

Regional Energy Planning as a Key for more Renewable Energy Projects in Local Communities

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Europe

The image features a stylized, colorful map of Europe. Countries are labeled in various colors: Iceland (blue), Scotland (purple), Ireland (green), Wales (blue), Norway (green), Sweden (purple), Finland (blue), Estonia (yellow), France (orange), Switzerland (green), Italy (blue), Spain (red), Portugal (green), Greece (yellow), Turkey (green), Romania (red), Bulgaria (blue), and others. A red circle highlights Bosnia and Herzegovina. Four portraits are overlaid on the map: a man in a white hard hat and safety glasses, a woman with sunglasses, a man in a sweater, and a woman with a large red X over her face. A compass rose is also present.



About Croatia



CROATIA



Karlovac County



Local Energy Action in Croatia

- Local/regional energy action traditionally not an issue in Croatia
- Energy sector – top-down thinking only, centralised planning and decision making
- Local communities usually not aware of possibilities, not interested to get involved or simply do not know what (how) to do (it)

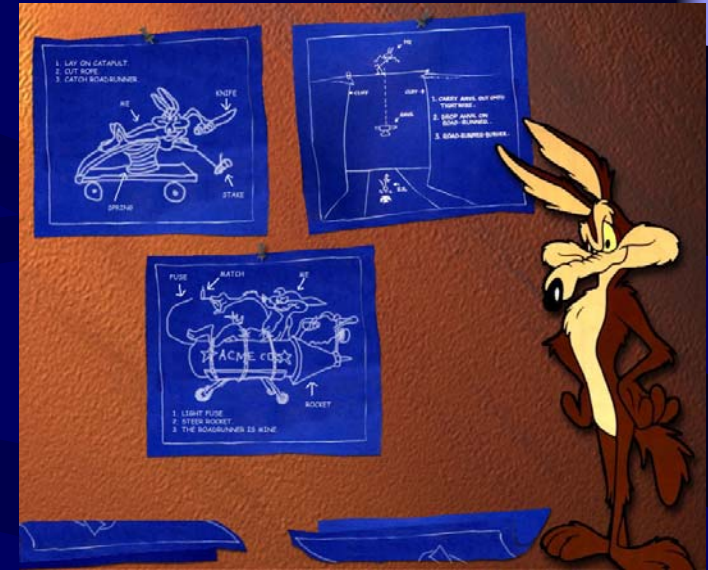
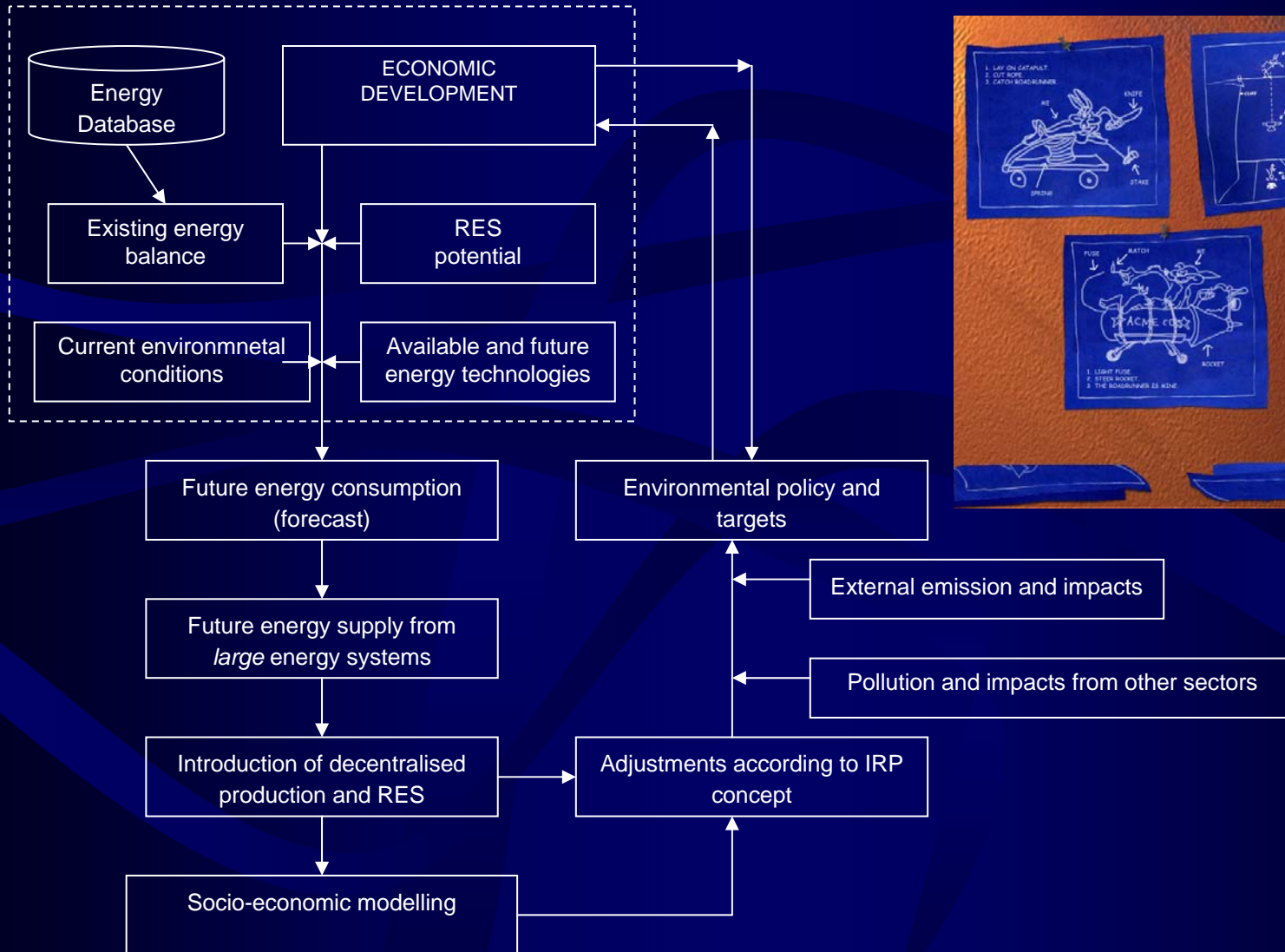
Wind of Change

- Regional energy planning as a methodological concept introduced by the EIHP
- National Energy Programmes in 1997
- EU trends, examples from neighbouring countries (Austria, Slovenia,...)
- New energy legislation in 2001: 'Local communities should plan their energy supply in accordance with overall national energy strategy...'

Methodological Concept

- Integrated resource planning – IRP on regional level
- Two phases:
 - Basic platform establishment (state of the art)
 - Energy strategy and action plan preparation
- Interaction (national/regional) on energy supply systems (electricity, oil, gas)
- Regional characteristics (energy, social, economy)

Methodological Concept



Example: Karlovac County

- Regional authority
(20 in Croatia)
- 141 787 inhabitants
- 3 622 km²
- 5 cities, 17 municipalities
- Important traffic and transit area
 - 1733. Karolina (Karlovac-Bakar)
 - 1779. Josephina (Karlovac-Senj)
 - 1813. Louisianu (Karlovac-Rijeka)
 - 2004. Zagreb-Rijeka
 - 2005. Dalmatina (Zagreb-Split)





History



Environment

Rafting?



**The best in Croatia!
(from 1854)**



Fishing?

Renewable Energy in Karlovac County

- Traditional biomass in households
- Few modern biomass combustion plants in wood processing industries
- Small hydro power (SHP) plants various sizes and ownerships
- Individual solar energy applications
- High potential for bioenergy and SHP, limited potential for wind and geothermal energy

Regional Energy Strategy

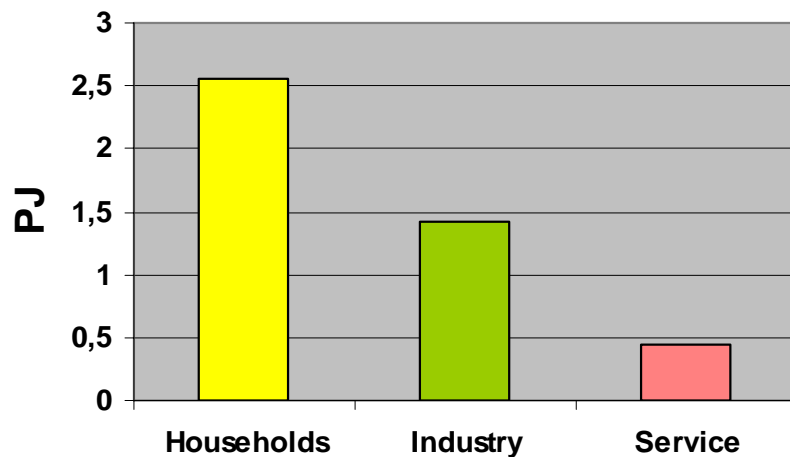
- Sustainable energy supply (environment)
- Drivers:
 - Energy prices
 - Public support
 - EU accession process
 - Local pride ('Being the first')
- Local champions



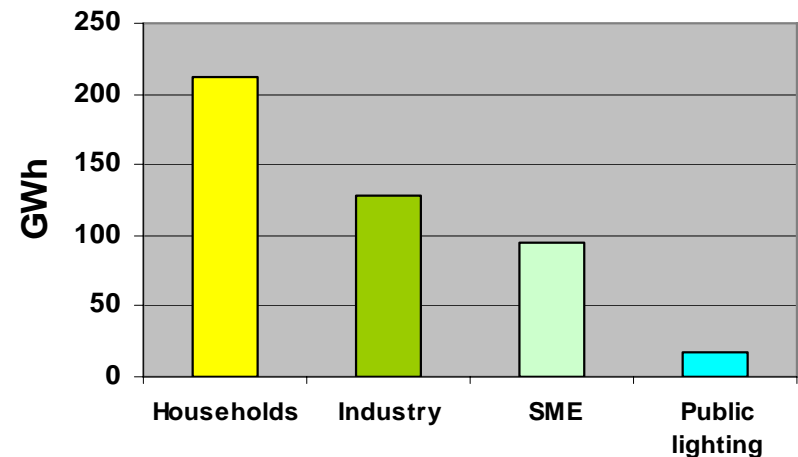
Regional Energy Strategy – Current Energy Demand / Consumption

- Energy demand = electricity and heat for households, services and industry sector

Heat

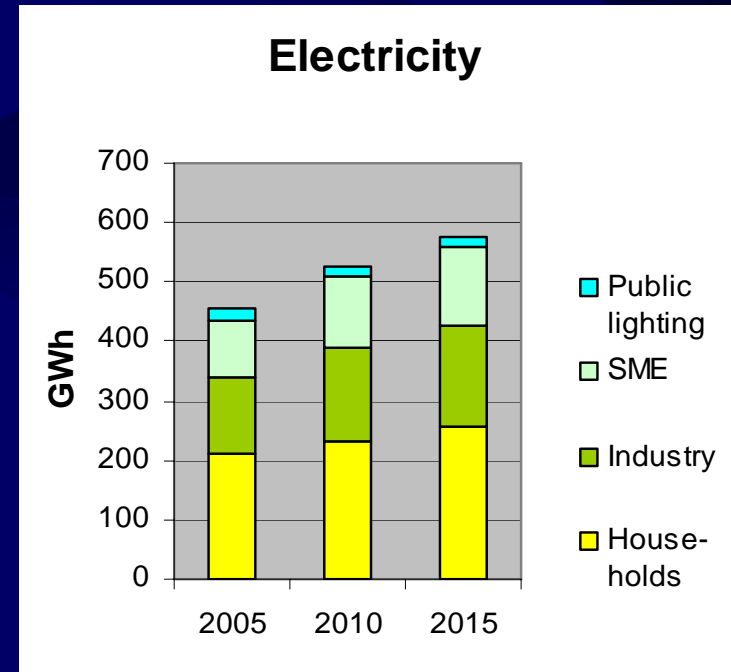
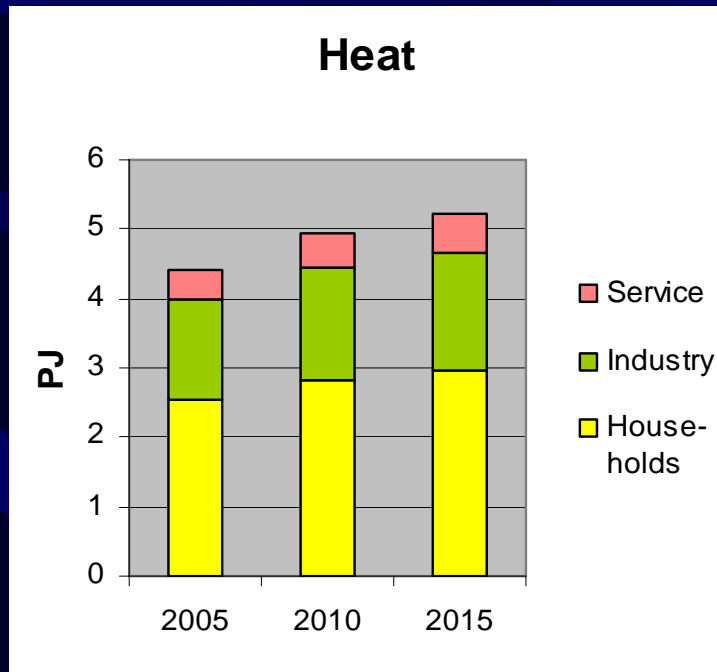


Electricity



Regional Energy Strategy – Future Scenarios

- Future energy consumption by sectors



Regional Energy Strategy – Future Scenarios

Renewable energy sources development

Source/year	2010	2015	Unit
Small hydro	2,36	4,05	GWh
Biomass	3	10	MW _t
Solar	1500	3600	m ²

Regional Energy Strategy – Setting the goals

- Share of renewable energy in total (heat/electricity) energy supply
- Additional effects / justification – CO₂ emission avoided, new jobs generated, pollution reduced, increased SME participation, local industry development,...
- National and international (EU, global) dimension and partnership

Renewable Energy Action Plan

- How to implement the goals?
- Identification and recommendations:
 - Barriers
 - Stakeholders
 - Projects
- Solutions:
 - Organisation
 - Logistics
 - Financing
 - ...



Biomass Projects

- Small DH systems - Zakanje, Ribnik, Netretic, Vojnic, Slunj, Plaski, Lasinja, Ogulin
- CHP plants – DIP Karlovac, Kordun
- Individual boilers – HOC Bjelolasica, schools



Small Hydro Power Plants Projects

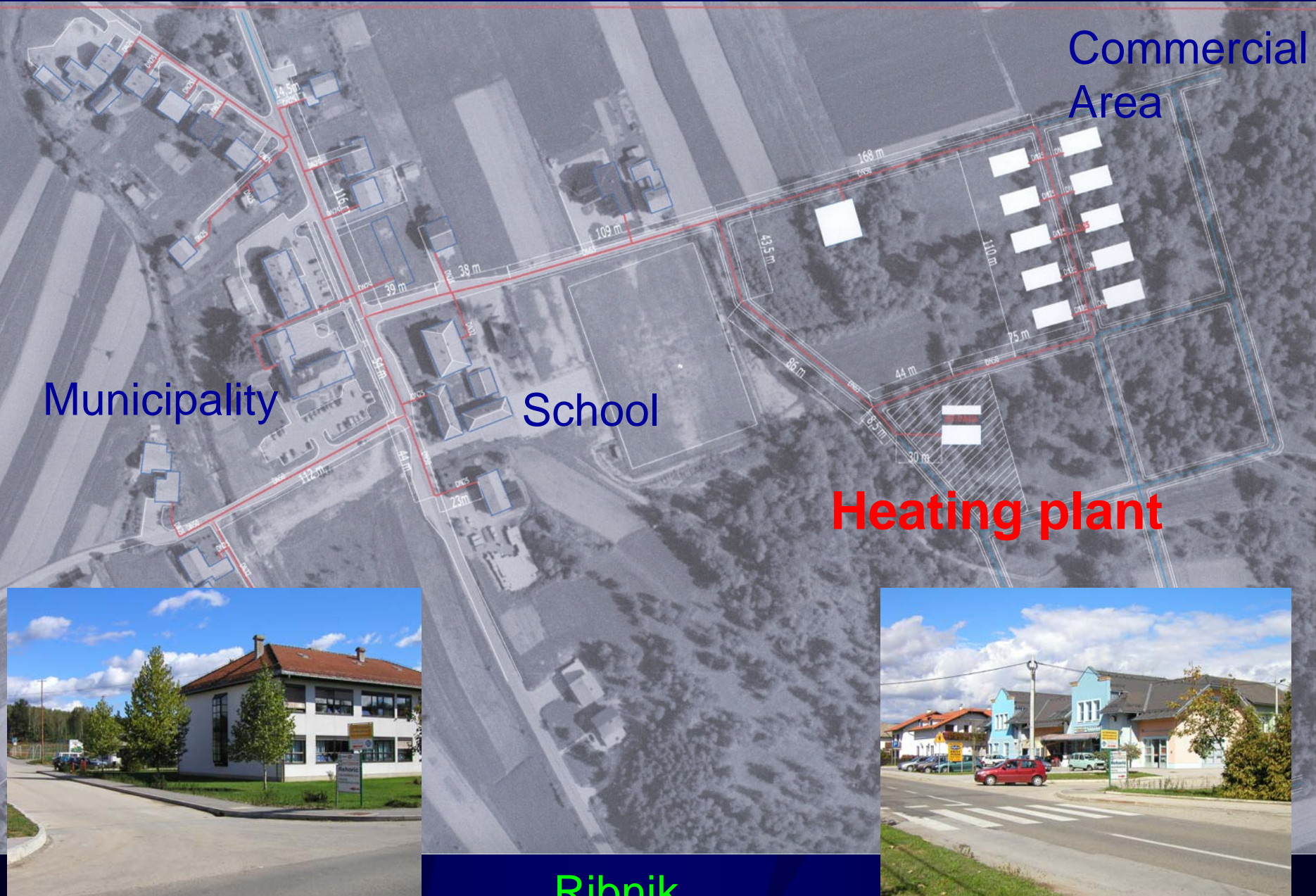
With defined utilisation sites			
Name of the water flows	Total possible number of utilisation routes	Total installed capacity (kW)	Possible annual power production (GWh)
Bistrica	1	50	0,20
Dretulja	10	466	2,57
Glinica	12	1 734	6,04
Korana gornja	39	8 455	32,64
Kupa gornja	15	14 244	41,55
Kupcina	16	1 041	4,13
Slunjcica	7	1 945	7,60
Tounjcica	22	3 200	9,14
Vitunjcica	6	1 258	3,68
Total	128	32 393	107,55

Zakanje Biomass DH Plant

- Total area of 45 km²
- 2169 inhabitants, 22 settlements
- Zakanje village - 37 residential and administrative buildings
- Small family houses - firewood
- Administrative buildings (municipality, post office and others) - connected to DH system based on fuel oil



Metlika (SLO)



Zakanje Biomass DH Plant (2)

- Existing heating plant capacity: 2 x 200 kW
- Annual fuel oil consumption: 40 000 – 45 000 l
- Total heated floor area (with the new biomass boiler): 10 000 m²
- Projected annual heat consumption: 951 600 kWh
- New biomass boiler capacity: 650 kW
- Total investment – heating plant: 69 066 EUR
- Total investment – heating network: 297 700 EUR

Project Development

- First contacts and initiatives: October 2003
- Basic analysis: November 2004
- Project presented in Karlovac county:
December 2004
- Project presented in Zakanje municipality:
January 2005
- Visit to existing heating plants in Slovenia:
March 2005
- Financial support from FZOEU: December 2005.
- Project documentation: January-May 2006
- Construction: June 2006 -





Regional Energy Planning & Local Communities

- Energy as a part of overall development
- People first!
- Task 29 (2000-2002, 2003-2005, 2006-2008)
- Future brings more challenges!

IEA Bioenergy

Task 29: Socio-Economic Aspects of Bioenergy Systems

Duration:
1 January 2000 - 31 December 2002

The objectives:

- To determine the economic contribution (financial, local industry creation, infrastructure developments, ...) resulting from the deployment of bioenergy systems;
- To determine the social impact (employment, education, health, ...) resulting from the deployment of renewable energy systems with emphasis on bioenergy;
- To encourage the exchange of information and Task results between participants and also with countries in transition.

Participating countries:
Austria, Canada, Croatia, Japan, Sweden, United Kingdom

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<http://www.eihp.hr/task29.htm>

PEOPLE FIRST!
IEA Bioenergy Network on Socioeconomics

The diagram illustrates the socio-economic aspects of bioenergy systems. It features a central circular flow diagram with three stages: 'Local Market', 'Market Oriented Model', and 'Local Planning And Implementation Model'. Surrounding this central diagram are various images and charts. The images include people working in a field, a bioenergy plant, a bioenergy bus, and a bioenergy map. The charts include a line graph showing 'Bioenergy production in the EU' and a bar chart showing 'Bioenergy production in the EU'.

Photos courtesy of: Sun-Pine Forest Industries, L. (Delftseveen), Canada; M. Aducci, Croatia; L. (Delftseveen), Austria; K. Richards, UK.