



WIND ENERGY IN WESTERN AND EASTERN EUROPEAN COUNTRIES

THE INTERACTION OF DRIVING FORCES IN THE PROCESS OF INNOVATION

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BULGARIA

Overview	Electricity Production	Driving Forces and Obstacles:	<i>1. Political Obstacles</i>	<i>2. Legislation 3. Path-dependency</i>	<i>4. Technical and Economic Factors</i>	<i>5. Cognitive Factors</i>	Prospects for the Future Development
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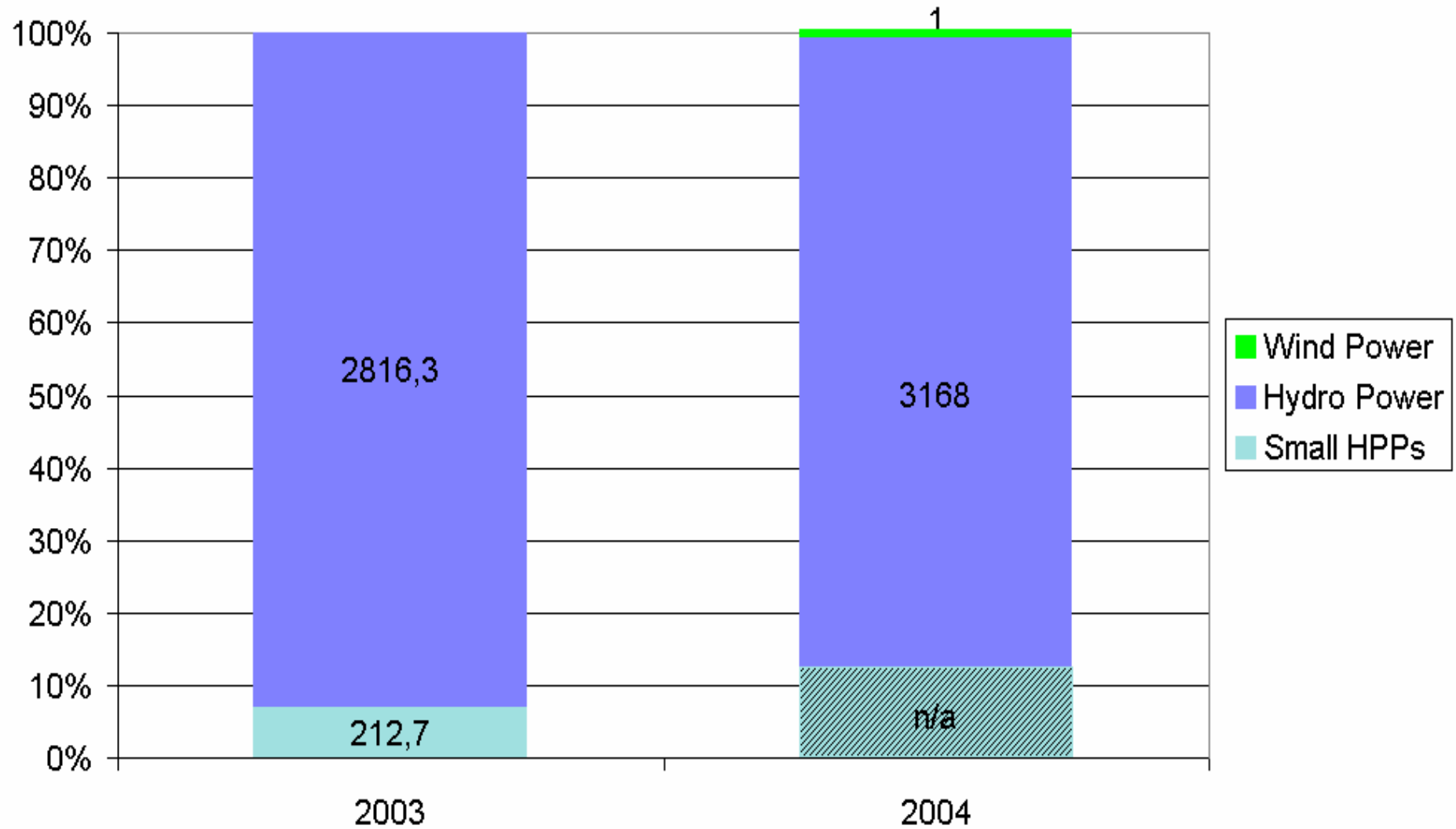
Wind Energy In Bulgaria

Yet To Begin

Overview of the Use of RES

- Electricity production from RES only 6 %
- Hydro power dominates the production from RES
- The State Electricity Company dominates the hydro sector with the ownership of the large HPPs
- Small HPPs and wind power with a marginal use
- 33 MB installed wind power officially certified
- Vestas and KC Trading with wind power projects

Electricity Production From RES (GWh)



Driving Forces & Obstacles For The Wind Energy Development

1. Political obstacles

- Political capture by nuclear interests (second NPP will be build)
- Intransparent decision-making (public discussions if any at all after decisions already taken, i.g. the public discussion on building of new NPP)
- Difficult access to decision-making (many energy experts supposed, that decision-making is done by less than 15 stake-holders)
- No institutional support (Ministry of Environment is not a driving force)
- No continuity in the RES policy (no strategy in force, the old one from 2003 is not actual at present)
- Insufficient policy implementation (RES target from 11% of domestic gross consumption of electricity till 2010 not achievable without large HPPs)
- No unity in the wind power sector (two wind power associations)

2. Legislation (main driving force is the EU RES-Directive 2001/77)

- Energy law amendments from summer 2006
- National indicative goals for RES production for a period of 10 years set by the Minister of Energy
- Obligation for linking to transmission and distribution networks
- Obligation for purchasing of the whole electric power on preferential prices
- 61 €/MWh for wind power, from 1.1.2007 up to 87 €/MWh for installations produced after 1.1.2006

3. Path-dependency

- Nuclear power development (still an option in Bulgaria, the four closed reactors in Kozloduy have to be replaced by two new ones at Belene)
- Major prestige projects (for instance building new hydro-cascade Tchaira with overall capacity of 800 MB)
- Export-oriented electricity sector (Bulgaria is still the biggest exporteur on the Balkans and is willing to remain such)
- Primary energy imports (nearly 100 % dependency on Russia and no clear prospects for braking with that)

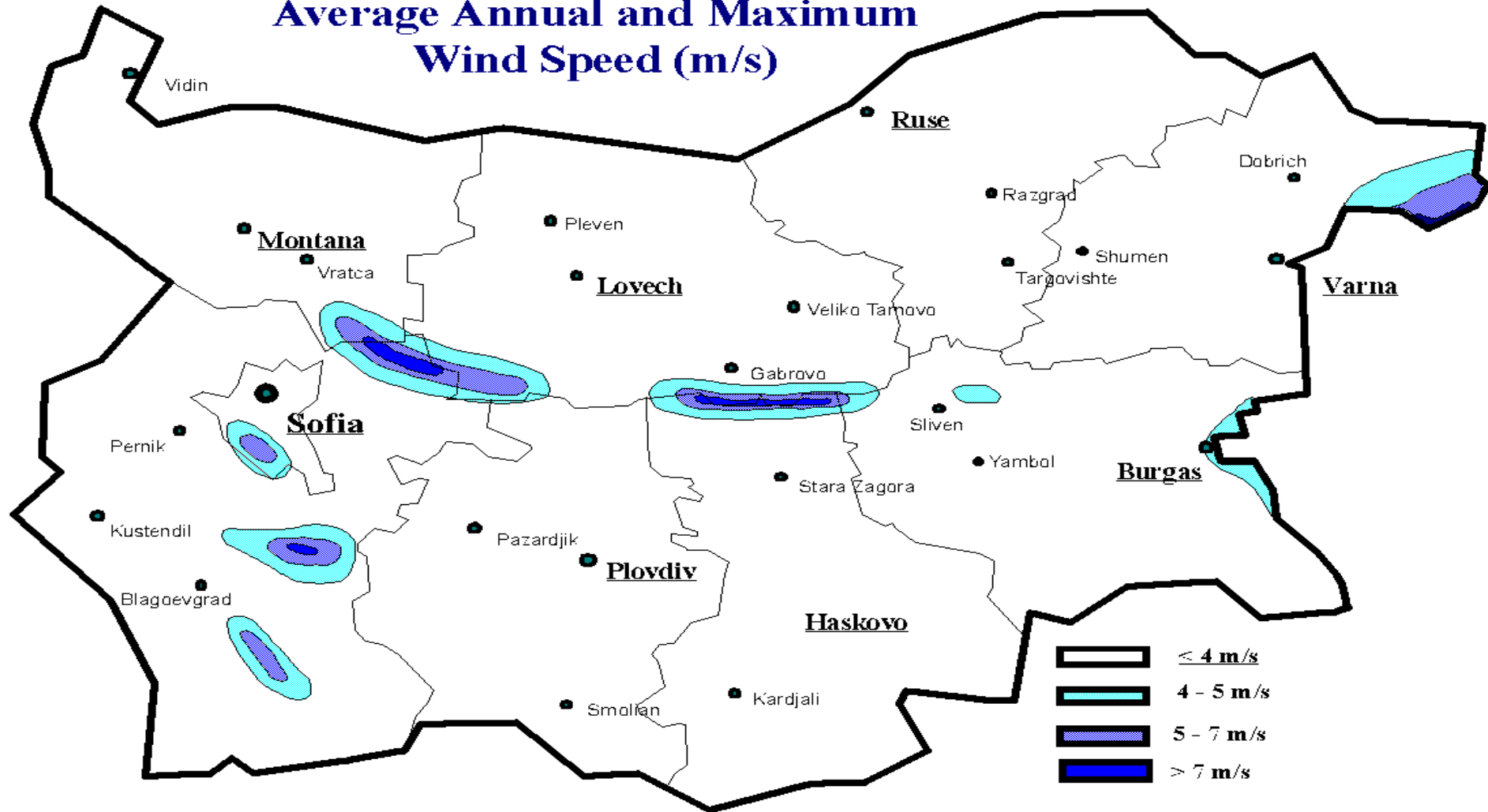
4. Technical and Economic Factors

- Infrastructure (low grid quality, bad road infrastructure)
- Investment costs (approx. 1250 €/kWh)
- Electricity prices (6 to 9 ct/kWh for end-consumers)

5. Cognitive Factors

- Big-unit thinking
- Know-how
- Lack of reliable information
- No national database
- Myths about wind power

WIND ENERGY - Theoretical Potential Average Annual and Maximum Wind Speed (m/s)



Prospects of the Future Development

What could be done to deal with the obstacles?

- Social acceptance
- Political influence
- New RES legislation
- Decentralisation
- Information transparency
- Vocational training
- Civic education
- Linking and cooperation with European partners
- Economic incentives
- Own wind turbine production

Overview

Electricity
Production

Driving Forces
and Obstacles:

*1. Political
Obstacles*

*2. Legislatiion
3. Path- dependency*

*4. Technical and
Economic Factors*

*5. Cognitive
Factors*

Prospects



Thank you!

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