# REAP & Biogas in Slovenia

"Biogas – Targets, Potential and Promotion within Central Europe"
Warsaw, 7. 4. 2011

Matjaž Grmek

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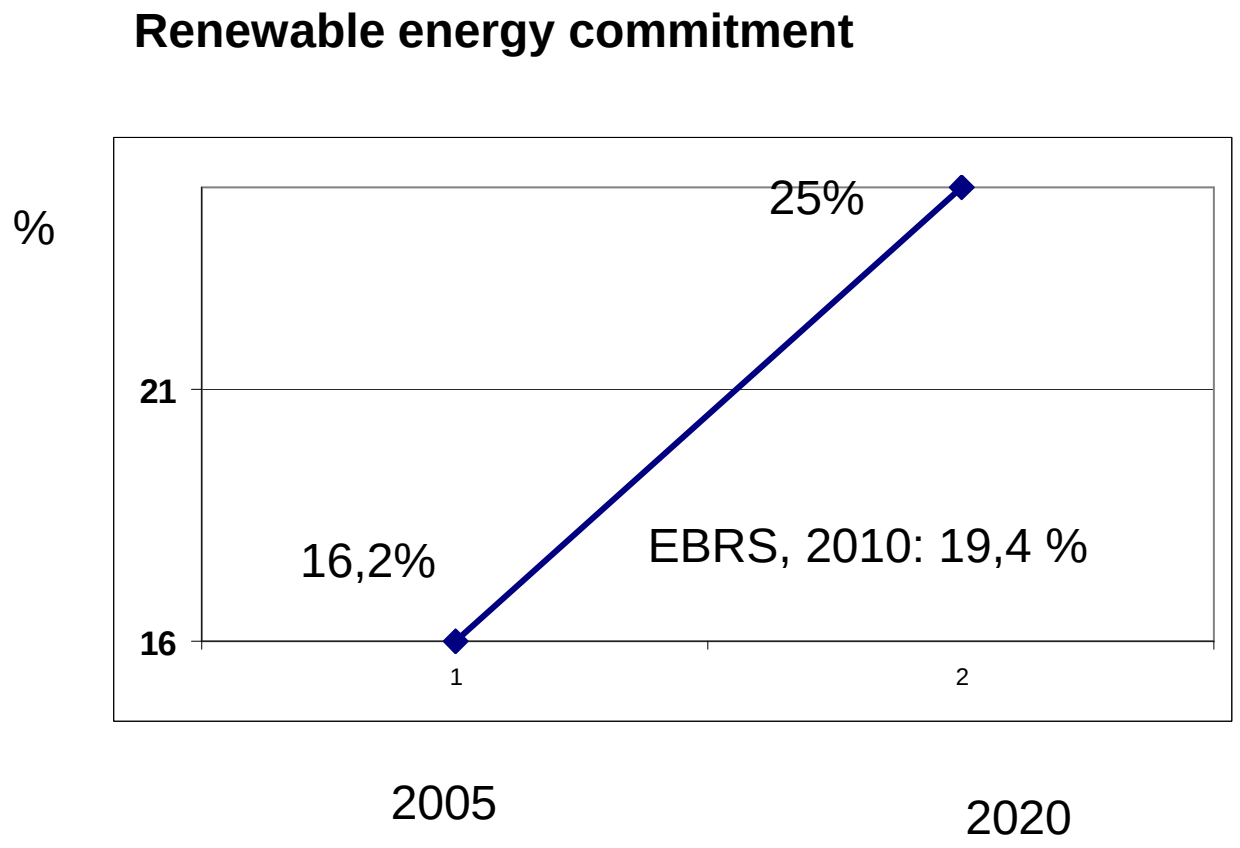
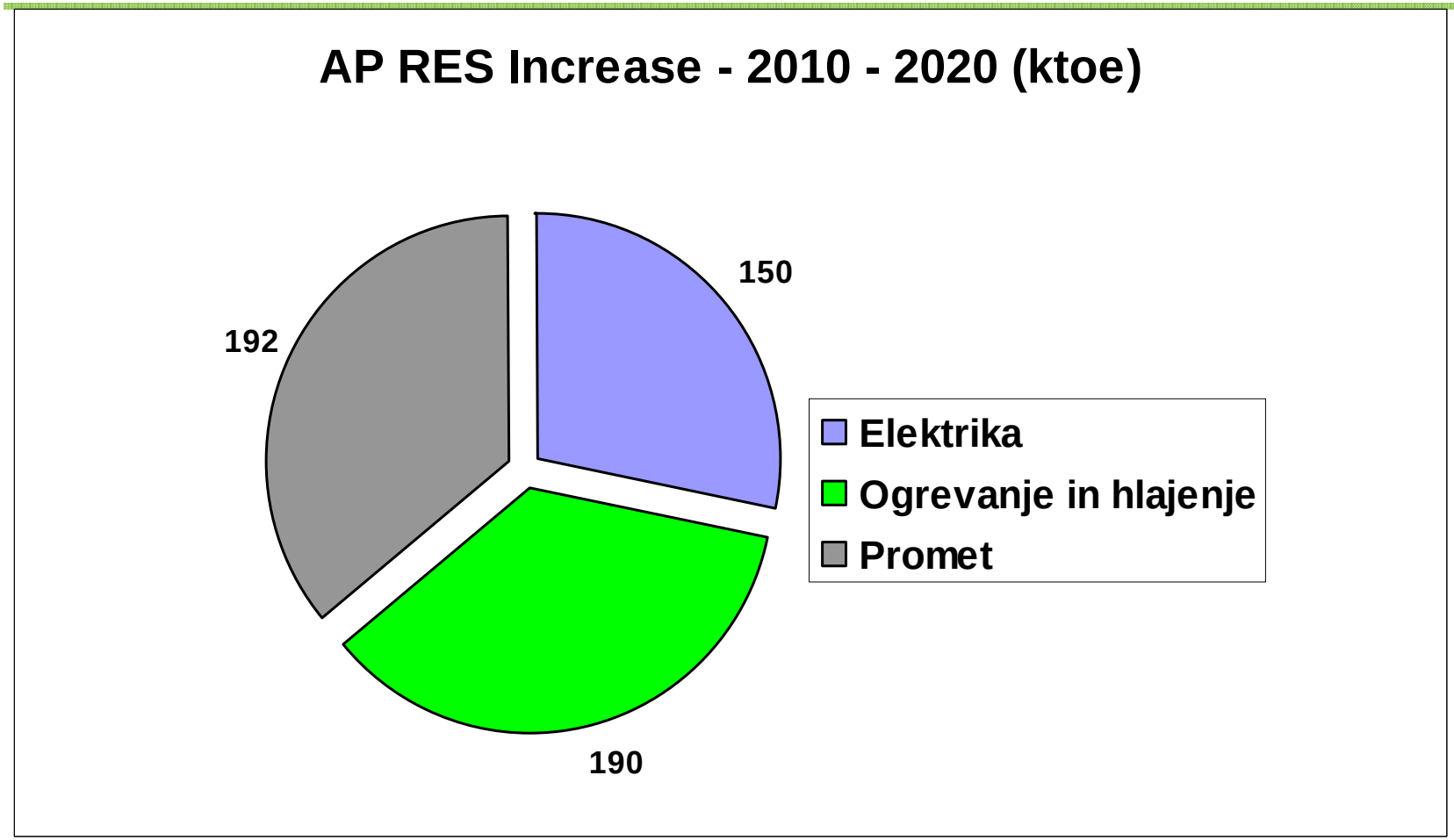
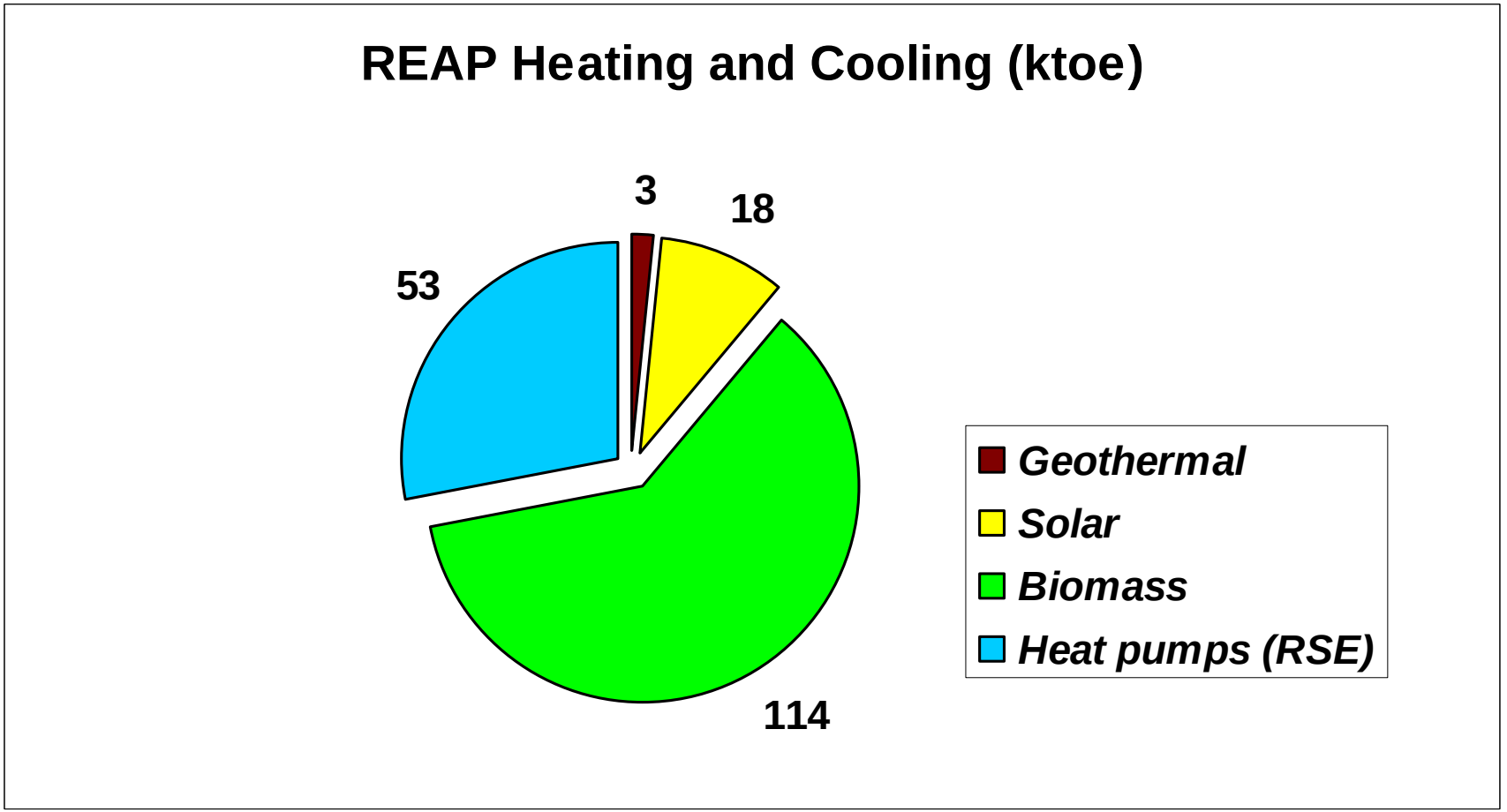
# nREAP targets



# REAP targets



# REAP targets



# REAP targets – biogas potential

- Gradual growth from - installed power of CHP
  **30 MW** (2010) to **61 MW** (2020)

- Agriculture represents the **main** biogas production **potential** in Slovenia. According to agricultural experts from **45** up to **78** MW (various impact scenarios)

  Substrates for BG – **360,000 t**

  Manure: 130,000 t

  Green biomass: 230,000 t >> 45 MW

- New study of KGZS in 2010:
  **72 / 102 / 134 MW**

# Biogas in Slovenia – potential 2010

Scenario 1 :

- 10% arable land (smaller farms 30%)
- 60 to 100% crop stubble (at bigger farms)
- 10% permanent grassland (up to 100% at farms)

Scenario 2:

- 20% (up to 30%) crops
- 70 - 80% crop stubble
- 20% meadows

Scenario 3:

- 30% crops
- 80–100% crop stubble
- 30–100% meadows

# Biogas in Slovenia - historical overview

- First biogas plant was built in **1993** for the anaerobic digestion on municipal – central wastewater treatment plant in combination with waste treatment at the big pig farm (Ihan). PETROL 2010
- Until **2002** (**feed-in tariff** introduced) only plans no realisation
- In **2003** first (and only) **small** farm biogas plant (124 kW)
- In **2007** 4 MW agricultural plants
- In **2009** 11 agricultural biogas plants in operation. The total capacity of installed power (CHP) was 13.8 MW
- In **2010** around 20MW installed power on agricultural plants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# Biogas in Slovenia – waste water

- Use of biogas from central **wastewater treatment** plants (CWWT) is necessary, especially from the aspect of **reducing methane emission**. Energy of biogas covers partly the energy need of the wastewater treatment. The energy produced is used in the plant for heating of digesters and partly covers the electricity needs.

- In **2009** in Slovenia existed **8 CWWT** installed **systems** for biogas production, but only **4** of them were using biogas for production of heat and electricity (**CHP**). In others biogas is burned on **torches**. Total installed electricity power on sewage gas is less than **1 MW**.

# Biogas in Slovenia – landfill & organic waste

- In 2009 **landfill gas** was used in only **3** landfills: Ljubljana, Maribor and Celje. The landfill gas is used for electricity production in CHP systems. The power capacity of all installed plants is 3.5 MW.

- A few systems using **organic waste**, food waste and byproducts (Koto Ljubljana 0.5 MW, Bioenerg Črnomelj 1.5 MW)

- There are currently no existing biogas plants in **food industry**.

# Supporting mechanisms - milestones

- Feed-in tariffs in 2002
- Grants - Ministry of Environment (investment and planning)
- Soft loans from Eko sklad (Eco Fund)
- Grants - Ministry of Agriculture, Forestry and Food, 2007, structural funds
  - measure 311 (investment in RES for farmers, up to 50%, decrease of feed-in tariff)
  - measure 312 (support for small enterprises funding, closed)
- Feed-in 2009, new system – state aid principles >>changes
- Feed-in 2011, restrictions for biogas

# Feed-in tariff - biogas

- 2009 - higher tariffs, 15 years (~160 €/MWh)
- Categories (50 kW, 1 MW, 10 MW) misssing 250 kW
- Extra 10% bonus for using of more than 15 % of heat
- Extra 10% bonus for using of more than 30 % manure
- Extra 20% bonus for using of more than 70 % manure for up to 200 kW plants

>>Feed-in 2011, restrictions for biogas from main (energy) crops (max 40% of the input volume if to be eligible, Off. G. RS No. 94/2010 )

# Supporting mechanisms - other

- **Education**, **awareness** raising through various domestic and international projects (KGZS, SLOBIOM; Interreg "Biogas Offensive"; IEE BIG>East, Biogas regions, BiogasIN, Agriforenergy, ...)
- Good **publicity** needed, bad comes on itself
- Study programs for secondary schools
  - "operator of biogas plant" in 2010

# Shining examples - Biogas Power Plant Nemščak, Panvita- GEAw 2006

- The **purpose** of the biogas power plant is to use **by-products** of the Panvita group - one of the biggest Slovenian food production entities - transform them and use them for sustainable energy purposes.

- To lower the **energy cost** for waste water treatment - BP

# Lessons learned

- **Financial suport** needed for (agricultural) biogas PP to happen
  - feed-in tariff
  - grants for investment
- **Price** and **conditions** have to be stimulating and adequate (1MW syndrome) and stable and safe
- Greater emphasis should be given to **crop stubble for biogas** production (food competition). (1991-2000: 7 ha/d of agricultural land were changed into building land, major problem for self-sufficient food production)
- Good **communication** to local stakeholders of investors is crucial
- Authorities can help with simple **procedures** and licensing

*"Gnoj je zlato in zlato je gnoj." ("Dung is gold and gold is dung.")*

Srečko Kosovel, Integrali Kons 5.

matjaz.grmek@ape.si

www.ape.si