



# Retrofitting of Social Housing. Policy and Financing Options

SESSION V: Financing Options for  
Retrofitting of Social Housing

# CECODHAS 2006

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N. I. Housing Executive

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# Home Energy Conservation Act

- Operational 1<sup>st</sup> April 1996
- 34% energy efficiency improvement
- No statutory enforcement powers
- No additional finance
- No deadline specified
- Strategy – finance works to own stock and partner others to encourage and, in some cases, fund private sector works
- Progress measured in reduced fuel use



# DOMESTIC ENERGY USE

- Energy consumption in 1996 was 79,600T/J
- Average SAP in N.I. in 1996 was 41
- Solid fuel was main domestic fuel with oil growing steadily - no natural gas
- By 2004 there was a 17.2% reduction in energy consumption over 1996 figure
- Average SAP in N.I. in 2004 was 57

# DOMESTIC FUEL MIX

	1996	2001	2004
	%	%	%
■ Mains Gas	0	3.1	8.0
■ Solid Fuel	40.4	18.4	8.4
■ Oil	35.7	58.1	65.3
■ Dual	9.3	9.5	9.7
■ Electricity	8.8	8.3	6.9
■ Other/LPG	5.8	2.6	1.8

# Solar Water Heating

- Cross-Border Project – EU Funded in 2000
- Partner – Donegal County Council and Bryson House
- 6 Dwellings in Bangor and Buncrana
- Thermomax systems
- Independent Evaluation
- No problems after 6 years

# Solar Water Heating



# Solar Water Heating

- Very cost-effective renewable
- Clear Skies Grants
- Solar Smart Grants
- Encouraged many more local installers
- Housing Executive bid to Environment & Energy Fund – 600 installations



# Photovoltaic Panels

- DTI Funded – over £300k
- UK Wide Field Trial – 9 projects
- Partnership Project - NIHE, NIE, UUU & DTI
- Flats required new pitched roof
- Panels supplied by BP Solar
- PV panels providing 49kW of power
- Tenants using on average half
- Performance monitored by University of Ulster

# PV in Social Housing



# Hard to Heat Homes

- 4 Rural Cottages selected
- Independently Monitored
- New Technologies
  - Solar Water Heating Panels
  - Photovoltaic Panels
  - Solar Air Heating & Ventilation System
  - Ground Source Heat Pump
  - 2.5kW Wind Turbine
  - Prototype Oil Fired Condensing Boiler

# Solar Air Heating & Ventilation



# Solar Air Heating & Ventilation

- EU Grant of €700k
- 120 systems installed – 55 in social housing
- Warm air for heat and ventilation in winter and hot water in summer
- Particularly suitable where condensation is a problem

# Wind Turbine



# Wind Turbine

- Installed at rural dwelling
- Noise problem
- Relocated to another site
- Long delay with Planning Approval
- Performance being monitored

# PV Panels & Solar Water Heating





# Conclusions & Developments

- Solar water heating - cost effective – bid for large scale roll out
- PV panels – longer payback
- Wind Turbine – relocated
- Solar Air Heating/Ventilation – up to 120 installations now underway
- Oil fired condensing boiler – now available commercially
- Ground Source Heat Pump – too early to draw conclusions



# Micro-CHP Units

- 50 Unit Field Trial
- Generates electricity and heat
- NIHE, NIE, EST, Phoenix & DETI
- Monitored by Carbon Trust
- 10 in NIHE, 10 in Housing Associations and 30 private homes
- Whispertech units – New Zealand

# Micro Combined Heat and Power



# Other Technologies

- Air Source Heat Pumps – Fermanagh
- Wood Pellet Boilers
- Windsave Units (1Kw) roof mounted small scale wind turbine
- Swift Units (1.5Kw)
- Hydro-Electric – River Lagan Feasibility Study

# Environment & Renewable Energy Fund (EREF)

- €83 million over two years
- Funded by household rates (local tax)
- Encourage innovation
- Increase security/diversity of supply
- Develop new skills – underpin jobs
- Reduce energy costs & fuel poverty
- Aid industrial competitiveness
- Centre of excellence for renewables

# EREF Funds

- €21m for Research & Development
- €3.5 to Build Market Capacity and Supply Chain Development
- €49 for Accelerated Deployment
- €9.5 to underpin knowledge and raise awareness

# Solar Water Heating in Social Housing

- €2.5m available over two years
- SWH installations in 200 houses - 2006/07
- SWH in 400 houses in 2007/08
- Installations began in August 2006
- 200 completions to date – advancing next years programme
- One of biggest SWH programmes in Europe
- Both Evacuated Tubes and Flat Plate Systems being used

# SWH in social housing

- Targeting fuel poor
- High visibility within social housing estates – SWH not just for wealthy
- Integrated into heating conversion programme – SWH panels fitted along with new gas or oil heating
- Reduced unit costs due to volume
- South facing roofs – no over shading
  - no dwellings with electric showers



# Carrickfergus



# Carrickfergus



# Dromore



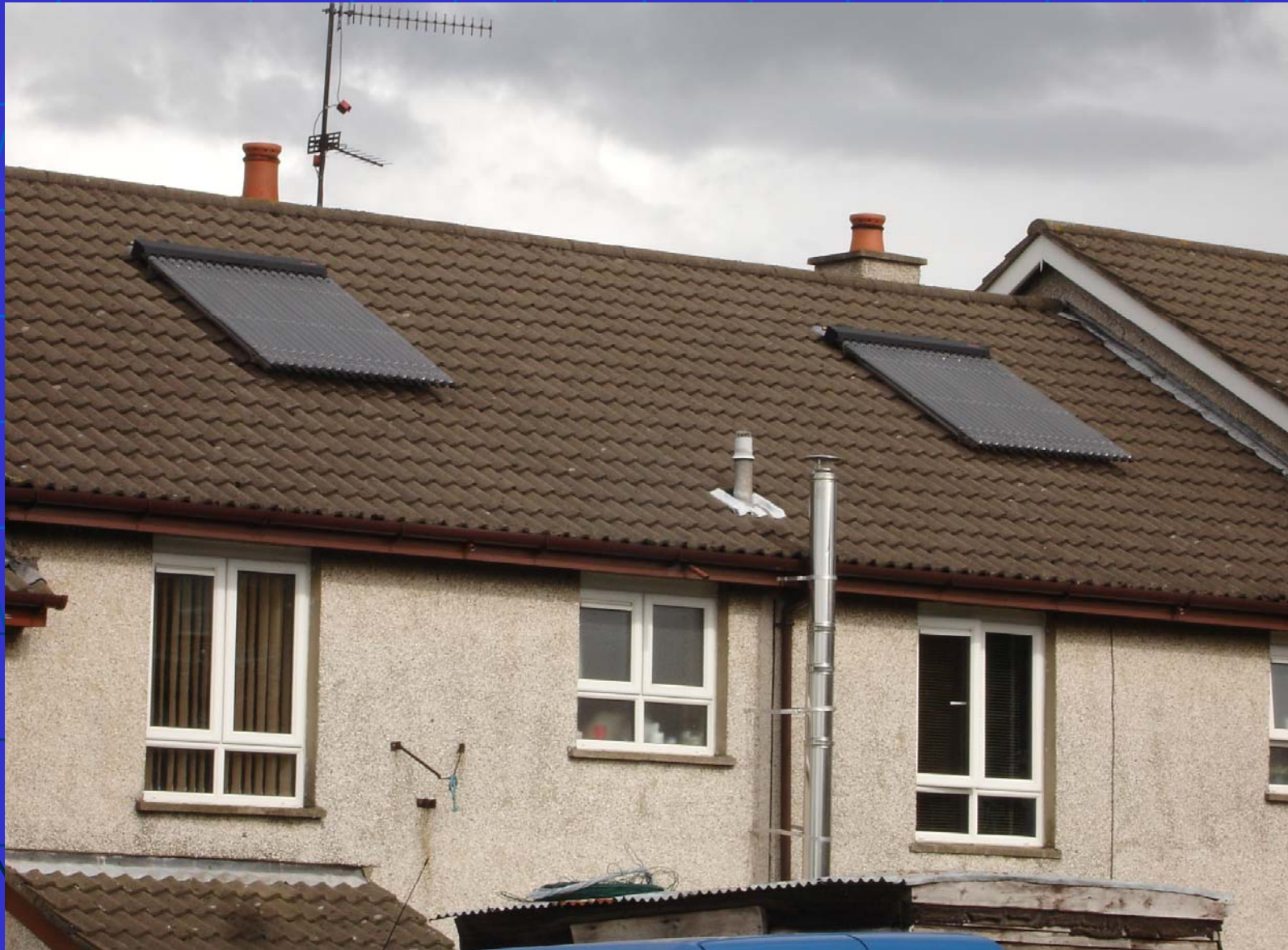
# Dromore



# Magherafelt



# Magherafelt



# Men at Work



# Other EREF Programmes in housing

- €11.2m in grants for private householders for renewable systems
- €2.1m for solar panels for fuel poor in private sector
- €0.7m for CHP in housing association stock



# Renovation of social housing: financing and policy options in Bulgaria



Thessaloniki, 7-8 November 2006

# Contents of presentation:

- Targeted subsidies from republican budget - National housing renovation programme & National strategy for financing building isolation
- EBRD credit line for EE in household
- EE Law provisions
- ESCO companies for household - a review
- Bulgarian energy efficiency fund (BEEF)- a possibility for financing



# Targeted subsidies from republican budget- NPRRB

- *"Up to 20% of the cost of common renovation work, isolation and strengthening of social housing stock will be covered by the state budget"* - this is envisaged in the **"National programme for housing renovation"** in Republic of Bulgaria . The programme is elaborated by MRDPW and approved by CM in 2005.



# National programme for housing renovation of residential buildings in Bulgaria 2006-2020

The purpose :

- To extend the life of buildings
- Decrease heating expenses by 40%
- Increase their market value.

Two overlapping programs:

- for ten years – 103 000 residences in panel housing estates in big cities Sofia, Plovdiv, Varna, Burgas.
- for 16 years – cover 580 000 residences

# National programme for renovation of residential buildings in Bulgaria 2006-2020

- Priority - panel residential multiresidential buildings in Bulgaria - 18 900 buildings, located in 120 residential complexes in the country with nearly 800 000 residents. Built in the years 60-80 of last age . 96,5% of them private.
- During the period 2006 - 2020 it is planned to renovate 684 683 residents, of which 362 792 of panel type, 152 686 Ferro- concrete type and 169 205 are solid.
- Total value for necessary finance resources equal to 4 150 000 000 leva.



# Constraints

- Lack of Condominium Ownership Act  
There is a ready draft but not yet put to discussions. Probably will be adopted by the end of this year.
- Bad social and economic condition of most people, living in panel buildings. Due to it occupants of panel buildings with resources solve their problems independently. The result - colorful facades with insulation of separate floors and doubtful energy effect.



# COMPLETE ENERGY RENOVATION OF A BUILDING

- Can save up to 70% of the heating expenses.
- The investment made to an apartment of 70 sq.m. with annual heating cost of 1800 leva may be recovered for 3 years if there is 30% reduction of heat loss and heating bills.

## Strategy for financing building isolation

The strategy was approved by Council of ministers at the end of 2005. and is within the frames of the National programme. The commitment of state budget concerning this strategy depends on the priority groups of buildings:

- **The residential buildings under NPRBS** - subsidies from the state budget equal to 20% of the project value;
- **State owned buildings, under the EEL for mandatory certification** - fully 100 % subsidies.
- **Municipal buildings** - covers the means necessary to do the mandatory energy audits and certification under the annual targeted programmes approved by CM , at minimum price for energy audit of 1 BGL per sq.m. defined in the NPRBS.



## National Strategy for financing building isolation

Parameters of the priority groups of buildings:

- **State** - for 15 years totally 508 buildings at the value of 147 104 mln leva , for 2007 - 10 units at the value of 2 896 mln. leva)
- **Municipal** - for 15 years period totally 3454 buildings at the value of 597,691 mln leva, for 2007 about 70 - 12113 mln leva.
- **Residential** - for 15 years totally 650 981 dwellings at the price of 2,490,000 billion leva, only for 2007 - 10 510 at the value of 40 200 mln leva,

## National Strategy for financing building isolation and the Energy efficiency law

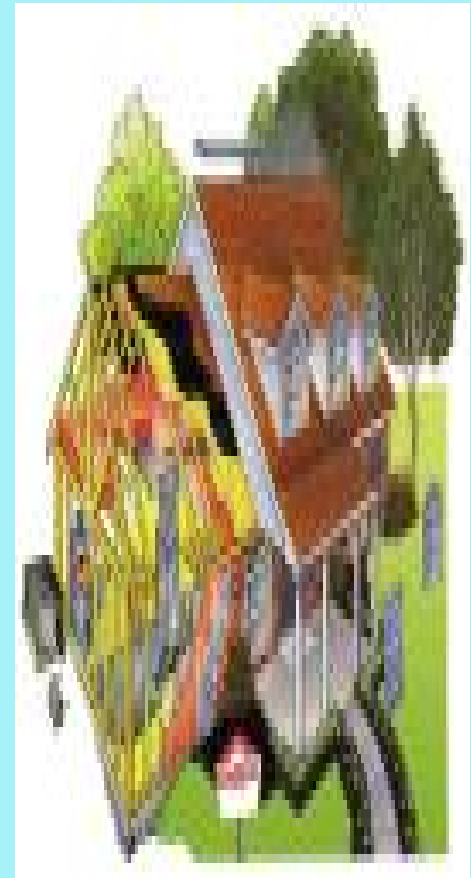
- For the state and municipal buildings :The ministries, regional governors, municipal councils and mayors elaborate and execute EE programmes (Art.. 7, 8, 9 and 10 of the EEL);
- The central executive powers, regional governors and other state bodies compose every year targeted annual programmes for EE and submit to the AEE to be generalized - Art. 11 of EEL. These programmes are financed by State budget (Art. 11, para 2 of the EEL).

## New finance approach - Credit lines

**EBRD credit line for EE in household  
in close cooperation with  
EEA, MEE and EU.**

**to support Bulgarian government  
for improving its energy strategy  
and EE.**

**Additional grant support is  
provided by IFK .**



## *Credit line EBRD household + grant from IFK*

(1)

- 24,7% - share of Bulgarian households in FEC, distributed as follows:
  - 34,7% for electricity , 20,5% for heating energy,
    - 17,1% coals, 26,3% wood, 1,3% liquid fuels, 0,1% natural gas
- 2 125 250 dwellings, most of which are private



*Credit line EBRD household + grant from IFK*

(2)

EBRD is financing with 50 mln euro EE projects at household via opening of CL in a couple of Bulgarian banks for purchasing and installation of devices, equipments and materials.

- 10 mln grant from IFK for finance structuring of the projects:
- Reassuring subsidy = 20% from the capital loan, but up to 850 €
  - Technical assistance delivered

Scope of loans: 500÷5000 euro for 5 years.

Credit receivers: household, associations of energy consumers- floor owners.



## *Credit line EBRD household + grant from IFK*

Technological scope of projects:

- isolation (walls, roofs, framework windows );
- glass packages (EE window frames);
- EE gas boilers and heaters ;
- EE stoves and biomass boilers ;
- solar collectors for hot water;
- Thermal pumps fro heating and cooling;

about. 20 000 projects will be financed;

[www.reecf.org](http://www.reecf.org)



# ***Credit line EBRD household + grant from IFK - RESULTS***

- Submitted loans by now – 9,7 mln leva
- Submitted grant by now – 1,7 mln leva
- Distribution :
- 55% for replacement of windows framework
- 10% for thermal pumps
- 11% - gas boilers
- 14% - wall isolation

[www.reecl.org](http://www.reecl.org)

# Energy performance contracting

- ***Contemporary economic mechanism for implementation of EE measures***

Complete or partial financing, delivered by ESCO company based on an energy performance contracts.



# Start phase in Bulgaria

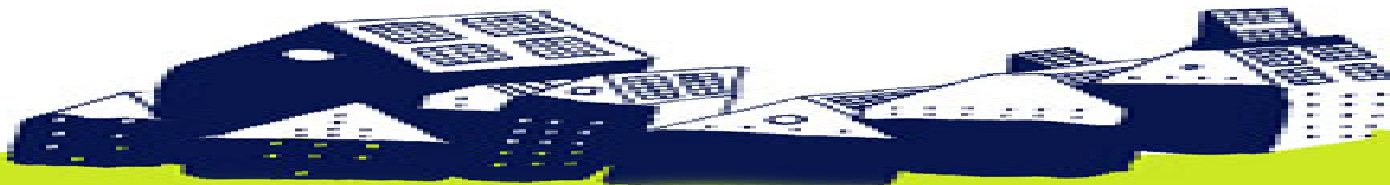
- **A few ESCO companies**
- **A few refitting projects in Sofia, Plovdiv and Radomir.**
- **Small sized projects - 60-80 000 euro**
- **Complete package of EE measures**
- **Realized savings of electrical and thermal energy – 40%**
- **Pay back period- 5-7 years**
- **Repay via savings realized.**



## Finance incentives for receiving a category of certificate for energy performance of buildings

Law for local taxes and fees , Art.24,1,18 envisages real estate tax exemption for old dwellings with certificates, issued under the EE law and the Ordinance for building certification for a duration of :

- 10 years at certificate category A ;
- 5 years at certificate category B.





**Bulgarian EE Fund, based on the EE Law**  
**[www.bgeef.com](http://www.bgeef.com)**

*The starting of BEEF is 1 September 2005.*

- statute. Juridical person : (independent public- private organization );
  - revolving fund ;
  - capital basis of 17 mln euro :
- it will deliver a non- free support for the realization of EE projects in all sector of energy consumption :
  - IN BUILDINGS**
  - INDUSTRIAL PROCESSES**
  - MUNICIPAL SITES AND EQUIPMENTS**
  - OTHER CASES OF END ENERGY CONSUMPTION**
- structure of the support : loans and/or guarantees (approximately 1:1).



Bulgarian EE Fund, established under the EE Law

## Terms for selection of projects

- at least 50% from revenues of each project should be generated from measured savings of energy;
  - to implement already proved technology
- size of projects : from 15 000 to 1.5 mln leva
  - own participation of credit receiver:
- more than 25% at financing from BEEF only
  - pay back period  $\leq 5$  years



**Thank you !**

**[WWW.SEEA.GOVERNMENT.BG](http://WWW.SEEA.GOVERNMENT.BG)**

**Energy Efficiency Agency**

**Ministry of economy and energy**