

## Potential and Prospectives for Energy Efficiency and Renewable Energy Investments in Ukraine for Climate Change Mitigation

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Steering Committee meeting of the Energy Efficiency 21 Project (EE21) , 29-30 May – Geneva, Switzerland

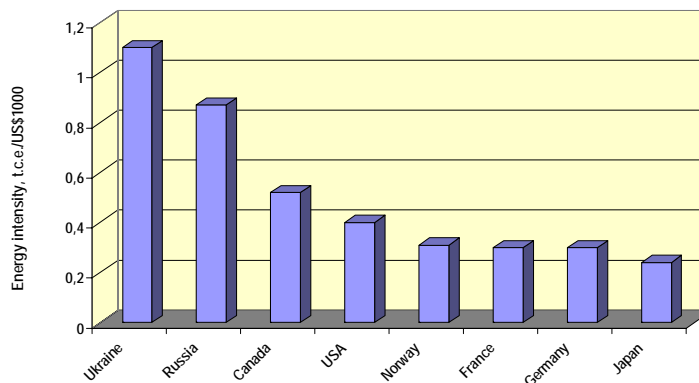
### MAJOR ENERGY EFFICIENCY POLICIES IN UKRAINE

- 1994 – *Law on Energy Conservation*
- 1995 – *State Committee of Ukraine for Energy Conservation*
- 1997 – *National Energy Saving Program*
- 1998 – *Wind Energy Program*
- 2004 – *Law on Cogeneration*
- 2005 - *National Energy Efficiency Agency*
- 2006, March - *National Energy Strategy till 2030*

**NATIONAL ENERGY STRATEGY TILL 2030: MAIN INDICATORS**

YEAR	GDP ENERGY INTENSITY,%	ENERGY IMPORT,%
2005	100	55
2030	48	12

**GDP ENERGY INTENSITY**



Source: OECD, 2002 (purchasing power parity)

### EC/TACIS PROJECT "Technical Assistance to Ukraine and Belarus With Respect to Their Global Climate Change Commitments"

- **Objective:** To assist Ukraine and Belarus in building institutional and technical capacity for participation in the UNFCCC and the Kyoto Protocol
- **Project duration:** 30 months (May 2004 - October 2006)
- **EC Consultant:** Consortium composed of:
  - 1) ICF Consulting Ltd. (United Kingdom)
  - 2) Agency for Rational Energy Use and Ecology (ARENA-ECO), Ukraine
  - 3) Joint Institute of Power Engineering and Nuclear Research (Belarus)

### MAJOR RECENT CLIMATE CHANGE POLICIES IN UKRAINE

- Established National GHG Inventory System
- Developed National GHG Inventories for 2003 and 2004
- Developed feasibility study for national GHG registry
- Completed Ukraine's Second National Communication (April 2006)
- Developed JI approval procedures
- Necessary training provided on GHG inventory, JI, and mitigation issues
- National climate change website and other information support

## KEY SOURCES EMISSIONS (2004 )

EMISSION SOURCE	million tCO <sub>2</sub> -e	%
FUEL COMBUSTION IN HEAT AND POWER SECTOR	88922	21,5
EMISSIONS IN IRON INDUSTRY	58476	14,1
FUEL COMBUSTION IN INDUSTRIAL ENTERPRISES AND BUILDING INDUSTRY	47056	11,4
FUEL COMBUSTION IN TRANSPORT SECTOR	37474	9,1
FUEL COMBUSTION IN RESIDENTIAL SECTOR	35510	8,6
EMISSIONS FROM COAL MINING	26949	6,5
NATURAL GAS LEAKAGES ON NATURAL GAS PRODUCTION, TRANSMISSION, DISTRIBUTION AND CONSUMPTION	23203	5,6
ENTERIC FERMENTATION OF DAIRY CATTLE	12158	2,9
AMMONIA PRODUCTION	11541	2,8
LANDFILLS	6256	1,5
CEMENT PRODUCTION	3777	0,9
OTHER SOURCES	62339	15,1
TOTAL, UKRAINE	413660	100

## ATTRACTIVE SECTORS FOR JI ACTIVITIES IN UKRAINE

- *Coal bed methane*
- *Landfill gas recovery*
- *Natural gas transportation and distribution systems*
- *Waste fuel and heat in metallurgy*
- *Coal and natural gas combustion systems*
- *Renewable energy*
- *Municipal district heating and water utilities*
- *Innovative industrial technologies*

## TWO COMPONENTS OF JI PROJECT POTENTIAL

1. Economically feasible projects that can not be implemented by reason of different barriers.
2. Economically unfeasible projects, but turning out effective through ERUs selling.

## ENERGY CONSERVATION POTENTIAL FOR JI MECHANISM

- practically reachable and economically sound potential of energy conservation till 2010 is the following:  
**40.5 million tones of coal equivalent/year**
- total economic potential of energy conservation:  
**85.5 million tones of coal equivalent/year**
- «additional» potential of energy conservation requiring external funding  
**45 million tones of coal equivalent/year**  
(«additional» potential of CO<sub>2</sub> emission reduction reaches 81 million tones a year)

## ASSESSMENT OF EXTERNAL INVESTMENT OPTION FOR JI PROJECTS

- External investment in economically feasible JI projects: USD 80 – 240 million
  - External investment in economically unfeasible JI projects: USD 60 - 100 million
  - Assessment of the total external financing: USD 160 - 320 million
- Total financing: USD 1.3 – 2.1 billion

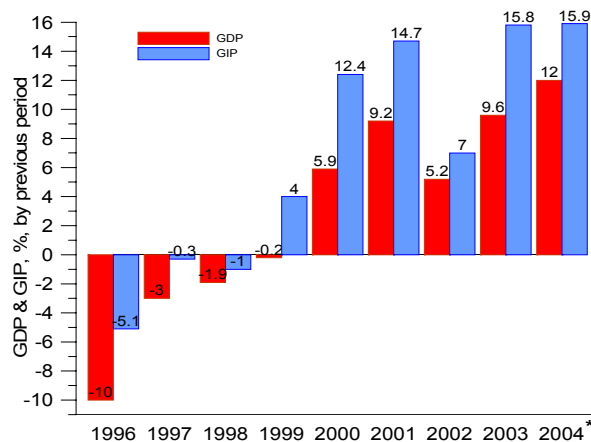
## ENERGY CONSERVATION AND CLIMATE EFFECT OF IMPLEMENTING JI PROJECTS POTENTIAL IN UKRAINE

- Annual reduction of energy consumption: 4,2 - 6,8 million tones of coal equivalent;
- Estimation of energy consumption reduction during 2008-2012: 27 million tones of coal equivalent;
- Annual GHG emissions reduction: 8 – 12 million tones of CO<sub>2</sub>-e;
- Estimation of GHG emissions reduction during 2008-2012: 50 million tones of CO<sub>2</sub>

### BENEFITS FOR CARBON INVESTORS IN UKRAINE

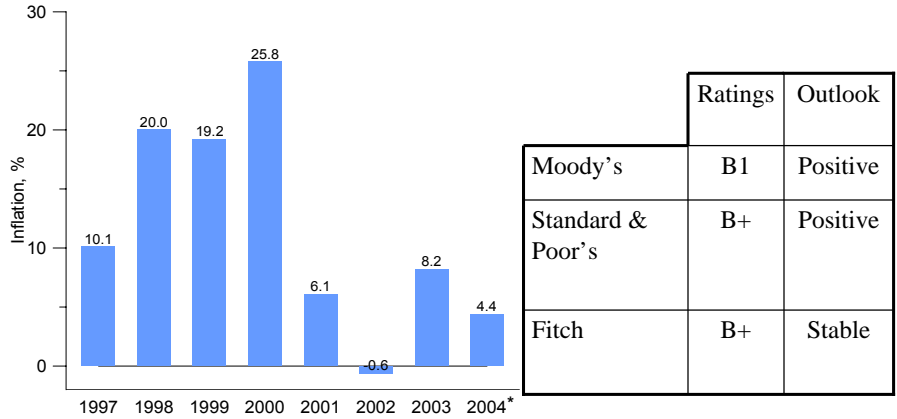
- The potential for JI projects is large due to energy intensive economy, obsolete equipment, limited financing availability
- There are possibilities to find significant amount of medium and large scale JI projects and thus reduce transaction cost
- Good prospects for quick projects approval
- Existing wide infrastructure of scientific research and design organisations can provide high quality projects and thus mitigate non-registration risks
- Ukraine as Annex 1 Party is interested in the projects that really are additional, thus lowering non-registration risk
- Ukraine will not become a member of the EU anytime soon that otherwise could reduce the additionality of a large number of potential JI projects

### INVESTMENT CLIMATE IN UKRAINE: STRONG ECONOMIC GROWTH DURING LAST FIVE YEARS



Source: Ukrainian State Statistics Committee

**INVESTMENT CLIMATE IN UKRAINE: LOWER INFLATION AND GOOD CREDIT RATING**



Source: Ukrainian State Statistics Committee, National Bank of Ukraine, Moody's, Standard & Poor's, Fitch

**SELECTED SUCCESSFUL PROJECTS IDENTIFIED AND DEVELOPED IN UKRAINE WITH UN ECE SUPPORT**

**Kharkiv District Heating and Building Energy Efficiency Upgrade**

Total project cost – EUR160mln  
 First phase cost – EUR15mln  
 Investors – EBRD, WB, Municipality, Utility

**Ivano-Frankivsk Cogeneration Project**

Total project cost – EUR 4mln  
 First phase cost – EUR1mln  
 Investors – Municipality, Utility, Local Banks

**Rivne ESCO Project**

Total project cost – EUR 6mln  
 First phase cost – EUR1.5mln  
 Investors – GEF, Ukrainian Government, Municipality