

Towards a Better Use of Biomass through Energy Efficiency

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Presented at
The 10th International Conference
EnEff 2012
Banska Bystrica, Slovakia
16-18 October 2012

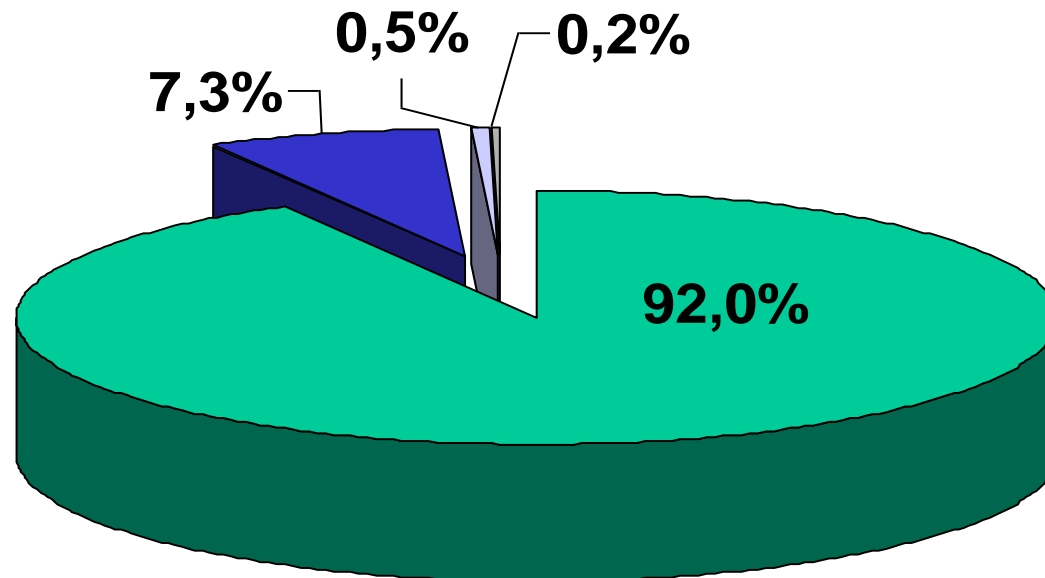
RES in POLAND:

Flat country - small hydro potential

Not much wind either

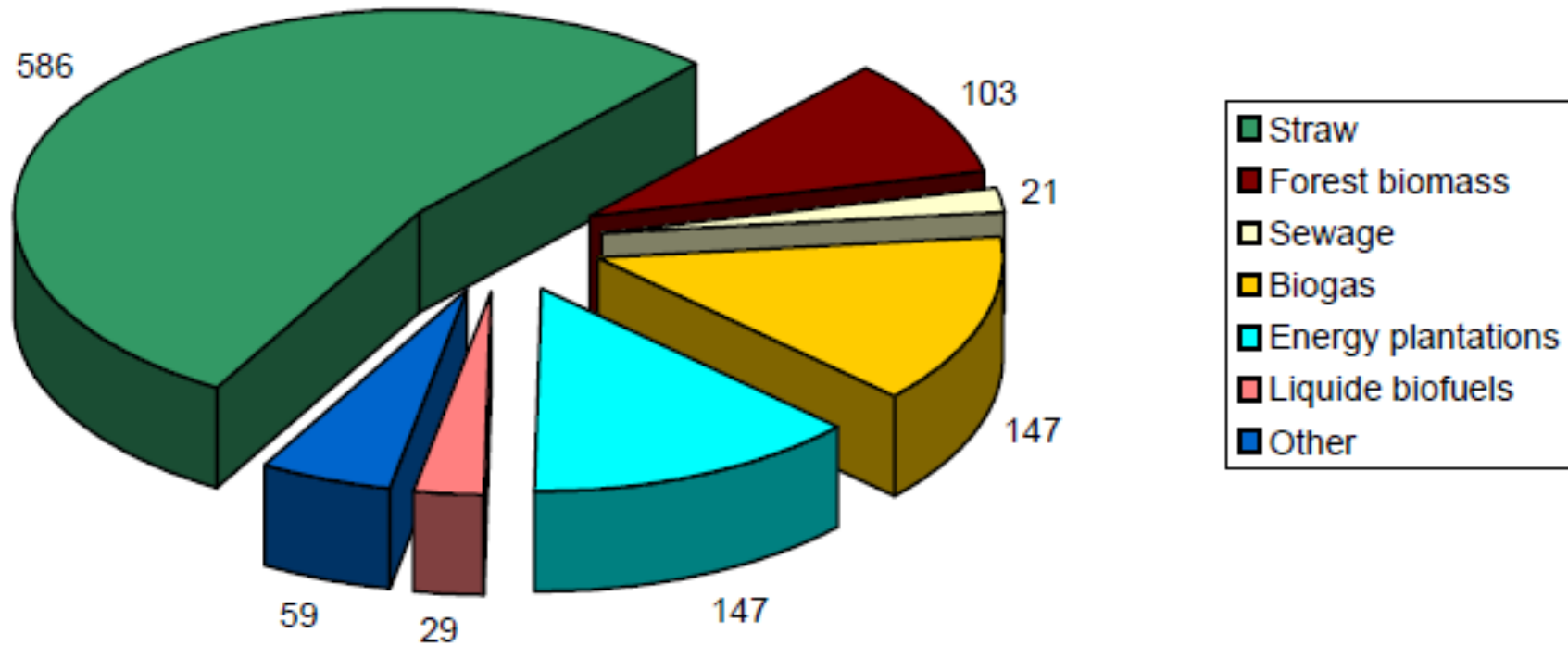
biomass is relatively abundant

The Use of RES in Poland



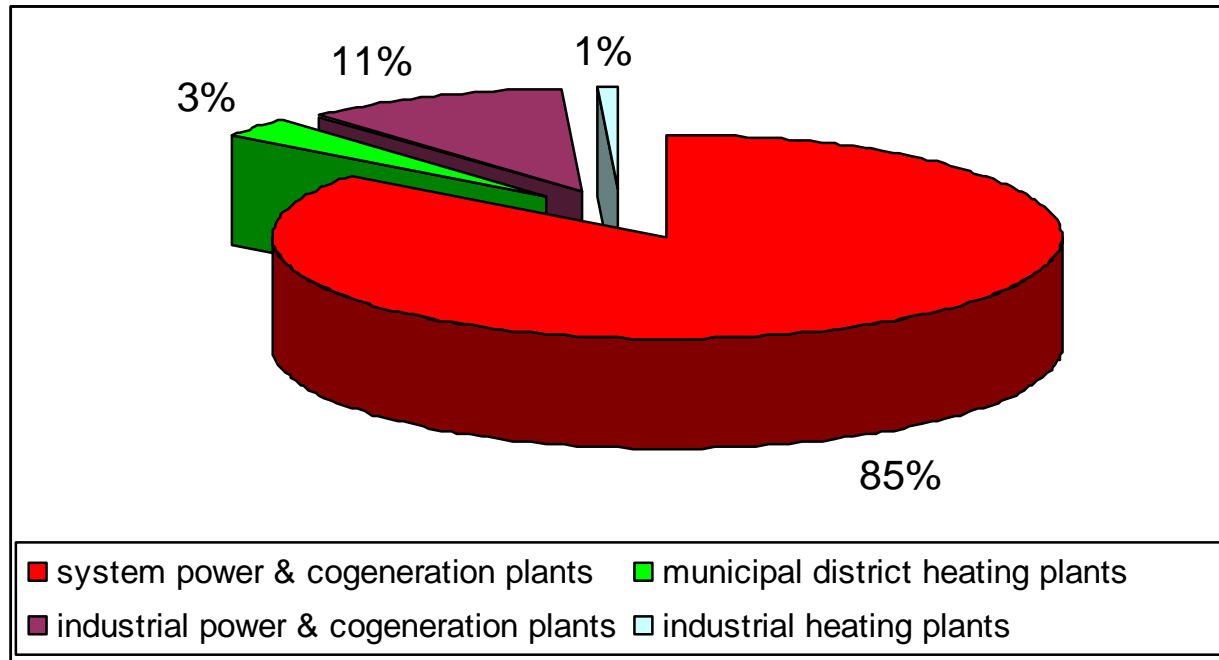
Biomass – 92% of the total RES (without large hydro)

■ Biomass ■ Hydro ■ Geothermal ■ Wind



Dakowski M., Wiąckowski S., Biomass potential in Poland [PJ], 2005

At present most of biomass in Poland is used for electricity generation



Co-firing with coal which in big power plants



PROBLEMS:

- Depletion of domestic resource
- Imports from remote countries
- **Transportation of large volumes**
- Technological problems (slagging...)
- Fire hazard (two recent cases in Poland)

A hypothetical example

ca 400 MW thermal
power plant

ca 5% of electricity
from biomass

500 tons/day, i.e

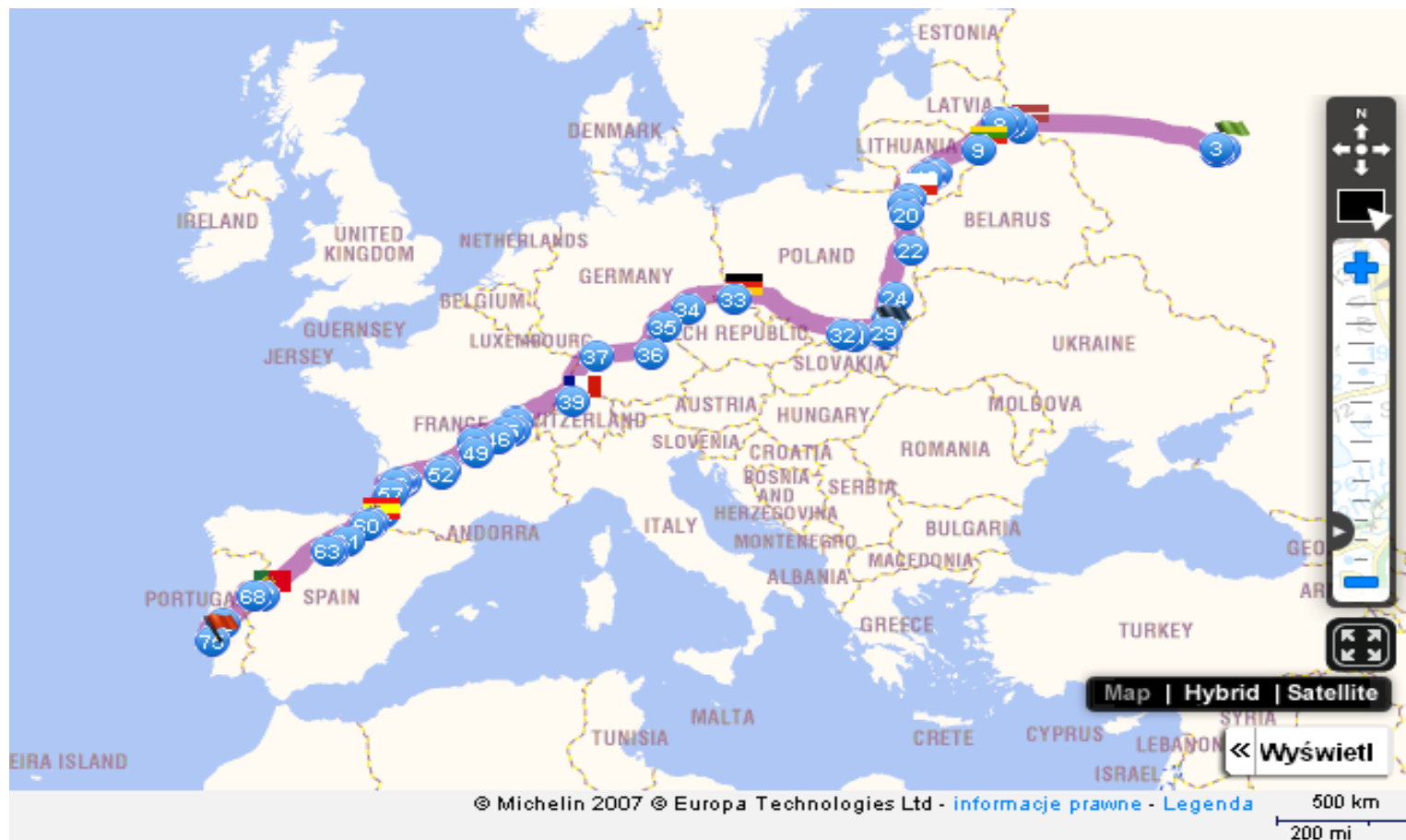
50 trucks with 10 tonnes load per day

times 100 km

gives 5000 km/day (one way)

every day

Moscow - Lisbon via PL 5100 km





**Recent study for the
ZE PAK Group
gives 179 000 km /month**

i.e.

more than 4 times around the globe

Moreover, it is
a very costly exercise

**FOR EACH MWh of „GREEN ELECTRICITY”
POWER GENERATORS
GET ABOUT
3 TIMES MORE THAN
they get for a coal-based MWh**

**in Poland it is about 400 mln EURO/year
to achieve the target it will become
700 mln EUR /year !!**

Experts, NGOs and (finally) the Government are revolting

some people claim the problem is
inefficient, old power plants
it not NOT that!

The problem is **SIZE** of the plant
(power, co-gen or heat only)
huge transportation needs

Is there an alternative ?

Alternative:

- **Local** use of biomass
- In **small**-to-medium size units
(at present primarily for heat only)

Primarily in **rural areas** where
biomass is available at spot

This would give

**AT LEAST THE SAME
CO₂ EMISSION REDUCTION EFFECT**

in fact MUCH LARGER !

**EMBEDDED ENERGY LOSSES
IN FUEL TRANSPORTATION AND PREPARATION
THERMODYNAMIC CYCLE EFFICIENCY**

**The technology is mature
and is
readily available**

BUT
locally biomass
is a **limited resource**

**one could eliminate more
fossil fuels
if
conversion to biomass were
integrated with thermal retrofits
of the buildings**

**here is a dilemma:
why should I put money in a retrofit
if
fuel costs me **nothing** ?!**

Anwer 1:

**you could sell the surplus to
your neighbours,
to your local school or clinic**



local biomass market (exchange)

Anwer 2:
change the way of accounting

case study:

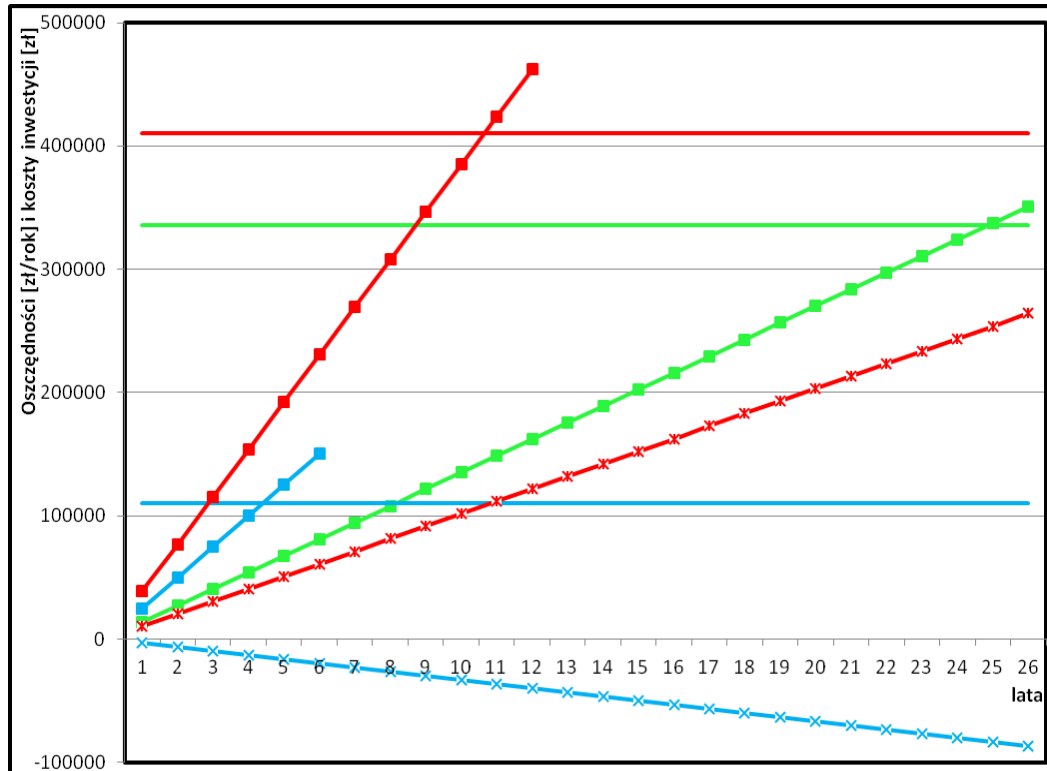
primary school in Bucze

(ca 60 km east from Krakow)

conversion from gas to local biomass

the main problem is the additional labour costs

Financial savings



years

Green - only retrofit

Red - bms+retrofit

squares - PICO
crosses - ESCO

Blue - only biomass

squares - PICO
crosses - ESCO

Thank you for your attention!