

NIB's Experience from Energy Efficiency Projects in Russia in relation to those in Baltic countries and Poland

Workshop on Energy Efficiency and Russia

FIIA and BOFIT

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- Energy sector always a priority sector for NIB
 - in Russia NIB´s focus is on NW regions
- NIB is a major financier of Energy Efficiency Projects in BSR
- NIB - financing subject to viable project
 - technical,
 - institutional
 - financial,
 - environmental

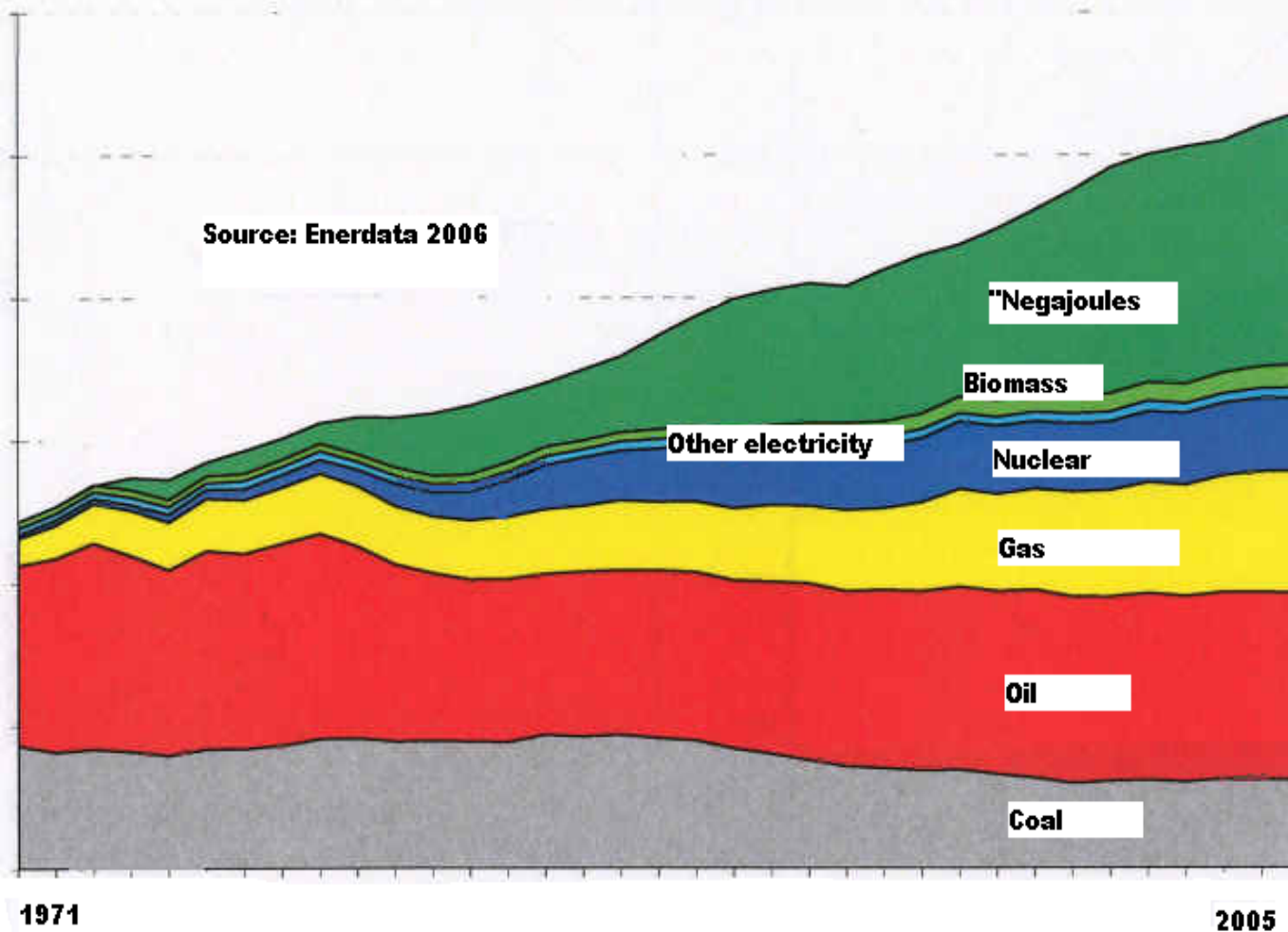
- National Energy Strategies
 - EU countries, Norway and Russia recently adopted/developed new strategies for 2020/30.
 - Energy Efficiency plays a central role in all strategies.
 - Russian new energy strategy important step towards energy efficiency!
- EU Energy Strategy
 - BSR Strategy 2009
 - EU-Russia co-operation (4 common spaces)
 - European Neighbourhood Policy (ENP)
 - UKREEP Energy Efficiency Program in Ukraine
 - Action Plan for Energy Efficiency worked out by the Commission 19.10.2006; COM(2006)545 final Action Plan 2007-2009
 - Baltic Energy Market Interconnection Plan BEMIP
 - EU Economic Recovery Package for 2010-2012
- NIB participates in EU IFI cooperation
- Baltic Sea Region Energy Co-operation BASREC
- Council of Baltic Sea States CBSS
- Co-operation with other IFI's and Commercial Banks
- Covenant of Mayor's Initiative
 - Energy Efficiency

CLEERE - Climate Change, Energy Efficiency and Renewable Energy Facility

- EUR 1 billion facility
- Loans for climate change adaptation and mitigation projects in the public and private sector
 - wind, hydro, biomass, solar, geothermal
 - energy efficiency in industry and housing
 - research and development
 - adaptation of infrastructure

Energy Efficiency Impact "Negajoules"

EU 27 - Development of the primary energy demand and of "negajoules" 1971 -2005



Energy Efficiency Indicators in BSR (2005)

Country	KWh/capita	TPES/pop	TPES/GDP	CO2/GDP
Denmark	6.659	3.62	0.11	0.28
Estonia	5.568	3.79	0.65	2.02
Finland	16.123	6.67	0.25	0.40
Germany	7.111	4.18	0.18	0.41
Iceland	28.057	12.25	0.34	0.21
Latvia	2.702	2.05	0.41	0.63
Lithuania	3.104	2.52	0.52	0.81
Norway	25.145	6.95	0.17	0.20
Poland	3.438	2.44	0.47	1.49
Russia	5.786	4.52	1.85	4.41
Sweden	15.430	5.78	0.19	0.19
Ukraine	3.248	3.04	3.17	6.56

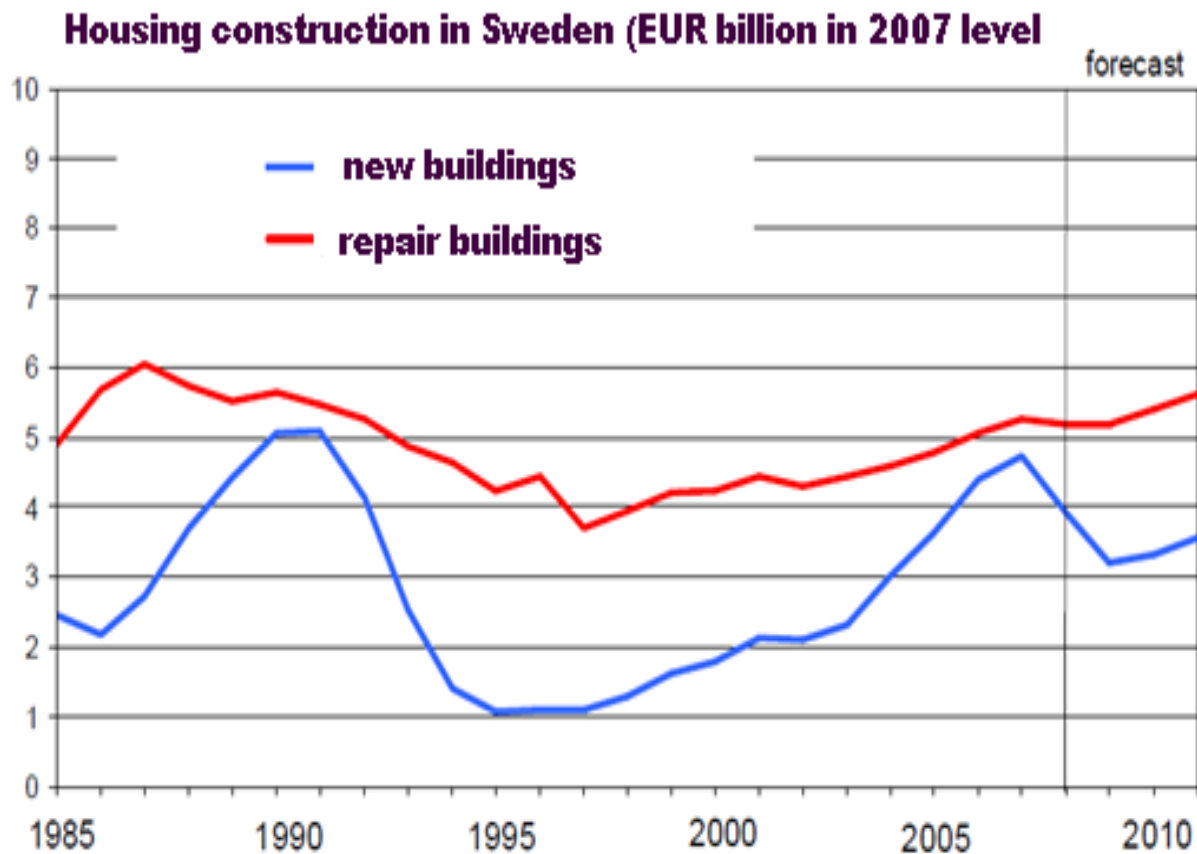
- Buildings
 - pilot energy efficiency projects
 - energy savings investments in existing buildings.
- Co-generation and district heating/cooling
 - European Union's Cogeneration Directive 2004/08/EC. First obligations under the directive came in force from August 2007.
 - Russian district heating based on open system vs. closed in Nordics
- Improving efficiency of production methods;
- Improved energy conversion
- Energy efficient products
- Transportation and Agriculture

Case Sweden 2006

	Primary Energy used	% of PE	% of Consumption
Energy losses	221 TWh	35.4 %	n/a
Industry	157 TWh	25.2 %	39.0 %
Housing	145 TWh	23.2 %	36.0 %
<u>Transportation</u>	<u>101 TWh</u>	<u>16.2 %</u>	<u>25.0 %</u>
Total	624 TWh	100.0 %	100.0 %

- **Lithuania NIB Environmental Credit Line**
 - National Project Implementation Unit (Central Project Management Agency under Ministry of Finance)
 - NIB provided Technical Assistance in cooperation with WB and Nordic grants
 - Schools, hospitals, public buildings > 200 projects

- **Russia – NEFCO Energy Efficiency Program**
 - Grants, repayment to a local revolving fund.
 - Renovation of heat systems in municipal buildings
 - Borrower: municipality or municipality company
 - Subsidized finance for social objects (schools, kindergartens, hospitals, sports facilities etc.)
 - Project implementation monitored by local and Nordic consultants to ensure good quality of works



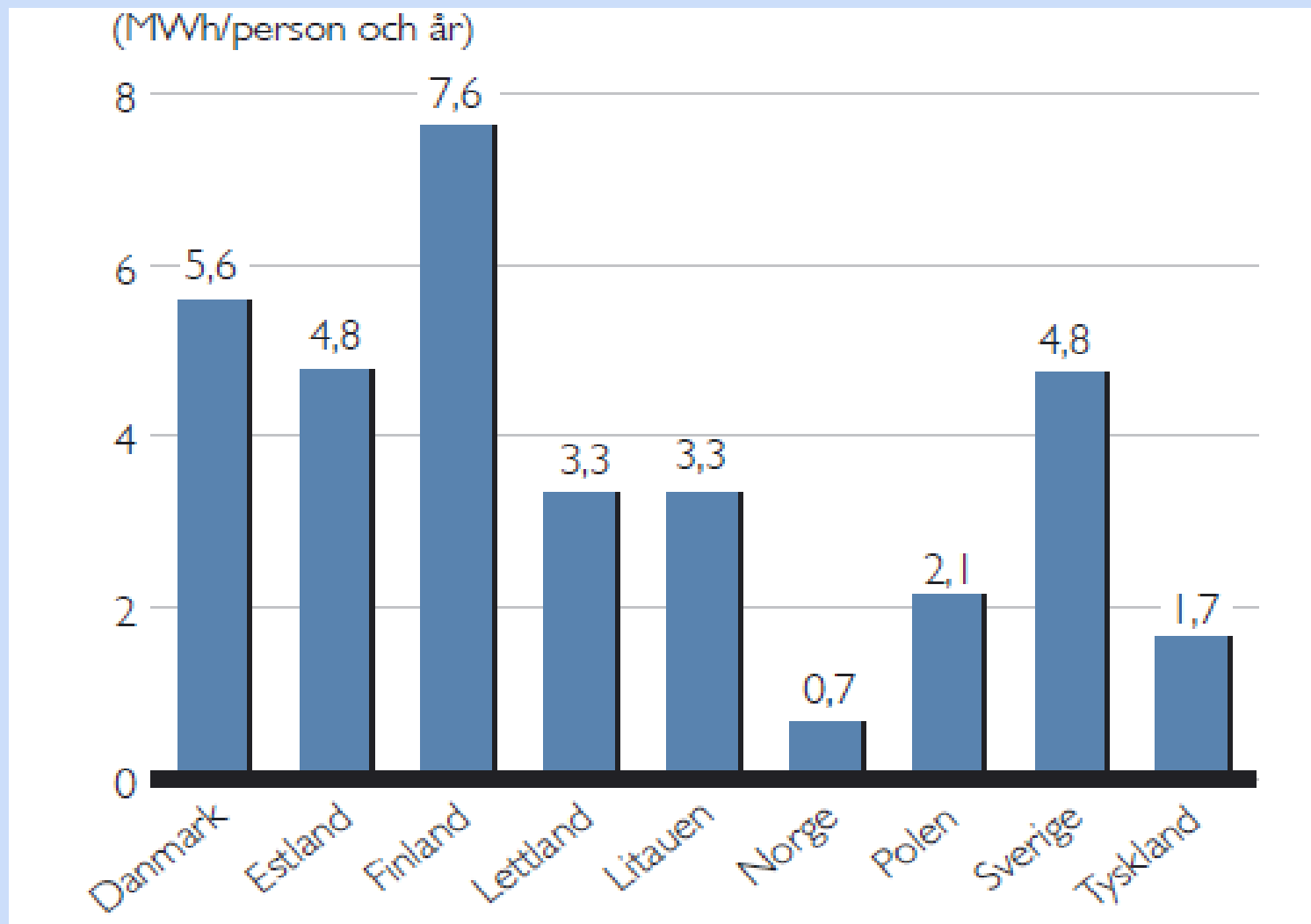
LÄHDE: EUROCONSTRUCT

- **Energy efficiency of new buildings**
 - Authorities to decide on regulative environment
- **Refurbishment of existing buildings**
 - Big energy savings – bigger in Russia and CEE than in Nordics
 - Proper tariffs and metering
 - Government support
 - Public awareness
 - Technical support – risk for wrong solutions
 - national PIU's
 - TA case by case
 - Long term financing
 - difficult to reach target groups as single projects are small
 - intermediaries to reach larger groups
 - credit lines to local banks or specialised institutions
 - Grants

District Heating and Cogeneration

District Heating production in Baltic Sea Region

2005



- **Murmansk District Heating Project**
 - Project specific PIU supported by external consultants
 - Project delayed despite support from Murmansk city as company at present is in liquidation
 - External support from external consultants requited by NIB
- **Latvian & Lithuanian Energy Efficiency Investment Programs**
 - National PIU
 - Latvian Investment and Development Agency LIDA
 - Lithuanian Central Project Management Agency CPMA
 - Assisted municipalities in local language with
 - preparation, procurement, follow-up
 - NIB
 - institutional support to PIU´s
 - due diligence and project approval
 - More than 40 DH&CHP projects implemented with good results

- DH and CHP increases efficiency compared to combustion and boilers only
- Government support for national & regional PIU's provide large scale benefits
 - Technical Assistance & IFI involvement is important
 - Reporting and monitoring quality to be improved in Russia
- Demand side investments, in general, higher return than efficiency of production
- Requires good feasibility studies and long term approach
- Social consequences if not properly managed – richer areas prepare own systems
- Public awareness
- Tariffs to be at fair level
 - seems to be understood by Russian authorities in last years, but complicated to implement.
 - In Russia tariffs still too low but situation is improving.

- Russia
 - TGC 1 (EUR 30 million in 2006)
 - 55 power plants, district heating in St. Petersburg, Leningrad Oblast, Carelia and Murmansk regions)
 - Installed electric generation capacity of 6,248.4 MW.
 - Heat production capacity 14,735 Gcal per hour. Heating network 845km
 - Electricity produced primarily sold on the domestic wholesale market, a portion also exported to neighbouring Finland and Norway.
 - Lenenergo (USD 25 million /USD 200 million facility)
 - distribution in St. Petersburg
 - Pulp Mills (NIB Ladoga Environmental Program)
 - Kondupoga
 - Segeza
- Baltics
 - Major energy utilities
- Poland major energy utilities
 - Belchatow and Turow lignite base power plants
 - Kozenice hard coal power plant

Renewable Energy Targets for Baltic Sea Region

21 oktober 2009

Final energy	Germany	Denmark	Estonia	Finland	Lithuania	Latvia	Poland	Sweden	Norway	NW Russia	REGION
2005 RE share	6%	17%	18%	29%	15%	35%	7%	40%	60%	3%	14%
2020 target	18%	30%	25%	38%	23%	42%	15%	49%	60%	0%	25%
Increase 2005-2020	12%	13%	7%	10%	8%	7%	8%	9%	0%	0%	11%
Electricity	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2005 RE share	11%	28%	1%	27%	4%	48%	3%	54%	100%	19%	26%
Expected increase in electricity sector	18%	20%	11%	14%	12%	11%	12%	14%	0%	NA	15%
2020 target	29%	48%	12%	41%	16%	59%	15%	68%	100%	NA	37%

Table 1: Renewable energy targets. No renewable energy target has been included for North West Russia

Available Bioenergy Resources in Baltic Sea Region

21 oktober 2009

PJ	Energy crops and grass cuttings	Forestry residues	Biogas from manure	Biowaste (mainly agricultural residues)	Municipal waste	Total
Germany	980	201	190	223	657	2250
Denmark	4	40	39	40	50	173
Finland	54	75	15	234	32	411
Sweden	59	100	22	364	62	607
Estonia	54	8	5	34	9	111
Lithuania	331	17	9	54	11	422
Latvia	63	25	6	2	15	111
Poland	1273	50	93	150	254	1820
Norway	0	160	0	17	40	217
BALTICSEA	2818	677	379	1117	1130	6121

Table 20: Available bioenergy resources in the Baltic Sea Region. The figures are derived from the report "How much bioenergy can Europe produce without harming the environment?" (EEA 2008), the Green-X database on dynamic cost-resource curves and a projection of the municipal waste resource from RISØ DTU²⁰. Data for Russia is lacking. For the purpose of modelling no limitation has been implemented on the access to biomass resources in Russia.

Biomass: energy crops, forestry residues, biogas from manure, biowaste, municipal waste

Source: EA Energianalyse 2009

- Regulative Environment
 - For example Large Combustion Plant Directive in EU
- Tariff Policy
- Opening up of Market in Russia trigger market pricing and investments

- Objectives
 - Promote flow of climate change mitigation projects by contracting for carbon credits for the period 2013-2022
 - Facilitate development post 2012 carbon market
 - Value addition for project owners
- EIB, Kreditanstalt für Wiederaufbau, Instituto de Credito Oficial, Caisse de Depot, NIB
- EUR 125m fund
- Independent Fund Manager: Conning / First Climate
- Buys post 2012 credits in partnership with a commitment period buyer
- CDM and JI projects
- Transaction Size 250,000 to 2,000,000 t/CO2
- Project Types
 - renewable energy,
 - fuel switching,
 - fugitive gases (including land fill gas and coal bed methane),
 - energy efficiency,
 - carbon capture and storage (CCS), land use, land use change and forestry (LULUCF)
 - programmatic CDM
- Operational March 2008

Testing Ground Facility (TGF)

- JI Projects
- Baltic States, Russia, Ukraine, Poland
- €35 m fund
- Investors
- Operational since 2003
- Emphasis on renewables & EE (84% projects)
- Small to medium size projects: 250 - 500 k/t
- Often project have investment from NEFCO and NIB
- 89% of capital allocated
- 7 signed ERPAS (Emission Reduction Purchase Agreement)
- 23 active projects under contracting

NEFCO Carbon Facility (NCF)

- JI & CDM Projects
- Eastern Europe and China
- €80 m fund
- Operational April 2008
- Initial closing of funding subscription June 2008
- Medium to large projects: 0.5 to 1.5 mtCO₂
- Compliance period purchases

- Energy Efficiency Projects often a challenge for the new member states in EU and thus also Russia
- Drivers
 - Tariffs covering costs
 - Public Awareness
 - Institutional capacity & Technical Assistance a key for success
 - national/ regional PIU´s
 - project specific external support
 - Proper Feasibility Studies and implementation process
 - IFI involvement helps
 - Accounting etc.
- CO2 – issue – Pricing of CO2
- Projects viability related to regulative network
- Climate for Energy Efficiency investments in Russia improved