

A Household Energy-Saving Initiative for Ukraine

Michael Emerson and Vladimir Shimkin

No. 408 / May 2015

Abstract

The wastage of energy in the household sector in Ukraine is of huge proportions, as a result of a long history of heavily subsidised prices and lack of investment to modernise the primitive (single-pipe) plumbing systems in Soviet-era apartment blocks. Currently household gas-heating prices are at last being raised to full import cost recovery levels, with compensatory income support measures for poor households. However this has not yet led to investments in basic energy saving (double-piping, metering, thermostatic controls, double-glazing of windows, etc.), because there are too many poor people who cannot afford to participate in collective or individual investments, and prevent multi-family apartment blocks from taking collective investment decisions. We therefore sketch out a proposal in this paper for funding energy-saving investments by a combination of loans and – for poor households – grants. The EBRD has already prepared a scheme of this kind, although nowhere near on a scale needed to have a transformative impact, and so it is proposed that the EU amplify the initiative with large-scale grant funding. The technical norms for such an initiative are specified in EU directives, with which Ukraine will become gradually compliant under its Association Agreement with the EU. Investment in household energy-saving would at this time be a no-regrets initiative, making a precious contribution to recovery of the economy at local levels at a time when the business climate is depressed by war and financial instability. This proposal would also generate geo-political benefits, since if Ukraine approached European energy-efficiency standards, it would no longer have to import gas.

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ISBN 978-94-6138-461-4

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1. Context

Ukraine's economic and social situation is in dire straits. The remarkable democratic renewal of its political leadership over the last year is at risk if significant support measures do not visibly begin to arrive on a timescale that is far shorter than that required to work out and implement a comprehensive medium- to long-term reform agenda.

While the IMF has been extending crucial macro-financial assistance to Ukraine with some co-financing from the EU, there is a specific need for Ukraine's 'European choice' to be supported by the EU in a manner that visibly reaches the grass-roots of the population fast, and on a scale that goes beyond symbolism, i.e. it should be macroeconomically significant.

Within the landscape of basic economic and political challenges, the Ukrainian energy sector is of crucial significance: Ukraine has had until now the lowest household gas prices, the highest level of energy wastage and (until now) the highest level of state corruption in the industrialised world. Moreover the level of minimum incomes (state pensions, for example) is so low that a large share of the population could not conceivably afford to pay market energy prices, notably for gas-fired household heating at present levels of consumption, and even less to pay for energy-saving investments in their houses or apartments.

In its February 2015 'Letter of Intent' to the IMF, the government of Ukraine has pledged to raise household gas prices to parity with import costs, which was part of the conditions attached to the IMF's decision on 12 March to grant an Extended Fund Facility Arrangement to Ukraine.¹ Actual prices were increased 285% in early 2015, and will reach 75% of import cost levels by April 2016, before reaching 100% parity by April 2017. This will permit the progressive elimination of state budget subsidies to Naftogaz, whose deficit in 2014 amounted to 5.7% of GDP, and is expected to decline to 3.1% of GDP in 2015, and then to 0 in 2017. At the same time, these huge budget savings will permit an expansion of social assistance to poorest households who would be unable to afford the price rises. Such benefits rose from 0.4% of GDP in 2013 to 1.3% in 2014, and will further increase alongside the price rises in 2015 through to 2017. However these increased expenditures will be far less than the savings to the budget from eliminating subsidies to Naftogaz.

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¹ IMF, Letter of Intent (by the government of Ukraine), Memorandum on Economic and Financial Policies & Technical Memorandum of Understanding, 27 March 2015; Conference Call on Extended Fund Facility Arrangement with Ukraine, 12 March 2015.

These measures for the reform of gas prices and accompanying social assistance, fundamental and long overdue as they may be, do not address the remaining huge problem of funding energy-saving investments in low-income households. There is help to households to meet their rising energy bills, but this is nowhere near enabling poorer households to invest in energy saving. As a result, the price reforms will be far from fully effective in inducing households to save energy. The present paper therefore sketches an initiative aimed at breaking this log-jam with a large-scale grass-roots energy-saving action at the household level, which would have to be substantially grant-funded by the EU and its member states.

This would be consistent with commitments being made by Ukraine in the context of its Association Agreement and Deep and Comprehensive Free Trade Area with the EU, signed in June 2014 and currently in the course of ratification. The Agreement foresees approximation by Ukraine on many EU technical standards and regulations, including for energy efficiency, and notably Directive 2002/91/EC on the Energy Performance of Buildings, for which the implementation delays are from five to eight years. This directive, and another one on Energy End-Use Efficiency (2006/32/EC) are of strategic importance for the EU's energy-saving objectives. The implementation periods in the EU itself are quite long, extending in some cases to 2020. Both have proved difficult to implement in many member states, and have recently been replaced by updated directives.² The new directives introduce the concept of 'Nearly Zero-Energy Buildings' (NZEB), which will become mandatory for new buildings or major renovations by 2020, albeit with a number of provisions allowing for flexibility.

Box 1. Main provisions of EU energy-efficiency directives

Energy Performance of Buildings Directive

- Methodology for calculating energy performance of buildings
- Minimum standards for energy performance of new buildings or major renovations
- Energy performance certificates upon sale or rental of buildings
- Inspections of boilers over 15 years old, and air-conditioning systems
- 'Nearly zero-energy' standard for new buildings by 2020, with principle of cost-optimality
- Retro-fits to cover 2-3% per year of building stock, up from present 1%

Energy-Efficiency Directive

- Long-term strategy required for overview of housing stock, policies for cost-effective renovation and expected energy savings
- Central government to refurbish 3% of buildings per year
- Energy saving schemes to achieve reductions of consumption of 1.5% per year
- With use of flexibility/exemptions this becomes 0.8% per year.
- Smart meters to aid better management of energy consumption
- Financing facilities from EU of 23 billion euro for 2014-2020
- Unspecified share of €315 billion investment package of the Juncker Commission

² The new Energy Performance of Buildings Directive 2010/31/EU and the new Energy Efficiency Directive 2012/27/EU. For an analysis of the implementation issues posed by these directives, see Tania Zgajewski, "The Energy Performance of Buildings: Promises Still Unfulfilled", Egmont Paper 78, Academia Press, May 2015.

Definition of the ‘Near Zero-Energy Building’ concept is technically difficult and subject to many variations. However a central indicator is that buildings should emit no more than 3kg of CO₂ emissions per square meter per year.³ The importance of this principle for the years ahead is illustrated by the estimate that if the EU is to achieve its objective of reducing greenhouse gas emissions by 80% by 2050 in comparison with 1990 levels, this would require a 90% reduction from the buildings stock, which would be consistent with the 3 kg standard overall. But this will require huge investments, on the scale of around €62 billion per year in the EU as a whole.

Ukraine’s progress and problems in implementing the above directives have been analysed in some detail by the Energy Reforms Coalition (a Ukrainian NGO).⁴ This analysis shows that progress is underway at the level of legislation, but the problems of concrete implementation remain formidable, especially at the level of Soviet-era apartment buildings. This in turn inevitably leads into issues of financing, to which we return below.

Beyond Ukraine, these directives are also inscribed in the Association Agreements of Moldova and Georgia with the EU. It would be of interest to make comparisons with the energy-efficiency standards and regulations being pursued elsewhere in the post-Soviet space, and notably in the Eurasian Economic Union states.

2. The energy-saving landscape in Ukraine

The energy-saving landscape in Ukraine has recently been thoroughly surveyed in a project of the Energy Charter secretariat,⁵ as well as by the International Energy Agency⁶ and the UN.⁷

The Ukrainian economy’s energy intensity (of 0.4 kg of oil equivalent per \$ of GDP) is comparable to that of Russia, but without of course the latter’s natural-resource endowment. The Ukrainian energy intensity is twice that of the United States, which is also an energy-rich economy. Comparisons with Germany and Japan may therefore be more relevant, and here for both cases Ukraine is three times more energy intense. This gives a long-term perspective of the potential for energy-saving.

The 2012 study by the International Energy Agency (IEA) advanced more modest numbers for Ukraine’s energy -saving potential, of one-quarter, or 27 million tonnes of oil equivalent. Ukraine’s own energy strategy document of 2012 aims a bit higher, with a comprehensive programme of energy efficiency that would cut energy consumption by 30-35% by 2030.

The household sector in Ukraine sees 52.5% of the population living in detached privately owned houses. Of the remaining 47.5% of the population, the vast majority (93%) live in owner-occupied apartments in 240,000 apartment blocks, of which 70% date back to the Soviet period. (See Annex A for basic data on the housing situation in Ukraine and cost estimates of energy-saving investments.)

³ For a detailed study of NZEB see “Principles for Nearly Zero-Energy Buildings – paving the way for effective implementation of policy requirements”, Building Performance Institute Europe (BPIE), 2011.

⁴ Energy Reforms Coalition, “Ukraine and the Energy Community – It’s High Time”, Kyiv, 2014.

⁵ Energy Charter Secretariat, “In-Depth Review of Energy Efficiency Policy of Ukraine”, 2013.

⁶ International Energy Agency, “Ukraine 2012’, Energy policies beyond IEA countries”, series, 2012.

⁷ United Nations, “Financing Energy Efficiency and Climate Change Mitigation: A Guide for investment in Belarus, Bulgaria, Kazakhstan, Russia and Ukraine”, 2005.

This immediately highlights the need for two different programming concepts, one adapted for individual houses, and the other for apartment blocks where much of the action has to take place at the level of the collective unit.

The technologies of household energy saving are well established, and range from the simple to the technologically sophisticated and comprehensive thermal modernisation. The simple and basic needs are for insulation of the external envelope for the building (double-glazed windows, wall and roof insulation), metering and thermostatic control of the heat supply into the building. More sophisticated systems involve installation of heat exchangers with weather-sensitive automatic temperature control systems, modernisation of heating systems inside the building from one-pipe to two-pipe systems, and renewal of radiators and piping. Going further there can be installation of mechanical ventilation systems with recuperation; and further still, replacement of heat-generation systems of buildings with more efficient boilers, and the introduction of renewable-energy sources.

For old apartment blocks of the Soviet period, there is the major problem of dealing with the 'single-pipe' system of central heating distribution inside the building, which cannot be fixed at the level of the individual apartment. As a result, in the standard Soviet-era apartment block, the only option for regulating the temperature of the apartment is by opening or closing windows. The large majority of apartment blocks in Ukraine are still in this condition. Making matters worse there is in many cases that rely on district heating, with the impossibility to even control thermostatically the intensity of heating even at the level of the entire apartment block. The suppliers of district heating in principle adjust for changing temperatures, but this is often done very crudely, such that when the weather warms up, the windows have to be opened to reduce overheating. The commercial incentive for district heating enterprises is to supply and sell as much as possible, so they cannot be counted upon to minimise heating rigorously. This problem, however, is to some extent being addressed by a project led by the European Bank for Reconstruction and Development (EBRD) for modernising district heating systems.

There are two main options for retro-fitting the standard apartment blocks.

The first option is to install an individual heating unit (IHU) in an apartment block, that includes metering and heat exchangers, together with a weather-sensitive automatic temperature-control system, plus replacement of the single-pipe system with a double-pipe system, which then permits metering and thermostatic control at the level of the individual apartment, and accompany that with the insulation of external walls and roofing. However, the change to the piping system is an operation that requires the cooperation of all apartment owners, and a lot of 'dirty work' in each apartment. This leads into a different category of problems, namely of the governance systems in apartment blocks (on which more below). The cost of this option tends to be in region of €100 per m², thus around €5,000 per standard apartment of 50m². Detailed costings are given in two case studies reported in Tables 4 and 5.

The second option is to do the same for the external insulation of the building, the individual heating unit (IHU), metering, heat exchangers and automatic temperature control system for the apartment block as a whole, but without fixing the single piping systems. The costs here will be lower, about €80-90 per m². This can achieve substantial energy savings, but still leaves much to be done within individual apartments, which would be only feasible with double-pipe distribution systems.

Double-glazing of windows, insulation of balconies and external wall insulation can of course be done technically at the level of the individual apartments, but here there is also the

issue of aesthetics of doing this in a haphazard manner, as well as the risk of damaging and endangering walls due to temperature and moisture variations, versus doing it coherently for the whole apartment block.

The costs of energy saving for individual houses is likely to be higher, with more external walls and roofing per housing unit compared to the average apartment. However it is simpler to establish incentives for individual action. Comprehensive studies of cost estimates for the average house seem so far unavailable, but for purposes of macroeconomic estimation we suggest an estimated €120 per m².

An example cited in the Energy Charter study⁸ concerned the thermal upgrading of a 150-apartment block in the city of Nizhyn, where energy consumption was halved. A similar result was obtained at an apartment block in the city of Lutsk, by means of external insulation and renovation of windows and heating controls. In another project the evaluation of the thermal upgrading of nine apartment blocks showed again a 50% reduction in energy consumption. But the costs of these cases are not available to us.

An attempt is made in Box 2 to sketch the macroeconomic dimensions of a comprehensive energy-saving programme for the housing stock. Assuming unit costs of €120/m² for houses and €100/m² for apartments, and investment in 2% of the housing stock per year, the annual investment costs would be €1.2 billion for the houses and €0.8 billion for the apartments. Some such investments are of course ongoing in any case. A rhythm of 2% per year, meaning 50 years for a fundamental transformation of energy efficiency on a national scale, may seem insufficient. The practicalities of more precise and ambitious targets would need further analysis.

Box 2. Some numerical parameters for macro-scale energy-efficiency investment in the household sector

Housing

6.5 million houses, housing 23.9 million people, 622 million m²
 Suppose €120 m² of expenditure for basic energy-saving investments
 = €74 billion of total costs
 Suppose only 80% of all houses need this expenditure, = €60 billion
 Suppose 2% per year, = €1.2 billion

Apartments

240,000 apartment blocks, housing 21.7 million people, 464 million m²
 Suppose €100/m² of expenditure for basic energy efficiency investments
 = €46 billion of total costs
 Suppose 90% need this expenditure, €41 billion
 Suppose 2% per year, = €0.8 billion

3. One babushka, 13 million pensioners

To take a real case, a pensioner is living in her village house off her minimum state pension of a little under 1,000 hryvna per month, or €50 at the January 2015 exchange rate (which suddenly further dropped by 30% on 5 February 2015). In 2013, this pensioner's gas-heating bill amounted to 20% of her pension. The gas prices were raised much more than the pension

⁸ Energy Charter Secretariat, op. cit., p. 73.

in 2014, reaching the level of \$111 per m³, and now 40% of her pension. The further price rises pledged in the Letter of Intent to the IMF will drive these heating costs way above the average pension level, and it is here that budget subsidies have to intervene as a partial cushion.

There are 13 million state pensioners in Ukraine, of whom 9 million receive pensions under 1,500 hryvna, with the largest numbers clustered around the 1,000 to 1,300 hryvna level (See Table A6 in Annex A). With 13 million pensions averaging 1,100 hryvna, the total bill for the budget at the current exchange rate amounts to €7.1 billion⁹. This implies that the gas bills of the pensioners at the beginning of 2015 amounted to around €3 billion. If the household gas prices were only multiplied by three, the compensation to state pensioners to maintain a constant level of gas heating would be €9 billion. If gas consumption was cut by 50% (an achievable figure after some years with extensive investments in energy saving), the pension compensation bill of the budget would still be around €4 to 5 billion.

On the other hand, the gas price rises will enable subsidies to Naftogaz to be phased out, and these budget savings should in principle be much larger than the compensation paid to poorer households. It is beyond the scope of the present note to estimate the precise budgetary calculus of the amount of savings in subsidies to Naftogaz. However, the broad picture here is essential background to the case for a large-scale and heavily subsidised energy-saving programme, which is in any case a strategic necessity for the Ukrainian economy.

Pensioners are not the only poor people in Ukraine. The unemployment rate is 8% of the labour force, amounting to 1.7 million people. Unemployment benefits are generally higher than the pension level, varying according to previous salary levels.

4. Governance of multi-apartment buildings.

Energy-saving investment in apartment blocks requires collective decision-making. There is a form of legal entity established in Ukrainian law since 2001, namely the “Law of Ukraine on Associations of Co-owners of Multifamily Buildings”.¹⁰ However only about 17,000 of the 240,000 apartment blocks have adopted this practice, and the numbers are not growing fast. This is at least in part because of the large number of very poor people who could not afford to share in investment expenditures, with more well-off people not wanting to run the risk of having to bear financial responsibility for defaulting neighbours.

A new (draft) law prepared in 2014 is intended to facilitate decision-making and management in multi-family apartment blocks – “On Specifics of the Right of Ownership in Multi-Family Apartment Buildings”. This law, which has not yet adopted, would facilitate major investment decisions such as for energy efficiency by allowing them to be adopted by a 75% majority rather than 100% as in the past, with lesser decisions to be adopted by a simple 50% majority.

Still it would remain crucial for subsidies to be available to carry the costs for very poor people, and thus create effective incentives for apartment blocks to get properly organised. Subsidies of approaching 100% would be necessary for households whose only source of income is the state pension or other minimal state welfare benefits.

⁹ Exchange rate: €1 = 20 hryvna. 13 million × 1,100 hryvna = 14.3 billion hryvna / 20 = €7.1 billion.

¹⁰ For the text of the law in Ukrainian, see <http://zakon2.rada.gov.ua/laws/show/2866-14>

5. Sketch of a programme

It is proposed that there be a new and ambitious grass-roots scheme to proceed with energy saving at the level of households, alongside or building on existing and proposed initiatives of the EBRD.

Taking stock of existing programmes, there is already a valuable initiative in operation, administered by the EBRD and called the East European Energy Efficiency and Environment Partnership (E5P), supported by a coalition of donors led financially by grants from the EU and Sweden, with the EBRD also contributing loan funds. Until 2013, E5P had received €93 million of grant pledges and had launched nine projects, mostly for the modernisation of district-heating system. This is a complementary programme to the present idea for a household scheme, since E5P seeks to improve the efficiency of district-heating systems that deliver heat into buildings, but without addressing the energy efficiency of the buildings themselves.

During the time that the present paper has been under preparation, we have become aware of another proposed EBRD project, described in Annex A. This would mobilise €100 million of loan funds, with the objective of adding another 20-30% as much in grant funding from the EU and other bilateral donors. The details of this project are not yet announced, and it will be important to carefully adapt the mechanism for mixing the loans and grants to the realities of Ukraine's Soviet-era apartment blocks. The easiest solution administratively would be ease the terms of loans to housing associations (i.e. legal entities administering multi-family apartment buildings) with the 20-30% grant elements. But that would not solve the problem of the poorest households who are in no financial condition to take on any loans. For the babushka on state pension, the grant element would have to be close to 100%. Such grants could be restricted to households already in receipt of social-welfare benefits. Without such arrangements, it is foreseeable that many or most apartment buildings would not be able to agree to apply for loans, even when coupled with a general 20-30% grant element.

The EBRD initiative, with a €100 million in loans plus the 20-30% of grants, would be a valuable pilot operation. But assuming €5,000 of expenditure per apartment, the €100 million would only reach 20,000 apartments. But if successful, it could lead on to the bigger dimensions that are necessary for a transformative strategy. Supposing an expansion of operations to increase the scale and notably the grant component, one might suppose a programme funded to the level of €500 million for both grants and loans, which could upgrade 200,000 apartments, and thus become something more than a pilot operation.

As and when a fully-fledged programme were set into motion, regional offices would be established at the level of all 23 oblasts, each controlling up a fleet or around 10 'Europa buses', say 200 buses in total. The teams in the buses, consisting of Ukrainian NGO personnel and EU energy experts with knowledge of Slavonic languages, would be responsible for disseminating information on the categories of expenditures eligible, and for explaining application forms. The 'Europa buses' would also serve as information points for the new EU-Ukraine Association Agreement and its DCFTA, thus aiming to correct the deficit of knowledge about what Ukraine's European choice means in practice, with this communications activity going hand-in-hand with delivery of tangible economic benefits at the grass-roots level.

Commitments of €1 billion of funding might be made in the first instance for three years. Such sums should be made available out of the €15 billion indicative pledge made by the EU

to Ukraine in 2014, this sum including loan contributions from the EBRD and the EIB (European Investment Bank) as well as grants from the European Commission's budget.

If the scale of operations increased along the lines of these numerical examples, there would be the question whether the EBRD should manage the executive functions. The EBRD sees itself essentially as a bank, rather than as a grant-giving agency. An exception might be made here, however, because of the exceptional importance of imparting a boost to the Ukrainian economy at a time when loan operations are very difficult to launch (exchange risk factor, paucity of bankable borrowers, etc.). Actually a precedent exists in the €2 billion Chernobyl project, in which the EBRD executes this (largely EU) grant-funded operation to install a secure containment vessel over the stricken nuclear power station.

6. Economic impacts

The energy-saving investments would have a significant and direct impact on the local economy, with a major boost for employment in many building and related service trades. In addition there would be increased investment in upstream industries for basic material inputs (insulation, metering, radiators, thermostatic controls, boilers, etc.) as well as more advanced energy-saving processes. Direct investments from state-of-the-art EU enterprises would contribute. The state of the industries and service sectors that would be at the heart of the programme would need to be assessed, with opportunities for foreign direct investment advertised and training courses organised for the skills required.

7. The separatist areas of Lugansk and Donetsk

Operational centres for both energy saving and income maintenance would in any case be established in government-controlled parts of Lugansk and Donetsk oblasts. In principle, an offer would be made to extend the energy-saving operations also in the separatist territories, on the condition that the local powers guaranteed the security of personnel administering the programme, and that a reasonably orderly execution of investments could take place. These conditions do not exist at present.

8. Conclusions

Expenditure of economic aid from the EU to Ukraine at this time on energy saving at local household level would be of exceptional value for several reasons:

- In the current war situation, large-scale private investment by industry and service sectors is reduced to little or nothing, since the risk and uncertainty factors are so acute.
- Investment in energy saving is a no-regrets policy, to enhance Ukraine's energy security and stop expensive waste.
- Household energy saving can create many jobs throughout the country in the building trades, and stimulate investment in the production of energy-saving materials and equipment.
- The basic technology is mature and easily accessible.
- The technical norms for such programmes are specified in various EU directives, with which Ukraine is committed to become compliant over a period of years.

- Such programmes, subsidised by the EU and its member states, would be delivering visible benefits to the population, and thus a much-needed support for Ukraine's European choice.

We have sketched in this paper a grassroots energy-saving programme on an economically significant scale, to be funded primarily by the grant funds from the EU and its member states, alongside loan and investment funds from the EBRD and EIB. The funds would be delivered directly at the grass-roots level, without transiting through central government. When the programme matures to full speed, its delivery mechanism would consist of a network of regional offices in all oblasts, with 200 'Europa buses' circulating in all oblasts to promote and help deliver the household energy-saving programme, as well as serve as communications vehicles for Ukraine's Association Agreement with the EU.

The programme would naturally complement the existing E5P programme, initiated by Sweden and administered by EBRD, which concentrates on district-heating projects, and another EBRD project for household-energy saving, which is in preparation, and will require grant funding to complement loans.

Annex A. Basic data on the housing situation in Ukraine and cost estimates of energy-saving investments

Table A1. Breakdown of the housing stock of Ukraine (2011)

Type of housing stock	Area, millions m ²	Number of Buildings	Population, thousands
Individual houses	622	6,500,000	23,913
Multi-family Buildings	464	240,000	21,719
Total	1,086	6,740,000	45,632

Note: Multi-family buildings including 82,500 'multi-story' buildings, the latter defined as those with five floors or more, the rest being one- to four-story multi-family buildings.

Source: Minregionbud.

Table A2. Housing stock ownership in Ukraine (2011)

Type of housing stock ownership	%
Private housing	97,5
State housing	0,2
Municipal housing	2,3
Total	100,0

Source: Minregionbud.

Table A3. Breakdown of multi-family building housing stock of Ukraine by the period of construction (2012)

Construction period	Area, millions sq.m.	%
Before 1961	76,8	16
1961-1970	71,4	15
1970-1980	105,1	22
1981-1990	134,5	27
1991-2000	62,1	13
2001-2011	34,7	7
Total	484,6	100,0

Source: Minregionbud.

Table A4. Calculations of the cost of energy-efficiency rehabilitation of a pilot project for 5-story residential panel building in Kyiv

Calculation of cost for EE rehabilitation of a pilot project building			
	Five storey panel building, 6 entrances, 120 apartments		
	Total heated area, sq.m.	5 700,00	
	Total cost per sq.m., UAH	1 158,51	
	Euro/UAH exchange rate	10,90	
	Total cost per sq.m., Euro	106,29	
		area, sq.m.	UAH, with VAT
1	Building envelope structures:		
	Replacement and insulation of roof	1 455	1 114 390
	Facade insulation	3 745	1 555 840
	Basement slab insulation	1 430	672 120
	Replacement of windows	643	1 425 776
	Subtotal		4 768 126
2	Individual heating unit:		
	Individual heating unit:		258 227
	Metering device		48 779
	Subtotal		307 006
3	Automated monitoring and control system		96 362
4	Modernization of heating system		180 756
5	Mechanized ventilation system		576 935
	Subtotal		854 053
6	Replacement of lighting system		11 869
7	Other works		390 704
8	Additional works		46 744
9	Design works		225 000
	TOTAL		6 603 502

Source: Minregionbud.

Table A5. Calculation of the cost of energy-efficiency rehabilitation of a pilot project 16-storey residential panel building in Kyiv

Calculation of cost for EE rehabilitation of a pilot project building in Kiev			
16 storey panel building, built 1990, 112 apartments			
Total heated area, sq.m.	9 021,00		
Total cost per sq.m., UAH	880,86		
Euro/UAH exchange rate	10,90		
Total cost per sq.m., Euro	80,81		
	area, sq.m.		UAH, with VAT
1	Building envelope structures:		
	Replacement and insulation of roof	1205,18	748 867
	Façade insulation	6732,36	2 602 290
	Basement slab insulation	720,18	206 821
	Replacement of windows	1798,756	2 033 160
	Subtotal		5 591 138
2	Individual heating unit:		
	Individual heating unit:		241 081
	Metering device		37 772
	Subtotal		278 854
3	Automated monitoring and control system		202 098
4	Modernization of heating system		180 756
5	Mechanized ventilation system		190 859
	Subtotal		573 713
6	Replacement of lighting system		11 869
7	Other works		1 215 672
8	Additional works		0
9	Design works		275 000
	TOTAL		7 946 246

Source: Minregionbud.

Table A6. Numbers of people who receive pensions from the Pension Fund (data on 01.01.2014)

Gryvna - UAH	Number of people who receive pensions	% of the total amount of people receiving pension
Less than 500	15,838	0,12
501 - 600	33,318	0,24
601- 700	63,385	0,47
701 - 800	4,248	0,03
801 - 900	3,731	0,03
901 - 1000	881,636	6,51
1001 -1100	2,743,053	20,27
1101 - 1200	2,804,960	20,72
1201 -1300	1,796,685	13,28
1301- 1400	830,805	6,14
1401 -1500	607,459	4,49
More than 1500	3,748,190	27,70
Total	13,000,000	100,00

NB: 13 million pensioners x1,100 gryvnas per month (= €660 per year) = €8.5 billion.

Annex B. EBRD project under preparation for a Ukrainian Residential EE Financing Facility (UREEFF)

Target board date: 24 June 2015

Project Description. The EBRD is considering establishing the Ukrainian Residential Energy Efficiency Financing Facility (“the Facility”, “the Framework” or “UREEFF”) in the amount of up to \$100 million. The funds will be made available to Participating Financial Institutions (“PFIs”) in Ukraine for on-lending to eligible private sector sub-borrowers for sustainable energy (“SE”) investments in the residential sector. To minimise the Foreign Currency (FX) conversion risk of the loan proceeds into local currency and on-lending to the end-borrowers, EBRD credit lines to PFIs will be supported by a partial hedge against local currency devaluation (up to a predefined maximum devaluation ceiling) expected to be funded by a grant from the Clean Technology Fund (“CTF”). The credit line will be also complemented by Donor funds to support the implementation of Technical Cooperation (“TC”) and non-TC incentive mechanism of the Facility. Potential identified donors include: CTF, Eastern European Energy Efficiency and Environmental Partnership (“E5P”), the German Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (“BMUB”), and EBRD-Ukraine Stabilisation and Sustainable Growth Multi-Donor Account.

Transition Impact. The Transition Impact of the project will derive from demonstration effects of sustainable energy investments and market-based behaviour patterns, skills and innovation. This project is the first residential Sustainable Energy Financing Framework in Ukraine. It will aim at demonstrating the benefits of rational energy utilisation in the light of the rising energy costs and unreliability of the energy supply in the country. The UREEFF will generally encourage PFIs to maintain lending to the retail segment and will allow expanding the financing to previously untapped market segments. The Facility will also generate Transition Impact through dispersion of skills by supporting PFIs in learning how to tap into less conventional sectors such as residential energy efficiency and to evaluate the risks and benefits associated with small scale energy efficiency investments. The UREEFF will also ensure transfer of skills to sub-borrowers and project specifiers (i.e. local engineers/architects/designers).

Environmental Impact. Categorized FI. All PFIs under the UREEFF will be required to comply with PRs 2 and 9. Any new PFI will be required to complete the Environmental and Social & Human Resources Due Diligence Questionnaires for ESD to assess compliance against the PRs. All PFIs will be required to ensure that sub-loans comply with the requirements of PR9, the eligibility criteria for residential EE and submit Annual Environmental and Social Reports to the Bank.

Technical Cooperation. The Facility will be supported by a comprehensive TC package which is anticipated to be funded from the Clean Technology Fund, the EBRD-Ukraine Stabilisation and Sustainable Growth Multi-Donor Account, German Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The TC will facilitate (i) transfer of skills to PFIs and sub-borrowers, (ii) awareness raising among a wider group of stakeholders, (iii) demonstration of the financial benefits of rational energy utilisation and in turn, contribution to the transition impact of the Facility.

General enquiries: EBRD project enquiries not related to procurement: Tel: +44 20 7338 7168; Fax: +44 20 7338 7380 Email: projectenquiries@ebrd.com

The above is a shortened version of an EBRD announcement, fully available at <http://www.ebrd.com/work-with-us/projects/psd/ukrainian-residential-ee-financing-facility.html>



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