http://www.urbanbiogas.eu)

- 5 concepts for 5 EU cities for Waste-to-Biomethane
- May 2011 to April 2014
- [www.urbanbiogas.eu](http://www.urbanbiogas.eu)

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## Knowledge Transfer

Promote biogas production and utilization in Eastern Europe by knowledge transfer from...

...Austria  
Denmark  
Germany

to

Latvia, Bulgaria,  
Croatia, Greece,  
Romania, Slovenia

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## BiG>East Activities

- **Studies** on biogas potential, barriers and policies
- Development of **biogas show cases**
- **Biogas handbooks** in **7 languages**
- **18 biogas training courses** for farmers
- **12 mobilization campaigns** for decision makers
- **3 Study tours** to existing biogas plants



**biogas**  
HANDBOOK




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## 18 BiG>East Training Courses
















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### 3. Barriers on Biogas Development

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### Barriers on Biogas Development in New Markets

- **Technical Barriers:**  
Need for adapted technologies  
(climate, agricultural structure, costs, local manufacturers, etc.)
- **Non-Technical Barriers**


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## Non-technical Barriers

- Lack of **suitable policies** (legislation)
- High **administrative burdens** (permission procedures)
- Lack of **financial incentives** and **investors**
- Lack of (successful) **pilot plants**
- Lack of local **biogas experts**
- Lack of **information**
- Limited local **availability** of biogas technologies
- Weak **waste treatment infrastructures**


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## 4. Lessons Learnt for Turkey




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## I. Suitable Policy Framework

- Mandatory requirement: legislation on RE
- Quota/ Green certificates are weak tools ☹️
- Preferred tool: Feed-in tariff system 😊
-  Turkey has a feed-in tariff system (~0.10 €)! 😊  
however, seems to be very low ☹️


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## II. Set-up of a strong Biogas Association

- A strong National Biogas Association is needed to:
  - Improve legislation (lobbying)
  - Represent / support industry
  - Implement Training
  - Provide Information
-  Turkey: BiyogazDer 😊


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### III. Capacity Building

- In developed markets (e.g. Germany) many specified biogas training courses are available
- Training need for farmers, plant operators, banks, administrative bodies, insurance agencies, etc.
- Implementing bodies: RE agencies, Biogas Associations




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## IV. Highlighting of Biogas Benefits

- Biogas benefits (GHG, best agricultural practices, jobs, energy security, etc.) must be highlighted in order to:
  - Gain public acceptance
  - Acceptance among Politicians
- Benefits must be specific and measurable!
  - Research is necessary!
  - Monitoring is necessary!



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## V. Lessons from other countries (examples)

**Germany:**

- too much reliance on corn silage as feedstock: price fluctuations
- only limited use of heat from CHP plants
- insufficient legislation on the use of digestate from waste materials
- open (not covered) digestate storage tanks

**Czech Republic:**

- too high initial feed-in prices

**UK:**

- former application of inefficient quota system instead of feed-in systems

**Latvia:**

- wrong use / estimations of feedstock (corn yields are low)
- high heat / insulation need due to cold winters



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## 5. Conclusion


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Year	Number of biogas plants	Installed electrical capacity (MW)
1991	~100	~10
1992	~150	~15
1993	~200	~20
1994	~250	~25
1995	~300	~30
1996	~350	~35
1997	~400	~40
1998	~450	~45
1999	~500	~50
2000	~600	~60
2001	~700	~70
2002	~800	~80
2003	~900	~90
2004	~1000	~100
2005	~1200	~120
2006	~1500	~150
2007	~1800	~180
2008	~2200	~220
2009	~2800	~280
2010 (projected)	~4500	~3500
2011 (projected)	~5500	~4000
2012 (projected)	~6500	~4500
2013 (projected)	~7500	~5000
2014 (projected)	~8500	~5500
2015 (projected)	~9500	~6000

1940                      1992                      1999                      2011


Organic/ green farmers      Electricity Supply Law (StrEG)      Renewable Energy Source Act (EEG)



- Germany needed more than 70 years to develop biogas...



- Turkey can do it much faster! In 7 years?


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## Thank You



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