



**Nikola Cerepnalkovski**  
**Energy Expert**

**ACTUAL ACTIVITIES AND PROJECTS IN THE ENERGY SECTOR IN  
REPUBLIC OF MACEDONIA WITH REGARD TO THE CLIMATE CHANGES**

27 May 2007, Sofia

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# Energy strategy of Macedonia

- More effective exploration of the energy resources
- More intensive use of the renewable types of energy, particularly the hydro resources, which, for the time being, is not used sufficiently
- Wider scale penetration of natural gas into the energy balance
- Attracting foreign strategic investors
- More dynamic opening of the markets of biofuels and electricity

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# BIOFUELS

- *The amendments and supplements of the Regulation for the quality of liquid fuels empowered in 2007 the dynamic of achievement of biofuels share in the transport fuels is adopted:*
- *According to the Regulation the following shares are set up:*
  - 3.5% till 31.12.2008
  - 4.5% till 31.12.2009
  - 5.75% till 31.12.2010
- The Regulation implement the EU Directive 2003/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport in the national legislation

# Tender for Cebren HPP and Galiste HPP

## Cebren HPP

- Basic characteristics

- Plant type

reversible

- Dam type

arched concrete

- Height

192.5 m

- Capacity

333/347 MW

- Generation

840/785 GWh

- Investment

319 mil.euro

# Tender for Cebren HPP and Galiste HPP

## Galiste HPP

- Basic characteristics

➤ Plant type	Classic
➤ Dam type	Rock fill
➤ Height	141.5 m
➤ Capacity	193 MW
➤ Generation	263 GWh
➤ Investment	200 mil.euro

# Tender for Cebren HPP and Galiste HPP package

- Statkraft, Norway
- RWE and HSE Germany/Slovenia
- Verbund, Austria
- Enel, Italy
- Edison, Italy



# Tender for Boskov Most HPP

- Basic characteristics

- Plant type

Classic

- Dam type

Rockfill

- Height

33 m

- Capacity

68 MW

- Generation

118 GWh

- Investment

70 mil.euro



## LIST OF COMPANIES QUALIFIED FOR SECOND PHASE FOR GRANTING WATER CONCESSION FOR BOSKOV MOST HPP ERECTION

- ААРЕ ТЕСИН АГ – SWITZERLAND
  - STATKRAFT - NORWAY
  - ЛАНДСВИРКУН – ISLAND
  - ЕОС и СТАСКИ СА – SWITZERLAND
  - (Consortium)
  - AES Electric – GREAT BRITAIN
  - EnBW – GERMANY
  - CEZ – CZECH REPUBLIC
  - СЕНКАП – GREECE
  - EDISON SPA – ITALY
  - RWE - GERMANY AND XCE SLOVENIA (Consortium)
  - ELECTRABEL - BELGIUM
  - VERBUND - AUSTRIA
  - ДУФЕРКО – ENGLAND AND ПАТИЈА ЕНЕРГИЈА – SWITZERLAND
  - (Consortium)
  - EFT, Turboinstitut, Granit
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# Feed-in tariffs for electricity produced from hydro

TYPE	Monthly quantity of electricity provided (kWh)	Annual quantities of electricity provided (kWh)	Preferential tariff (€cents/kWh)
I	1 – 85.000	1 – 1.020.000	12,00
II	85.001 – 170.000	1 – 2.040.000	8,00
III	170.001 – 350.000	2.040.001 – 4.200.000	6,00
IV	350.001 – 700.000	4.200.001 – 8.400.000	5,00
V	over 700.001	over 8.400.001	4,50



Feed-in tariffs for purchasing electricity produced  
from wind power plants

8.9 €cent/kWh

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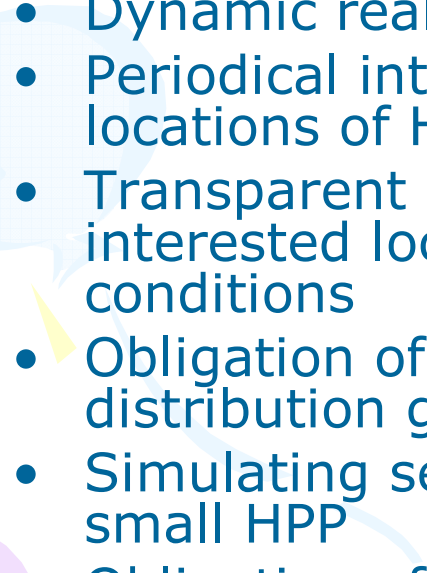
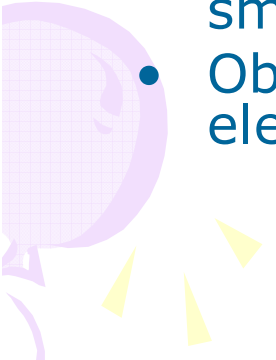
# Feed-in tariffs for electricity produced from biomass

TYPE	Installed Capacity	Preferential price (€cents/kWh)
I	$\leq 500$ kW	13,00
II	$> 500$ kW	11,00



# DG penetration policy

For the present the policy to DG development is closely connected mainly with the development small HPP and CHP

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- Dynamic realization of the small HPP programme
  - Periodical international tenders every 6 months 60 locations of HPP at a time
  - Transparent and non discriminatory participation of all interested local and foreign investors under equal conditions
  - Obligation of the DSO for connection of small HPP to the distribution grid
  - Simulating selling tariffs for the electricity produced by small HPP
  - Obligation of the Market Operator for purchasing all electricity produced by small HPP at feed-in tariff
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# Small HPP study

- 400 sites
- Single capacity from 50 kW up to 5000 kW
- Total capacity 250MW
- Total annual production 1250 GWh




# First tender for small HPP

- 60 sites proposed
- Interest expressed in 41 sites
- Total capacity 45 MW
- Total annual generation 170 GWh



# SECOND TENDER FOR SMALL HPP

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- 28 sites proposed
  - Interest expressed in 24 sites
  - Total capacity 15 MW
  - Total annual generation 57 GWh



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# WIND ENERGY

The following activities are foreseen to be undertaken During 2008 :

- Measuring of the data for the wind at the level of 30-50 m
- Analyses of the data
- Feasibility studies for the concrete locations
- Вклучување на стратешки инвеститори заедно со ЕЛЕМ.



# SOLAR ENERGY

- During 2007 the government secured funding for subsidizing 500 solar collectors, which are already in operation.
- The subsidy was up to 30% of the total investment respectively up the 300 Euro, за поединечен колекторски систем.
- It is assessed that these collectors will replace 1200 Mwh electricity per annum
- The government reduced the taxes for import of components for solar collectors from 18% to 5%.



# CHP Skopje

- Basic characteristics:

- Capacity

- 223 MWe
- 160 MWht

- Production

- 1850 GWh el.
- 350 GWh ht.

- Investment

- 137 mil euro



# CHP Skopje



- Investors:

- Russian consortium, SINTES group 80%
- AD Toplifikacija, Skopje 20%



# Zelezara CHP

- Basic characteristics:

- Capacity

- 200 MWe
- 150 MWh

- Production

- 1500 GWh el.
- 440 GWh ht.

- Investment

- 140 mil euro



# Zelezara CHP



- Investors:

- |                              |     |
|------------------------------|-----|
| ➤ Foreign strategic investor | 49% |
| ➤ ELEM, P.MAkedonija         | 51% |



# Energy efficiency and renewable power sources

- **Previous period**

- 120 projects in the Economy sector from 1980-2000, financed from the Budget
- Saving of 7% of the primary energy
- 27 projects from 2000-2004, financed by EBRD
- 5 projects for gasification from 1997-2000, financed from the Budget
- Strategy for energy efficiency
- Program for energy efficiency

- **Next period**

- Foundation for energy efficiency and renewable power sources
- GEF through World Bank 5,5 mil \$
- Commercial Banks 7,0 mil \$
- Support for preparation of projects
- Financing of the projects implementation
- Guarantees for credits for projects
- Realisation through Agency for energetic of Macedonia
- Continuous activity with wide spectra of institutions, projects and manifestations.

# Актуелни проекти за периодот 2008 – 2012 во рамките на Националната Стратегија за механизмот за чист развој согласно Кјото Протоколот

- HPP Sveta Petka (36 MW, 66 GWh, 60000 CER per year)
- Rehabilitation of 7 small hydropower plants (10 MW, 27 GWh, 25000 CER per year)
- Rehabilitation of the three units of TPP Bitola
- TE-TO Skopje (340 MW, 2500 GWh, 785000 CER per year)
- Rehabilitation of the central heating in Skopje
- Geothermal heating in Kocani
- Using of the waste heat in Rafinerija OKTA, Skopje
- TPP Drisla (150000 t waste per year, depony gas 72000 CER per year)
- Biogas fro agricultural waste

National authority in the Ministry of environment approves the project for CDM



# CONCLUDING STATEMENTS

- Innovation of the existing and elaboration of new strategies for long term complex development of the energy sector for a period of 20 – 30 years
- Intensification of construction of new generating and interconnection facilities
- Implementation of contemporary technological decisions in projects
- Keeping the ecological aspects in the energy projects in accordance with the EU directives and Kyoto protocol
- Higher use of Renewable Energy Sources
- Wide education, promotion and implementation of energy efficiency



THANK YOU VERY MUCH

- MY ADDRESS IS :

Nikola Cerepnalkovski

Skopje, Kole Nedelkovski – 25, Republic of  
Macedonia

- Phone :

0038923121162

- Mobile Phone

0038970255920

0038976403001

- E-mail address:

[nikolacerepnalkovski@yahoo.com](mailto:nikolacerepnalkovski@yahoo.com)