

Resource Efficiency for Competitiveness. Eco-innovations as a Driver of the Economy

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Financing Eco-innovation in SEE

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Structure of the presentation

- REC's work on eco-efficient innovations and impact on competitiveness
- Eco-efficiency. Eco-efficient innovations.
- Environmental problems of CEE industry
- Summary of drivers
- Benefits for society/Benefits for companies
- Summary of barriers
- Strategies for eco-efficient innovations
- Best practices



Context of REC's Work on the Topic

- Project of The Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM)
- Linked to the Dutch Presidency of the EU July 1 – December 31, 2004
- Strengthening the environmental pillar of the Lisbon Strategy as it has been neglected and opportunities for synergies between environment and economy are not fully grasped

Project objective: Demonstrate through concrete best practices that well-designed environmental policy and legislation can trigger environmental innovations lowering companies' (and municipalities') costs and leading to better economic, environmental and social performance



Eco-efficiency. Eco-efficient Innovations.

WBCSD definition : Eco-efficiency is achieved through the delivery of competitively priced goods and services that satisfy human needs and bring quality of life while progressively reducing environmental impacts of goods and resource intensity throughout the entire life-cycle to a level at least in line with the Earth's estimated carrying capacity.

Eco-efficient innovations (classification of best practices):

- Optimised products or processes – increase quality, reduce cost because of better resource efficiency
- Waste recycling – wastes from one industry – raw materials for another
- New products – more resource efficient to produce and use
- System innovations – new ways of fulfilling societal needs, complex structural and technological changes
- Innovations can also be end-of-the-pipe (repair technologies)



Other Concepts and Considerations

- Conflict b/n environmental protection and economic competitiveness is a false dichotomy – “it stems from a narrow view of the sources of prosperity and a static view of competition. Strict environmental regulations do not inevitably hinder competitiveness advantage; indeed they often enhance it.”
- Pollution = Resource Inefficiency
- Resource inefficiencies – incomplete material utilization and process control → waste, defects, stored materials
- Incremental vs. radical innovations
- Environmental technologies – whose use is less environmentally harmful than relevant alternatives
- Targets of eco-efficiency: pollution prevention, cleaner technology, environmentally improved products, loop closing, EMS, system innovation



Environmental Problems of Industry

- Relatively high energy intensity per unit of production amounting to several times the EU average
- Low level of penetration of clean technologies and predominantly obsolete technological stock
- Low efficiency of resource management within the companies
- Waste management within companies not well developed
- High emissions of SO₂ and CO₂ mainly from the energy sector.



Summary of Drivers

- Compliance with EU legislation – IPPC, VOC, LCP Directives, Energy Efficiency Directive, Directive on national emissions ceilings, etc.
- Availability of flexible financial mechanisms – subsidies, grants, loans
- Perceived market pressure from the commercial customers (especially export-oriented companies)
- Opportunity for gaining new markets in EU through better company image
- Pressure from the mother company in case of internationally owned companies
- Perceived social pressure especially for companies with bad past environmental performance
- Top management or mayor's commitment
- Short payback periods
- Introduction of high enough, long-term guaranteed feed-in tariffs (RES)
- Economic instruments

Economic benefits through:

- Reduced or raw material use or replaced RM
- Reduced energy intensity
- Benefits from material use through recycling
- Better use of by-products
- Reduction of fossil fuel utilisation
- Decrease of used energy per unit of production
- Decrease of water intake and water discharge
- Decreased waste deposit charges
- Spinning off new production activities and products
- Sales from commercialisation



Benefits for society/Benefits for companies - competitiveness

Society

- Eco-efficient innovations have environmental benefits and avoid future costs for society
- Creation of new jobs
- Improved safety and help
- Improved workers' satisfaction

Companies

- Gives competitive edges to companies:
- Operational advantages
- Improvement of image
- Eco-efficiency can appeal as a brand to certain consumers – marketing opportunities
- Safer products with higher quality



Summary of Barriers

Valid especially for SMEs!

Wide-spread perception: environment is a burden!

Economic

- Lack of flexible financial schemes/Risk/venture capital
- Low-cost/short payback projects are financed but problem with financing medium-cost and medium- or long-payback projects
- Big investments – possible negative impact on competitiveness in the short term/ Upfront costs
- Cost will be higher for companies with older technologies (sic NMS)

Regulatory

- Standardization and regulations can be harmful if they are too detailed instead of fixing targets
- Regulatory focus on end-of-pipe solutions

Technology

- Availability of technologies. Required research
- Process inflexibilities

Diffusion

- Difficulty to evaluate precisely the benefits for the company or municipality
- Discovering the opportunities is not always easy and trained consultants are needed. Lack of expertise
- If the societal and market pressure is missing environmental performance is no longer a top priority for managers.

Management

- Lack of management understanding on the potential benefits
- Strong lobbies for nuclear, coal, oil shale (RES)



Environmental Regulation

Focused on the adoption of Acquis Communautaires in their entirety. Transposition of EU Directives.

Main points concerning industries:

- Reduction of energy consumption per unit of production
- Promotion of clean technologies
- Improvement of waste management and increase of recycling within the companies
- Improvement of resource management within the companies (energy, raw materials, water)
- Increase of the share of renewables in the total national energy supply.

Why is good regulation needed?

- Creates pressure motivating companies to innovate
- To alert companies about likely resource inefficiencies
- Regulation should be more innovation-oriented
- SEE countries can learn from WE and CEE experiences that strict obligations that have to be fulfilled on short term lead to expensive end-of-pipe technology.
- Longer-term adaptation strategies with emphasis on clean technologies may reduce costs significantly and offer chances.



Strategies for Eco-efficient Innovation

- Making companies proactive – realise potentials; reward frontrunning companies; benchmarking for eco-efficiency
- Improve sustainability assessment by companies and customers – build knowledge on env. aspects of products; eco-labels; reporting requirements
- Improving the eco-innovation system – strengthen research; provide funds; encourage procurement of such products
- Policies for eco-innovation – technology platforms; networking testing centres; lead markets;
- Use of market-based instruments – pollution taxes and tradable permits; green tax reform



Financial Instruments

- Subsidies: developing new technologies, setting up new businesses, subsidies for R&D, market introduction (overcoming entrance barriers)
- Fiscal incentives – decrease the administrative burden for innovating companies, stimulates R&D
- FOGIME: investment guarantee fund for the management of energy – leverage effect
- FIDEME: green investment fund for environment and energy management: provides mezzanine financing,
- Green taxes: economically efficient instrument for reducing consumption, pollution and other environmentally harmful activities to an acceptable level. It gives producers and consumers strong incentives to change their production and behaviour.
- VAMIL (NL) – free depreciation of environmentally friendly operating assets



Environment-Driven Business Development (Sweden)

- Main goal of programme is to integrate environmental issues into the core business strategy of SMEs
- Managed by Swedish Business Development Agency (NUTEK)
- Types of interventions:
 - Environmentally sound products as a competitive device
 - Design for the environment is linked to business strategy and tools for DfE are applied, tested or developed.
 - Work actively with supply-chain co-operation and some focus on environmental market communication, for example Environmental Product Declarations.



UAB Ekoproduktas, Brewers yeast recycling factory – Lithuania

Type of innovation: Waste recycling and utilisation. Elements of industrial ecology and system innovation

Environmental problem: 5,500 -6,000 t of liquid yeast waste landfilled each year

- **Economic benefits:** The company sells the dried yeast locally and abroad.
- **Environmental benefits:** liquid yeast waste was previously dumped at the landfill; the new product is environmentally friendly and closes the beer production process loop
- **Social benefits:** No more bad smell in the vicinity of the landfill;
- **Drivers:** Opening up of new market opportunities; expansion of the market of recycled yeast after accession; pressure by EU legislation; loan from Lithuanian Environmental Investment Fund (LEIF) (80% of loan at 0 rate)
- **Barriers:** reluctance of some beer producers to share liquid yeast transportation costs; reluctance to impose in practice the polluter pays principle



Tukums Council – Latvia

Type of innovation: Adaptations of existing products or processes with the aim to increase the quality or reducing the costs

Description: energy saving lighting; public-private partnership;

Problem: old lamps; poor quality of lighting; big waste of energy

- **Economic benefits:** estimated savings are 37,000 EUR/year.
- **Environmental benefits:** reduced energy consumption (630,000 kWh/year); CO2 reduction – 365 t/year
- **Social benefits:** bigger safety; more night life; less crime; high potential for replication.
- **Drivers:** good cooperation b/n partners-third party financing; contribution from ESCO (part are loan from the Latvian Environmental Investment Fund) ; preferential loan from the Nordic Investment Bank; municipal commitment
- **Barriers:** lack of experience in third-party financing; hard to convince the financial institutions



Korte-Organica – Hungary

Type of innovation: Industrial Ecology – utilisation of hazardous waste (spent steep solution) to produce waste-water treatment chemicals

Environmental problem: 3,000 t of spent steep solution annually → 2,400 t hazardous waste

- **Economic benefits:** Both from processing the spent steep solution and from selling the produced chemicals; pay-back period 4-6 years; producers of sss pay less for this kind of treatment; cheaper quality raw materials
- **Environmental benefits:** 0 hazardous waste compared to 800 t (per 1,000 t of sss; 300t less salt discharge into surface waters; use of less natural resources; less transportation;
- **Social benefits:** 6 new jobs created; **Relation to EU/National policy:** Landfill Directive; Hazardous Waste Directive; Waste Water Directive
- **Drivers:** company's own innovation capacity; good economic viability of the project; financial support from the EU Life Programme (0.47 out of 1.9 MEUR); extended business opportunities after EU accession



Jelenia Gora – Poland

Type of innovation: Utilization of biomass from municipal green areas for heating purposes - Pilot Joint Implementation project

Environmental problem: 3,000 t of spent steep solution annually → 2,400 t hazardous waste

- **Economic benefits:** Reduction of fuel costs of 50%; less landfilling fee
- **Environmental benefits:** saving of 220 t of coal by its replacement with biomass; 385 t of waste wood are not landfilled any more; in 15 years CO₂ emission reduction 21,000 t;
- **Social benefits:** decreased health risk; better work environment; potential for replication
- **Relation to EU/National policy:** Kyoto Protocol; Polish renewable targets
- **Drivers:** mediation and analysis by a professional organisation; available cost reduction and raw material usage minimisation; improvement of the quality of environment in town and its image



Studied Companies and Organisations

- **Czech Republic** – Linde Technoplyn; Frantschach Pulp and Paper; Ikea; Kovohute Pribram; Ostrava Water and Sewerage Company; Veskom;
- **Estonia** – Estonian Energy; Ahtme CHPP; Narva Power Plant; Ilmarine; Kunda Cement; Optiroc; Terts; Rakvere Basic School; Silmet Group/Okosil; Tallinn Water; Arctic Talvitex; Vasar
- **Hungary** – Audi Hungaria; Biohő Hőszolgáltató; Debreceni Vízmű; Denso Manufacturing; Greenergy; KEMAK; Körte-Organica; Emszet; E-On; EDASZ;
- **Latvia** – Grindex; Rebir; Latvenergo; Lijepaja Council; Ekodoma; Tukums Council; Valmiera Glass Fibre
- **Lithuania** – Achema; Vilniaus Vingis; Bega; Ekoproduktas; Rokiskio Suris; Vilniaus Vandenis;
- **Poland** – Klinkmar; Daewoo Motors; Metalodlew; Huta Stali; Famed; Polish Security Printing Works; Stolarka Wolomin; Comal; Jelenia Gora; Metrix
- **Slovakia** – Quelle; Biomasa Association; Chemolak; De Miclen; Messer Slovnaft; Kappa-Sturovo; Novacke Chemicke Zavody; Slovnaft; ZOS Trnava
- **Slovenia** – Iskra Avtoelektrika; Lesna TIP Otiski Vrh; Polycom; Sava Tires; Termo; TOM; Tosama;



Thank you!

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