

# The Role of the Private Sector in Energy Efficiency in Ukraine and the FSU

U.S. - Ukraine  
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## What is the Alliance?



- **Mission:** To advance energy efficiency world-wide through policy, education, research, technology deployment, market transformation and communication initiatives.
  - Headquartered in Washington, D.C. with operations in Eastern Europe, South Africa, Mexico, India and several states in the U.S.
  - **Chairs:** ✓ Senator Mark Pryor (D-AR)  
✓ James James Rogers (CEO, Duke Energy)
- ...with strong bi-partisan congressional, corporate & public interest leadership.



## Alliance ASSOCIATES



- Forging Alliances with Business, Govt. & Public Interests
- Alliance enjoys sponsorship by **>145 businesses and organizations** across a broad spectrum of economic sectors.
- **Complete list at:**  
[www.ase.org/section/\\_audience/associates](http://www.ase.org/section/_audience/associates)

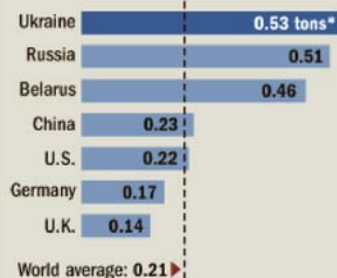


## Huge Potential for Energy Efficiency in Ukraine

- Very high **Energy Intensity** (*energy needed to produce per unit of GDP*) in Ukraine as well as many other FSU countries.
- Ukraine is very **dependent** on importing energy resources and fuels. 75% of natural gas comes from Russia.
- Supplying **HEAT** to the 70,000 hi-rise residential buildings accounts for about 40% of the country's heat energy sources.
- Energy efficiency is **improving** at 4 to 6%/year, but remains at a level similar to Poland in the 1990's.

### Fueling Production

Ukraine is less energy-efficient than most nations. Amount of energy used to produce each \$1,000 of GDP in various countries:



\*Tons of oil equivalent needed to produce each \$1,000 of GDP, where GDP is at 2000 prices and adjusted for purchase-power parity.

Source: Wall Street Journal,  
8 May 2006

## General Issues in Municipal Sector in Ukraine and the Region

- ❖ **Climate:** harsh winters for most.
- ❖ **Inefficient buildings & heating** → residential sector a major energy consumer  
~ DSM can save 30% of residential energy use!

### HEATING:

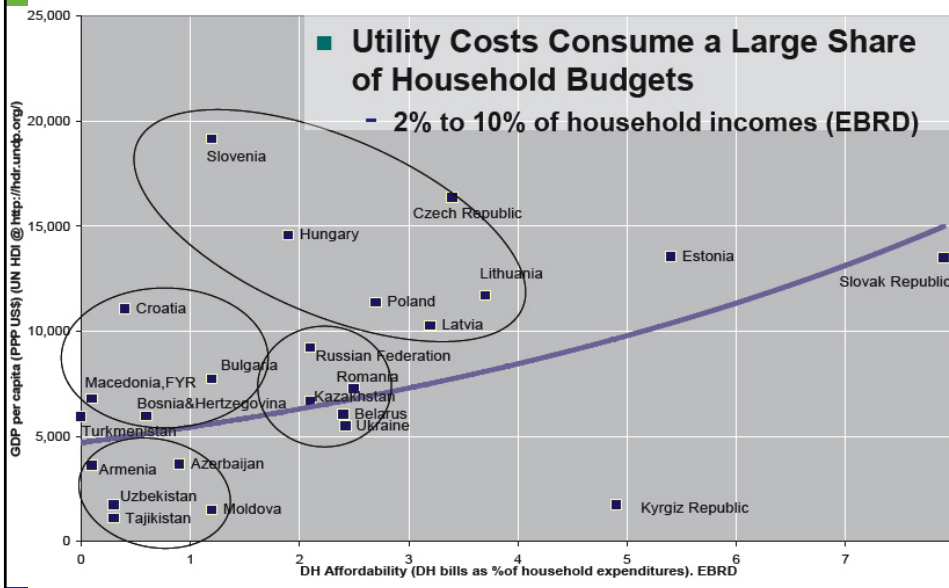
- ❖ **District Heating** dominates but many systems in *disrepair* following collapse of Soviet Union.

### RESIDENTIAL BUILDINGS:

- ❖ Most built inefficiently half a century ago and neglected since.
- ❖ Many apt. bldgs. of pre-fab concrete panels.



## Inefficiencies Strain Poor Households in Region



## A Host Of Barriers To Improvements

### Energy Prices (Tariffs):

- Tariffs do not recover costs (*lowering incentives to EE and raising payback periods*)
- Non-payment tolerated
- Subsidies intended for the poor not well targeted

### Consumer Challenges:

- Insufficient metering
- Lack of control over energy use
- Low willingness to pay for poor service, even when able.

### Ownership Issues:

- Often unclear who owns the building
  - No clear responsibility outside the individual apartments
- → lack of **FINANCING** also a major barrier



## Overcoming Barriers to EE in the Region

### 1) POLICY

*Legal & regulatory frameworks must be improved...*

- ✓ Create **incentives** for promoting energy efficiency
- ✓ Open the energy sector to **private participation**
- ✓ Promote **metering** and **DSM** measures
- ✓ **Eliminate subsidies**  
~ *Energy tariffs should recover costs* ~
- ✓ Modernize energy **standards** & technical **regulations**
- ✓ Promote energy efficiency **services market**



## Overcoming Barriers to EE in the Region, cont.

### 2) CAPACITY and AWARENESS

- Strengthen **national agencies** for:
  - ✓ setting energy efficiency targets
  - ✓ developing programs
  - ✓ ensuring implementation
- Train **energy managers** and **auditors**
- Cultivate **partnerships** among:  
energy consumers, service providers, financiers
- **Provide Information:** test EE models, document case studies, prepare guidelines, advocate.

### 3) FINANCING - *Need mechanisms, such as...*

- ✓ loan funds    ✓ vendor credits    ✓ leasing
- ✓ credit guarantees    ✓ carbon finance

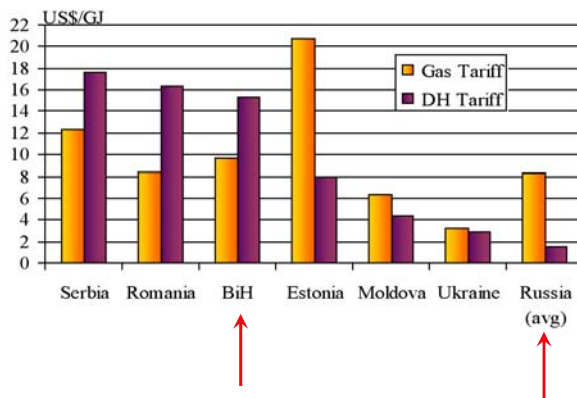
## What Can Be Done to Improve Residential EE: The Policy Realm

### ❖ **Metering** - *so billing is based on consumption*

- *Example:* mandatory building-level metering in Moldova saved 20% - 50%

### ❖ **Pricing**

- Prices gradually rising towards market levels
- Subsidies being replaced with targeted aid
- Tariffs adjusted to minimize distortions like cross-subsidies



## The Policy Realm, continued

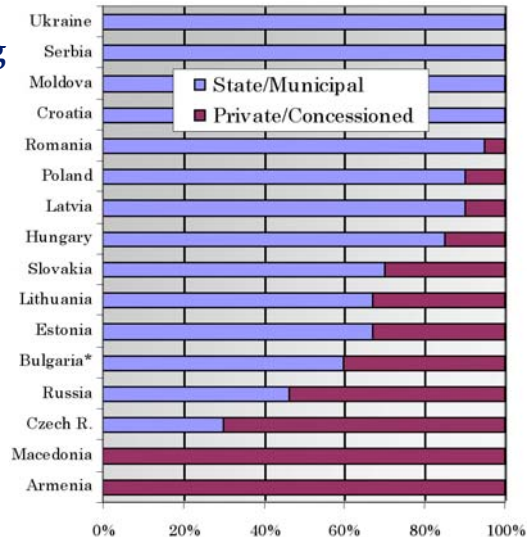
### ❖ Privatization of Heating

*Reforms are increasing private participation:*

- ✓ more effective management,
- ✓ transparent accounting,
- ✓ improved service & QC,
- ✓ lower costs.

*More likely to embrace EE:*

- ✓ well capitalized
- ✓ not subsidized by municipal budgets



## Approach proved successful in Central and Eastern Europe

- ❖ Promoting policy reform: tariff reform, energy efficiency legislation
- ❖ Designing and establishing Innovative financing mechanisms: revolving funds, ESCO financing, etc.
- ❖ Training leaders: national and municipal energy planning, management and conservation
- ❖ Raising public awareness
- ❖ Building networks of EE experts and cities
- ❖ Designing energy efficiency (EE) projects: for buildings, heating systems, water supply networks

## **Innovative Policy Design and Reform - Alliance Experiences**

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- ❖ Promoted and Advised on Legal reform:
- ❖ Ukraine: Municipal Budget Code,
- ❖ Lithuania: district heating law
- ❖ Albania: new building code
- ❖ Bulgaria: National Policy Reform, ESCO Development
- ❖ Moldova: Housing and Condominium legislation

## **Innovative financing**

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- ❖ Grants: should only be used to trigger the market forces and gradually phased out to allow for market acceleration
- ❖ Performance contracting and third party financing - energy service companies (ESCOs)
- ❖ Housing renovation/modernization loans
- ❖ Municipal funds (linked to the awareness of municipal officials on benefits of such investments)
- ❖ Energy efficiency revolving funds

## Innovative financing - continued

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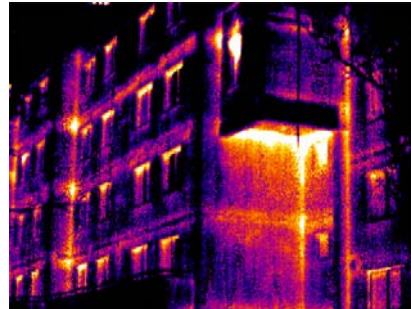
- ❖ Leasing
- ❖ Vendor credits
- ❖ Social/subsidy funds for low-income EE financing
- ❖ State Housing Development, Repair and Maintenance funds
- ❖ Credits from commercial banks,
- ❖ Credit guarantees
- ❖ Carbon finance, etc.

## Typical EE Measures in Multi-Family Buildings in the Region

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### ❖ Building Envelope

- windows & entrance doors  
*weather-stripped or replaced*
- thermal insulation  
*(e.g., polystyrene boards on outside walls; attic and underground spaces)*
- reduced thermal bridges  
between balconies & façade



### ❖ Building Systems and DH Substations

- improved interior heat distribution systems *(e.g., pipe insulation)*
- waste heat recovery from air ventilation;
- DH substation retrofits





## Typical EE Measures in Multi-Family Buildings in the Region, continued

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### ❖ Inside Apartments

- Thermostatic Radiator Valves (to *control* heat from radiators)
- Heat cost allocators  
(to *measure* radiator heat at apartment level so heat bills for entire building can be more accurately divided among apartments)
- Apartment-level **meters** for water and heat
- Heat **reflectors** behind radiators
- CFLs
- Low-flow shower fixtures
- Window repair/ replacement
- Enclosing and weatherproofing balconies



## Designing municipal EE projects

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### ❖ Buildings -municipal and residential:

demand-side energy efficiency, with metering, control, weatherization, and with billing for actual consumption - Lviv (Ukraine), Vanadzor (Armenia)

### ❖ Heating systems:

modernize district heating (DH) systems, achieve optimal centralization, switch fuels, introduce demand-side management (DSM), rehabilitating the DH networks and substations, including upgrades for increased CHP production

## Designing municipal EE projects, continued

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### ❖ Water supply networks: Watergy

#### **Institutional:**

Set up energy management staff and infrastructure within the City government and/or municipal water company.

#### **Technical:**

Energy Audit; metering, leak detection and repair, piping improvements, motor/drive replacements and other low-cost options

## Ukraine municipal sector: Successes

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- ❖ Ukraine: Information clearinghouse, replication of success stories, Association of Ukrainian Cities (AUC) partnership
- ❖ Municipal energy management and accounting (Lviv)
- ❖ Bill collection software (Kiev)
- ❖ Municipal and residential building EE: planning, heat metering, weatherization, regulation (Lviv)
- ❖ Carbon finance for school heating (Ivano-Frankivsk)
- ❖ Vendor credits (Kovel)

## **Municipal sector: Recommendations**

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- ❖ Increase technical capacity of municipalities for creating energy accounting database and establishing energy management system
- ❖ Develop revolving funding mechanisms for municipalities and incentives for energy efficiency investments
- ❖ Spur EE retrofit models for municipal and residential end-users

## **Municipal sector : Recommendations, continued**

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- ❖ Provide legal enabling environment for implementation of innovative financing schemes, Public-Private Partnerships, energy service companies, etc
- ❖ Launch a nation-wide energy efficiency project for schools
- ❖ Tariff reform eliminating subsidies combined with structured social safety programs

## Ukraine Industrial EE Initiative: Overview

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- ❖ UIEEI: July 2006 – March 2008 (USAID)
- ❖ Purpose:
  - Significantly reduce natural gas consumption by developing 10 EE projects at selected large consuming industries - large industrial users of natural gas (more than 10 million cubic meters (MM3) / year).
  
  - Develop, demonstrate and disseminate a sustainable process that can be widely replicated in Ukraine by other industries and large users

## Ukraine Industrial EE Initiative: Implementation

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### ASE & IRG Involved local ESCOs:

- ❖ ESCO OptimEnergo
- ❖ UkrESCO
- ❖ RENCO-Rassvet
- ❖ ESCO EcoSys
- ❖ Arena-ECO
- ❖ EnergoService – Sodruzhestvo

## **Ukraine Industrial EE Initiative: Implementation, continued**

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### **Investment grade audits:**

- ❖ Sumykhimprom:
- ❖ UNIPLIT building material plant:
- ❖ Chernihiv Chemical Fiber plant (multiple projects)
- ❖ AvtoZAZ
- ❖ AvtoKRAZ
- ❖ Kozlov Distillery

## **Ukraine Industrial EE Initiative: Recommendations**

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### **Examples:**

- ❖ Energy Management Systems
- ❖ Integration of thermal processes
- ❖ Heating network maintenance
- ❖ Heat recovery
- ❖ Replacement of old equipment by EE equipment
- ❖ Cogeneration plants
- ❖ Compressors
- ❖ Gas-steam Turbines
- ❖ Furnace retrofit
- ❖ Fuel switch

**Reduction of NG ranges from 1 to 10 Million m<sup>3</sup> per year per project**

## Ukraine Industrial EE Initiative: Results

### Design and implement industrial EE projects:

- completed 10 investment grade energy audits
- engaged 6 Ukrainian ESCOs
- **over \$70 Million investment identified**
- assisted in finding project financing (UkrExIm Bank, EBRD, US ExIm Bank)

### Strengthening the capacity of Ukrainian ESCOs:

- engaged in the audits and project development
- partnerships with western ESCOs (3 new JV)

### Assisting in developing EE legislation:

- incentives for implementing energy efficiency

## Alliance Associates Working in the Region

### Associates that work in the Region:

- ❖ Johnson Controls (*cooling, automation*)
- ❖ Spirax Sarco (*water & steam management*)
- ❖ Honeywell (*control systems*)
- ❖ Lockheed Martin (*space industry*)
- ❖ Whirlpool (*appliances*)
- ❖ Philips (*lighting*)
- ❖ Procter and Gamble (*cleaning products*)
- ❖ Panasonic (*electronics*)
- ❖ Owens Corning (*building materials, composites*)
- ❖ Osram Sylvania (*lighting*)
- ❖ Dow Chemical (*chemicals*)
- ❖ DuPont (*many sectors*)

**Honeywell**



## Contact Us!

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