



HEP - Obnovljivi izvori energije d.o.o.

STRATEGIES TOWARDS POST 2012 REDUCTION PATHWAYS

Future Climate Change Policy:
Looking Beyond 2012

International Workshop , 11-12 April 2007, Prague

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HEP – Obnovljivi izvori energije d.o.o.
Croatia





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- Cooperation and Projects of HEP – OIE





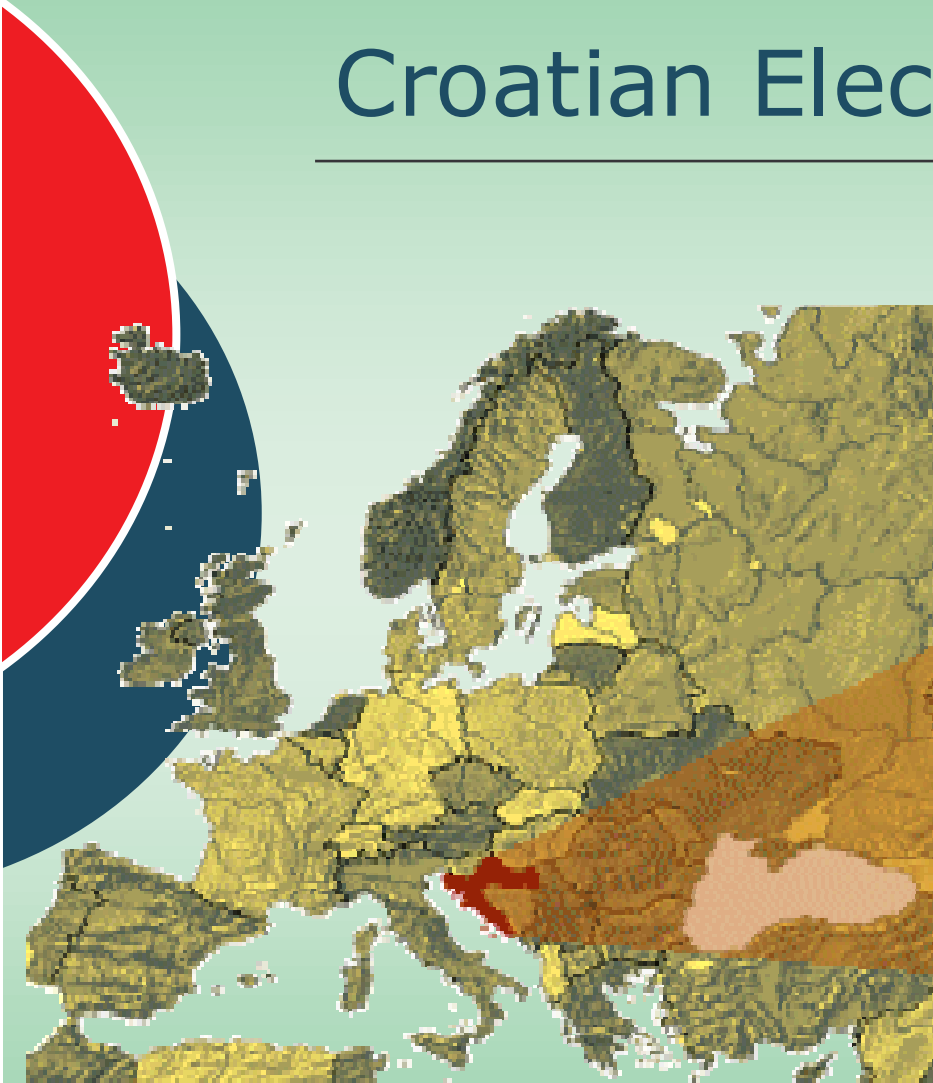
Electric Power Sector Reform and Restructuring of HEP Group

- Croatian Electric Power Sector
- Croatian Electric Power Sector Reform
- HEP Group Profile
- Restructuring of HEP Group





Croatian Electric Power Sector



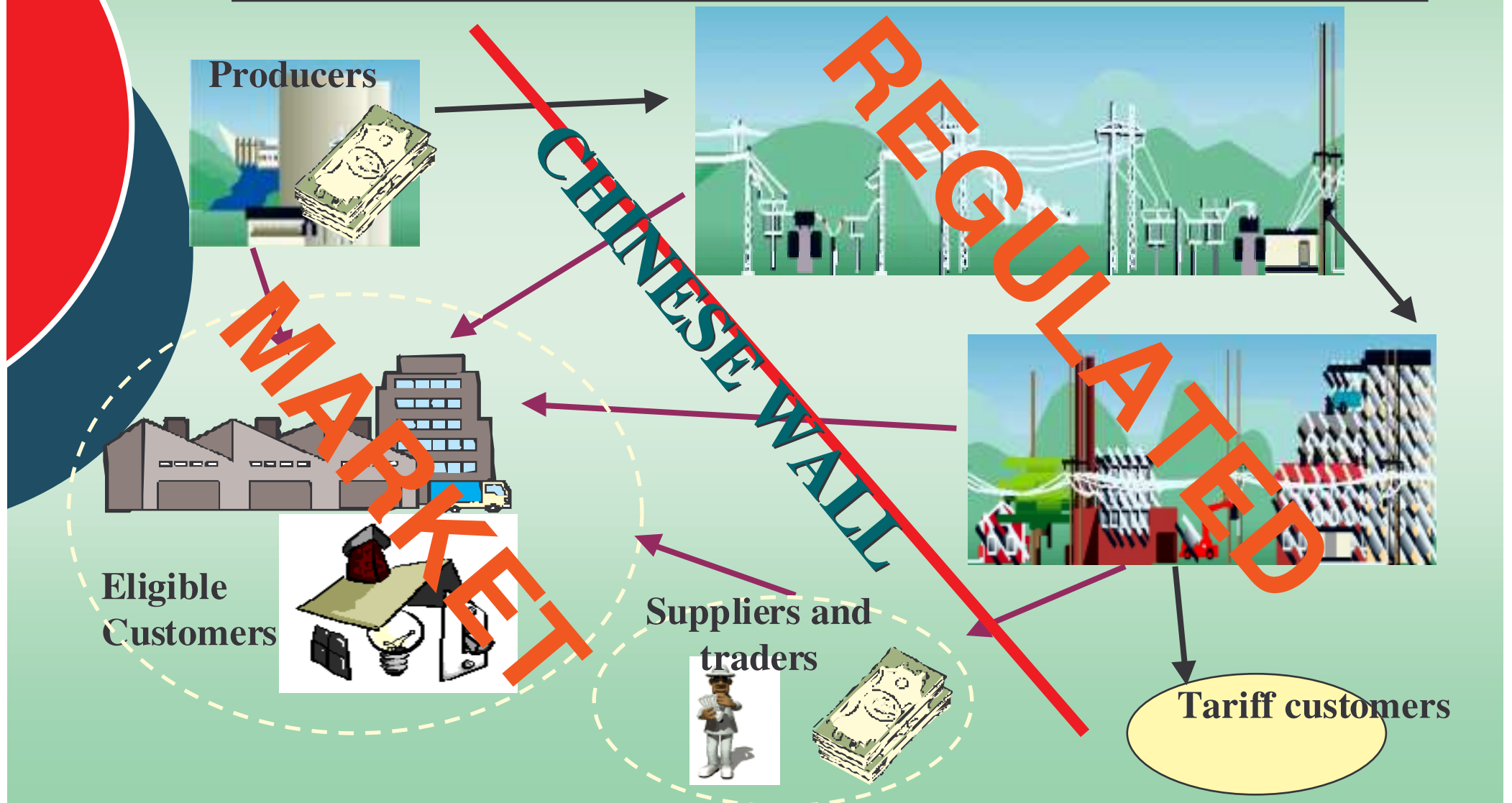


Croatian Electric Power Sector

- Electricity consumption in 2006: 17,2 TWh
- Generation capacity in 2006: 4054 MW

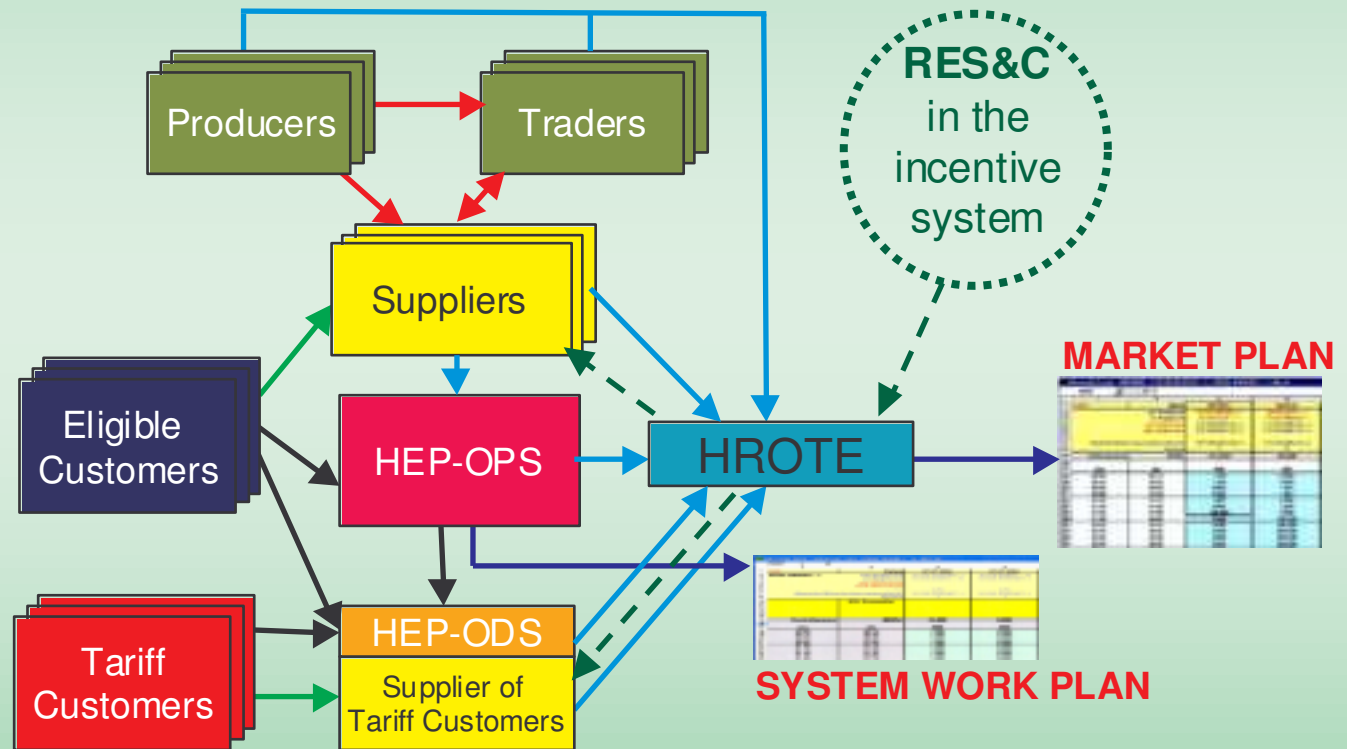






Electric Power Sector Reform





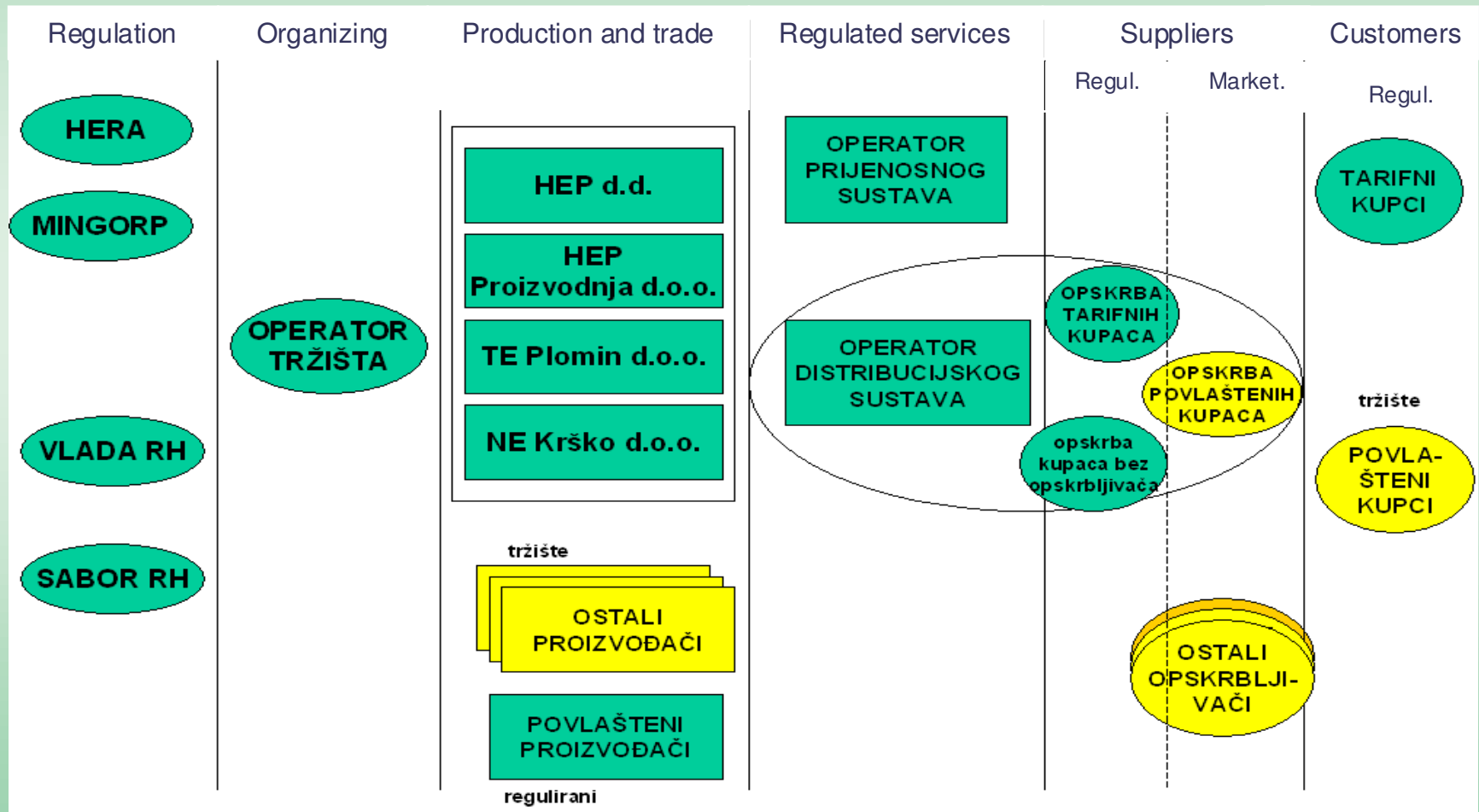
Croatian Model of Electricity Market



-  Electricity sales contract
-  Grid utilization contract
-  Supply contract
-  Delivery of contracts and contracted schedules



Electricity Market Participants





Timescale for Electricity Market Opening

- July 1st 2006 – 106 eligible customers exceeding **9 GWh** annual consumption (25% of total consumption)
- July 1st 2007 – entrepreneurs
- July 1st 2008 – all customers



HEP Group's Profile

- Generation, transmission and distribution of **electricity** across the territory of the Republic of Croatia
- **Heat** generation and distribution via district heating systems
- **Gas** distribution and supply in the Slavonija region
- **Energy Efficiency** Projects
- **Environmental Protection** Projects (among others - nuclear waste disposal)



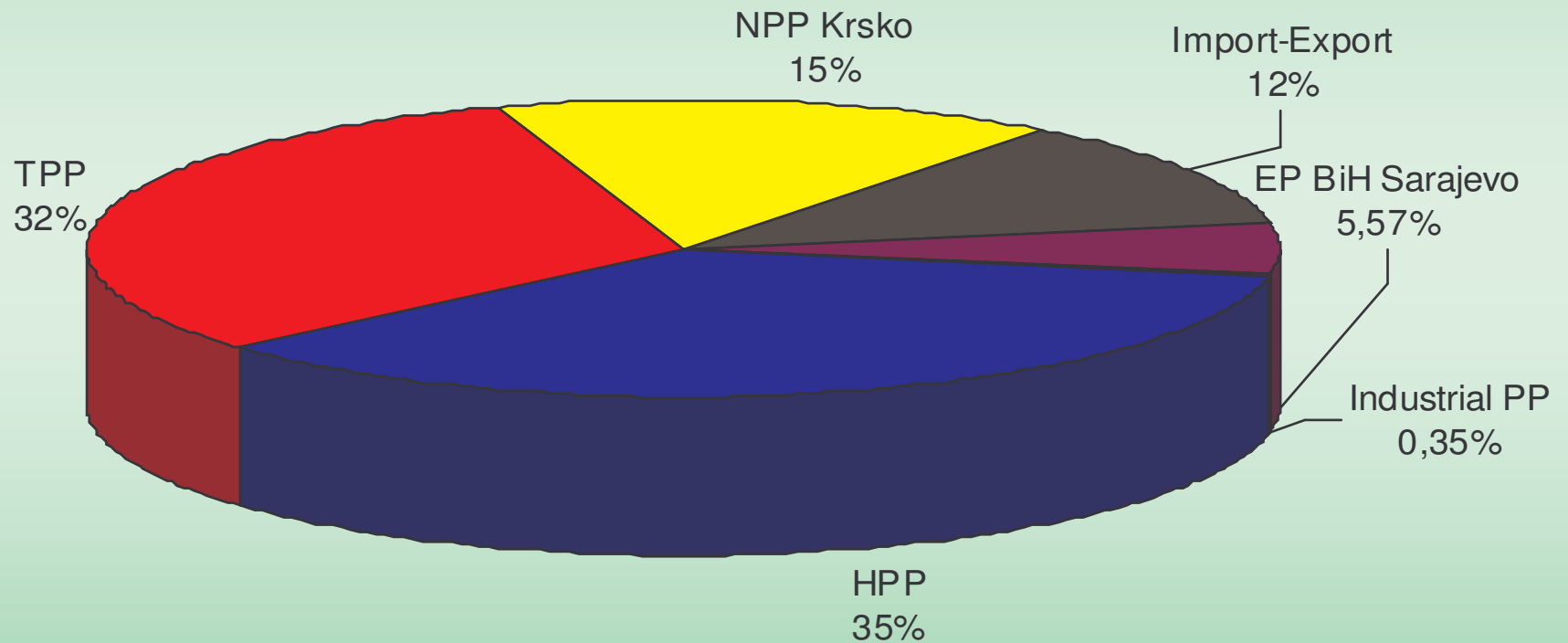
HEP Group's Profile

- **19 HPP** (>5MW) (installed capacity **2.071 MW**)
 - Storage PP 1689 MW
 - Run-of-river PP 362 MW
- **12 TPP** (NPP included) (installed capacity **1.983 MW***)
 - * Including NPP 338 MW (50% share in NPP Krško in Slovenia)
 - TPP Plomin 205 MW (joint investment with RWE)
 - **Unaccessible TPP in other countries – BiH, Serbia (400 MW)

- 144 high voltage substations (400-220-110 kV)
- 24.346 mid and low voltage substations
- 6962 km high voltage power lines (below and above the ground)
- 128.500 km mid and low voltage power lines
- Number of employees: 14.535



HEP Group's Profile



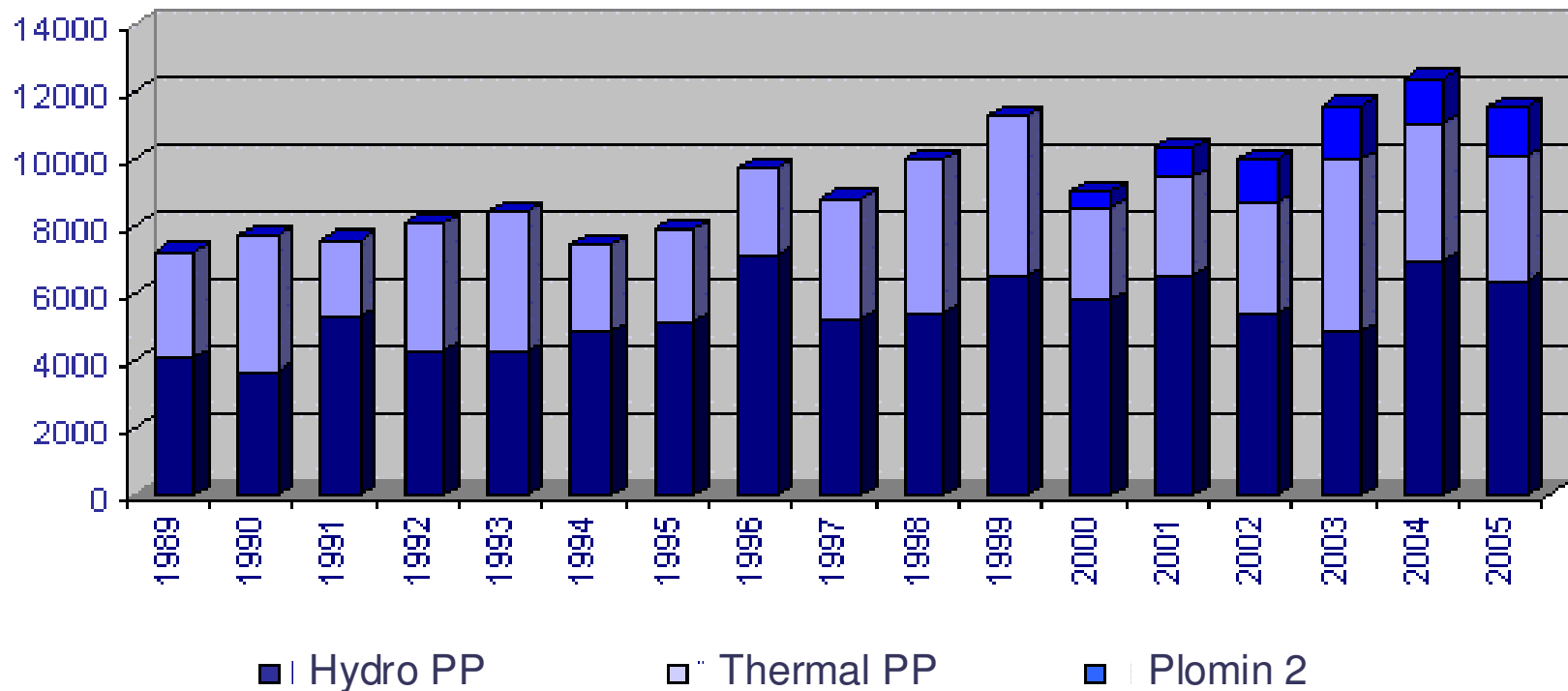
Electricity Generation in Croatia in 2006.



HEP Group's Profile

GWh

Annual electricity generation (HEP Proizvodnja)





Restructuring of the HEP Group

Operator Tržišta d.o.o.

HEP d.d.

HEP Proizvodnja d.o.o.

HEP OPS d.o.o.

HEP ODS d.o.o.

HEP Opskrba d.o.o.

HEP Trgovina d.o.o.

TE Plomin d.o.o.

HEP Toplinarstvo d.o.o.

HEP Plin d.o.o.

HEP ESCO d.o.o.

APO d.o.o.

HEP Obnovljivi izvori energije d.o.o.

HEP NOC

NE Krško d.o.o. *

* - company outside HEP Group in co-ownership



Croatia and the Kyoto protocol

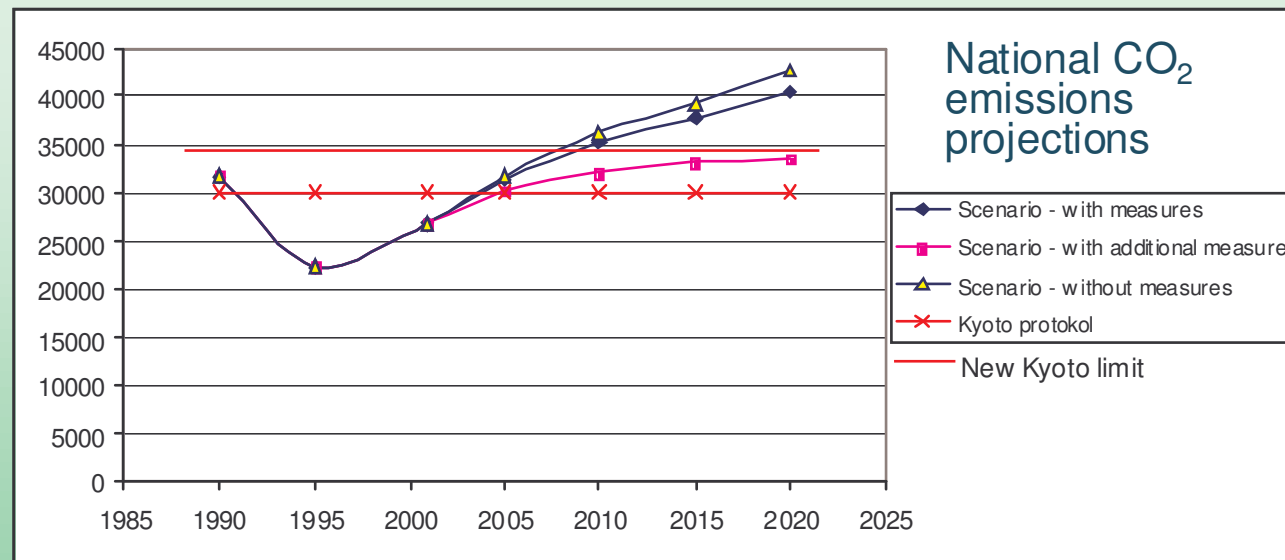
- CO₂ Emissions from Power System
- Power Sector CO₂ Emissions Projections





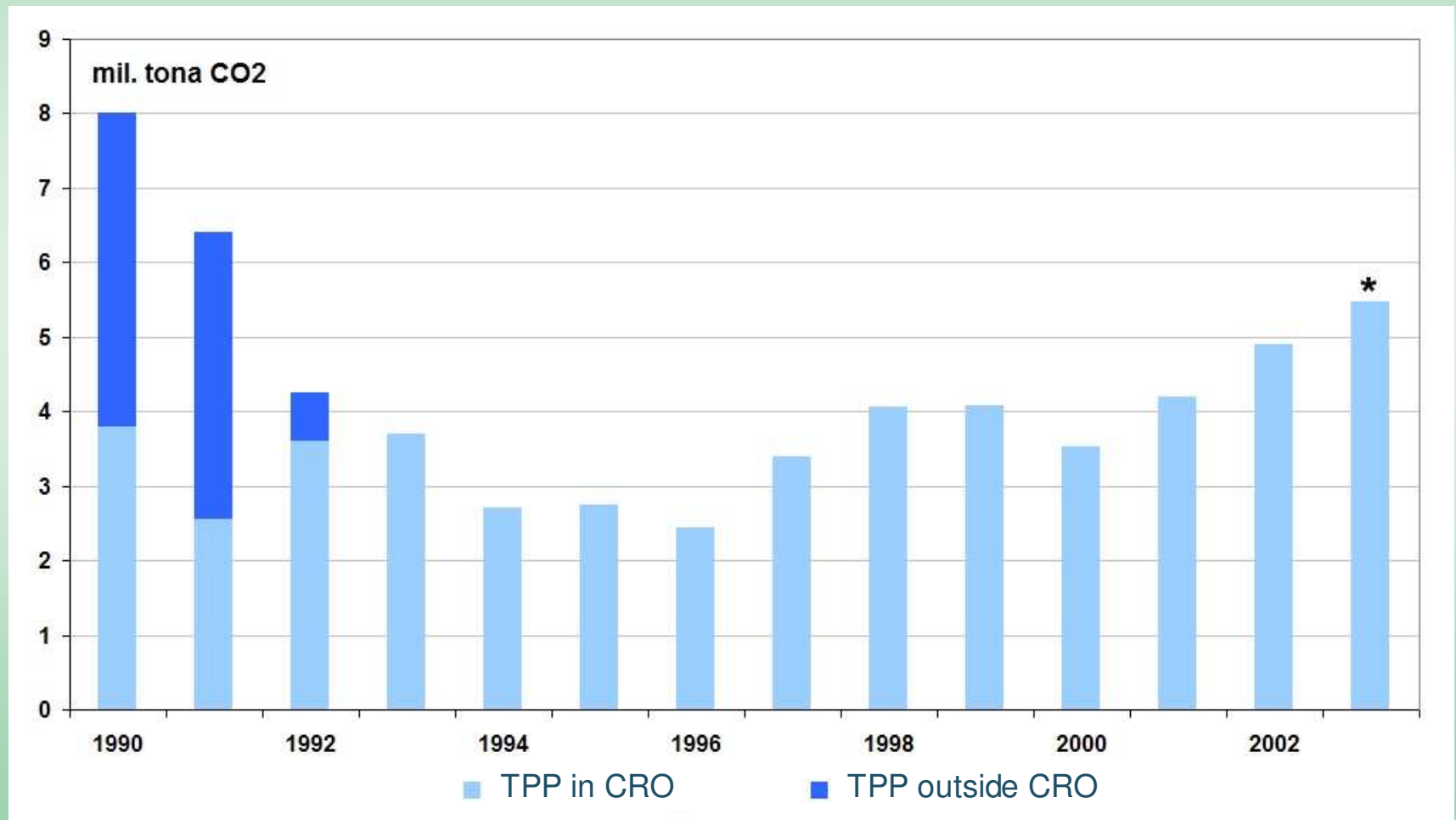
Croatia and the Kyoto protocol

- Croatia has signed the Kyoto Protocol, but has not ratified it yet
- Reduction of Croatia's greenhouse gas emissions by 5 percent in relation to the base year (1990), over the commitment period from 2008 to 2012
- Croatia was recently granted additional 3,5mil. tons of CO₂ emissions in 2012, based on specific conditions in 1990



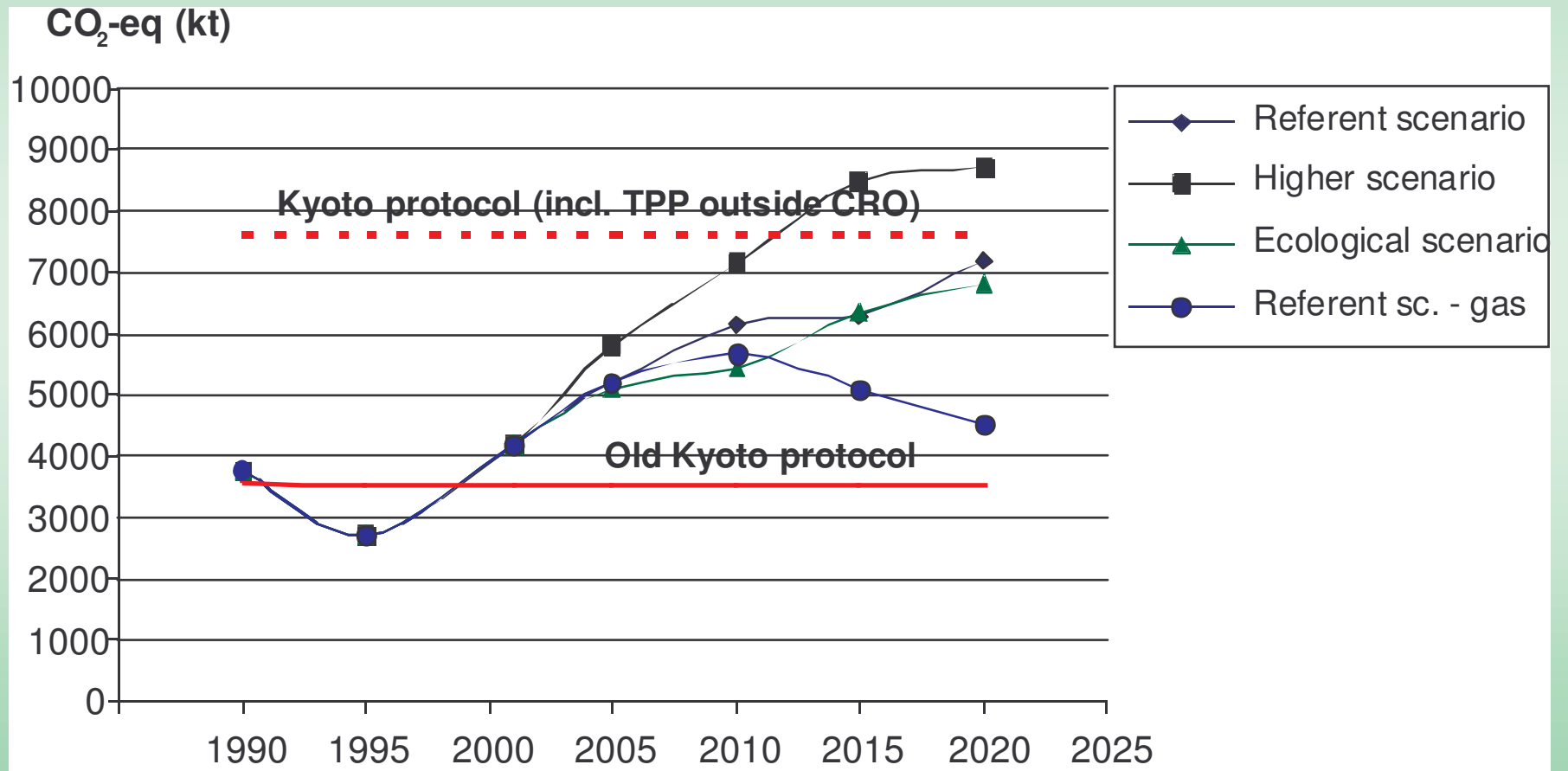


CO₂ emissions from the power system





Power sector CO₂ emissions projections





Renewable Energy Sources in Croatian Electricity Market

- Motives for Exploitation of RES in CRO
- History of Incentives for RES in CRO
- Proposed Minimal Share of RES and Incentive System





Motives for Exploitation of RES in CRO

Obligations

In 2012. Croatia can have 34,62 mil. tons of CO₂ emissions, as 5% less than in year 1990.

- Directive EU 2001/77/DC
- Mandatory share of RES in total el. consumption
- **GHG emission reduction (Kyoto protocol)**

- Entering Croatian Market
- Using Croatian renewable resources

- Environmental protection
- Reduction of import dependency
- Employment possibilities

Private Capital Interest

Country Interest



History of Incentives for RES in CRO

From 1994 HEP buys electricity produced in wind PP and small hydro PP (<5MW)

- at higher price than own production
- on the account of Company's profit
- trying to encourage private investors
- to create real examples of different electricity generation technologies



History of Incentives for RES in CRO

Name of the plant	Power (MW)	Annual production (MWh)
WPP Jasenice (Obrovac)*	10.80	20.000
WPP Trtar (Šibenik)	11.90	32.200
WPP Ravna 1 (Pag)	5.95	15.000
sTPP Jakuševac (waste)	2.036	7.500
sTPP Pliva (waste)	4.875	38.000
sHPP Cabranka	1.26	1.800
sHPP Roški Slap	1.64	6.500
Ukupno	38.461	121.000

*Contracted but still not in operation



Minimal Share of RES and Incentive System

As stated in government's document "Pozakonski akti iz područja obnovljivih izvora energije i kogeneracije" from March 2007:

	Total electricity <u>consumption</u>	<u>Share</u> of RES* in total electricity <u>consumption</u>
2002.	13 TWh	0,6%
2010.	19 TWh**	<u>5,8%</u>

- Incentive system: **Feed-in tariffs**

*Not including large Hydro (>10MW)

**Projected (Document states 1100 GWh of electricity production from RES)

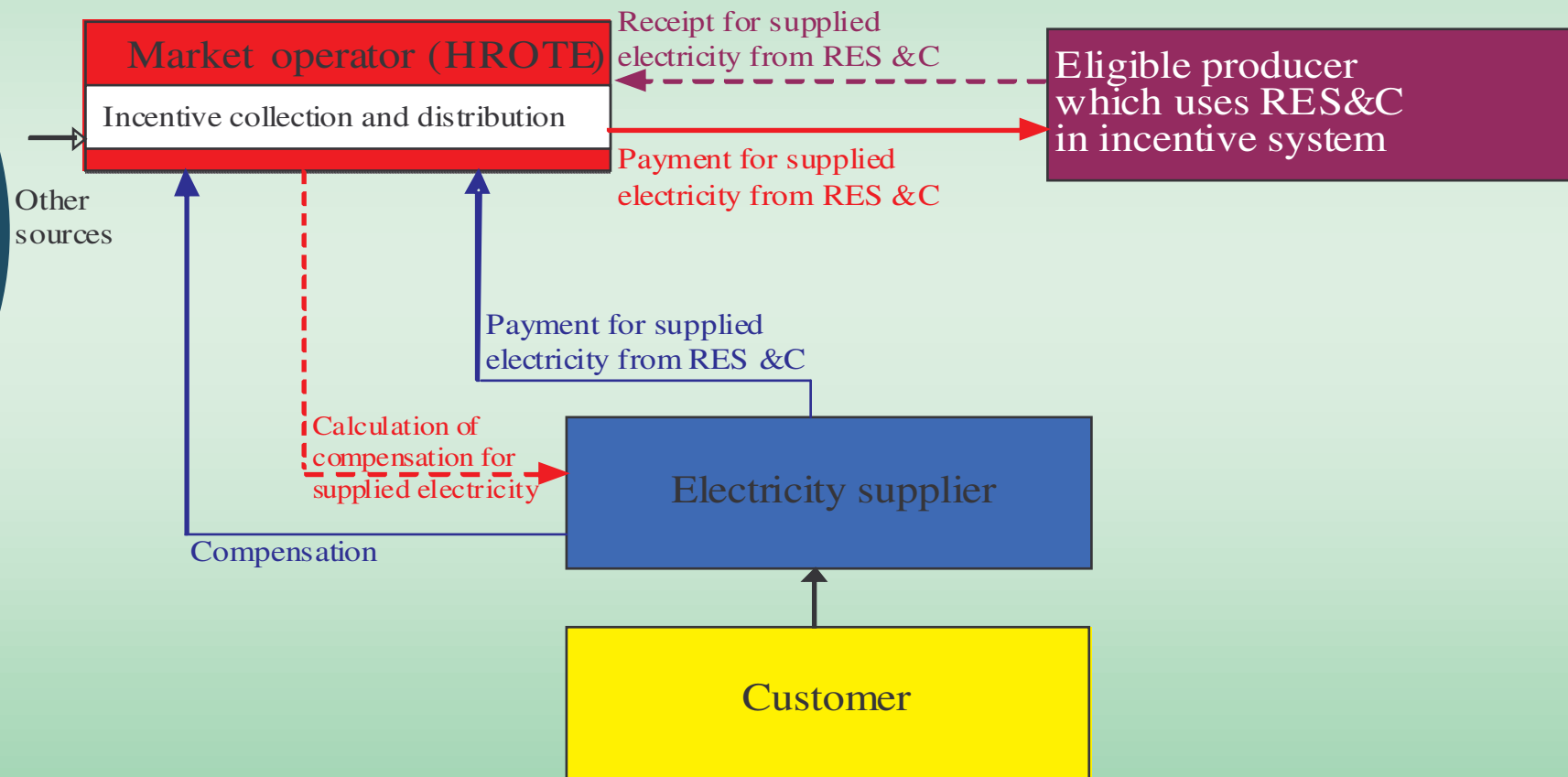


Croatian Feed-in Tariffs

RES	Tariff (c€)	
	Installed Capacity <u>below 1MW</u>	Installed Capacity <u>above 1MW</u>
PV	28 – 46	None
Small Hydro	9	5 - 9
Wind	8	9
Biomass	13 – 16	11 – 16
Geothermal	17	17
Other	7	7



Part of Electricity Market Related to RES and Cogeneration





Founding of the Company

HEP – Obnovljivi izvori energije d.o.o. (HEP – Renewable Energy Sources Ltd.)

- About the Company
- Objectives
- Business Areas
- HEP – OIE's Key Advantages





Member of HEP Group

Operator Tržišta d.o.o.

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HEP NOC

NE Krško d.o.o. *

* - company outside HEP Group in co-ownership



About the Company

- Founded in October 2006 in order to group and support RES based projects
- Long term Company strategy is to **integrate RES** electricity production technologies in a **profitable** way to the core HEP business area



Objectives

1. Delivering **profit** from selling RES electricity (small hydro <10 MWe, wind, geothermal, biomass...) at feed-in tariff
2. Development of **new competencies** and improving the image of HEP Group
3. Improving total balance of **CO₂ emissions**, which can help in planning and construction of basic fossil fuel plants
4. Contribution to the **diversification** of primary energy sources and reducing the risk of oil and gas prices fluctuation



Business Areas

- ✓ **Production** of RES electricity
- ✓ **Placement** of RES electricity and other products
- ✓ Research&development, design, financing, construction and management of RES projects and facilities
- ✓ **Joint projects**
- ✓ Project and financial management
- ✓ Marketing i advertising
- ✓ Environmental protection services



HEP – OIE's Key Advantages

- ✓ Member of HEP Group – synergy with other HEP Group members
- ✓ Experience with electric power facilities construction and operation
- ✓ Competence in electric power systems
- ✓ Financial stability and credibility
- ✓ Understanding of local conditions
- ✓ Land accessibility



Cooperation and Projects of HEP-OIE

- RES Investment Priorities
- Project Assessment
- Cooperation Models
- Cooperation Realization Process





RES Investment Priorities

- Wind
- Biomass
- Small hydro
- Geothermal
- Photovoltaic (solar)
- Other

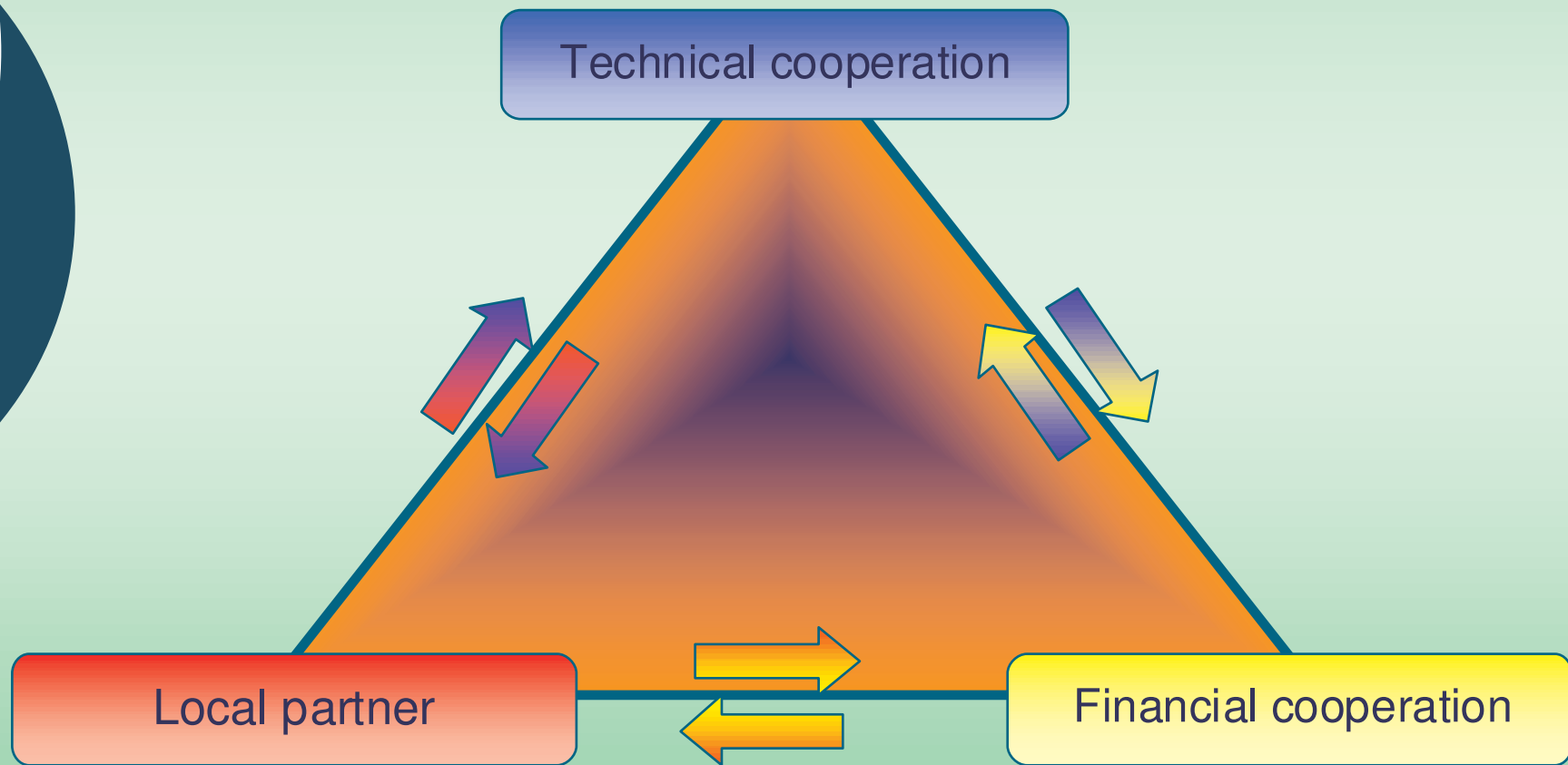


Project Assessment

- Available resources
- Construction possibilities
- Technical and regulatory conditions
- Partner assessment (previous projects)
- Financial assessment
- Legal framework and requirements
- Social and environmental impact



Cooperation Models





HEP Group's Mission Statement

To provide secure and reliable electricity supply to its customers at minimum cost.



HEP Group's Vision Statement

To remain an integrated corporation that will become a player in the regional market, a Croatian energy cluster consisting of a group of related multiutility businesses and one of key enablers of Croatian economic growth.



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Thank you!

