

EFFECTIVE ENERGY EFFICIENCY POLICY: THE BASIS FOR MODERNIZING UKRAINE'S HOUSING SECTOR

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Policy paper

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EXECUTIVE SUMMARY

Typical of Ukraine's heating and power generation system is the considerable losses at all stages of operation: from generation to distribution to utilization in residential complexes. Indeed, it is the least efficient system in all of Europe. Today, Ukraine spends 33% more fuel to produce a single gigacalorie of heat, demonstrates average 7-8 times higher heat distributions systems loss and 3-5 times higher energy consumption in buildings than other European countries.

At this point, Ukraine has adopted its third energy conservation program, named **"The Targeted State Economic Program for Energy Efficiency for 2010-2015."** Yet, this program provides no relevant financial, human or incentivizing resources, nor does it offer any investment conditions. At this stage, the implementation of this latest program is under serious threat.

Ukraine's biggest consumers of heating power (natural gas) are its cities. According to expert estimates, the cost of heating power for public facilities has gone up from 800% to 1,300% since 2006, depending on the city, while the share of spending on energy in local budgets has grown from 2.5% to 7.5% and continues to rise.

If nothing is done at the state level to undertake systemic reform in terms of energy conservation in the residential services sector (RSS), **the municipal heat generating systems in its cities could go into complete collapse.** This means that consumers will find themselves unable to pay for heating power (natural gas), because its price continues to rise while utility companies will be unable to deliver it because they will run out of money. The time could come when urban Ukrainians will find themselves without hot water, without the ability to cook food, and without heating in wintertime.

Why does Ukraine continue to tolerate serious losses in the energy efficiency of its RSS?

- ❖ no tracking systems: as of 2012, more than 40% of heat generating enterprises and 70% of consumers were not equipped with meters to measure the use of heat;
- ❖ no means of regulating consumption and enormous heat loss because of the outer walls of residential and public buildings;
- ❖ unfair competition on the energy resource market;
- ❖ focusing public spending on modernizing generation rather than reducing consumption;
- ❖ little focus on upgrading heat distribution systems that are highly leaky;
- ❖ no system of incentives for comprehensive thermal upgrades of buildings;
- ❖ uncompetitive privatization of power and cogeneration assets and non-targeted spending of the capital it generates;
- ❖ a long and costly system for designing and costing documentation, approvals and oversight;
- ❖ current public procurement system makes them more expensive than market coal offer;
- ❖ a lack of understanding of the municipal energy management importance;
- ❖ low awareness in energy saving practices among the managers of the public institutions, which consume a substantial part of the energy in the cities.

Recommendations for improving RSS energy efficiency policy

For the Government:

Establish a series of incentives and compensatory mechanisms to launch a national-scale program to reduce energy consumption and losses through thermal upgrading based on an integrated management system in the country's power industry and maximal self-sufficiency through the resulting savings.

Financial support:

- set up financial incentives of thermal upgrades by refunding a portion of investor taxes paid in the process of insulating buildings;
- direct IMF credits to set up revolving funds that could issue loans for municipal energy-conservation programs. Low interest rates would ensure that ROI periods are shorter. The program should be completely self-sufficient while servicing the loans will not burden Ukraine's State Budget. A broad-based thermal upgrading program will make it possible to engage the construction industry, which currently has no demand for new housing and could generate hundreds of thousands of new jobs.

Non-standard sources of additional financial support – use funds from local and municipal Environmental Funds and by selling the attics of condominium buildings for the construction of penthouses and using the resulting revenues to modernize the buildings themselves. Particular attention should be paid to reducing the red tape in putting together such projects and reducing the cost of project documentation.

What to avoid – stop the practice of privatizing power generation and distribution infrastructure to fill in budget holes. All capital generated through privatization should be channeled into energy consumption reduction programs.

What might the systemic reform of RSS energy efficiency policy yield?

Every year, Ukraine's residential, community, educational and other public institution heating system and its public catering system consume nearly **30 billion m³ of natural gas**. Yet Ukraine extracts nearly **20 billion m³** of natural gas itself. The remaining **10 billion m³** it **imports from Russia**.

If RSS energy efficiency policy is systemically reformed by upgrading the entire RSS chain, from thermal generation to distribution to utilization in residential buildings, Ukraine could reduce consumption of natural gas to **15 billion m³**. **This would eliminate entirely the need to import any gas from Russia.**

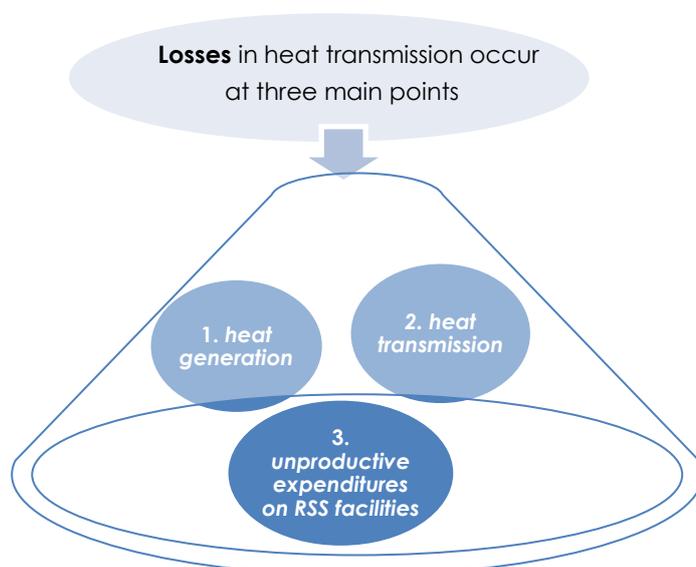
The purpose of this policy paper

The **purpose** of this policy paper is to assess the level of losses of thermal power in both residential and non-residential buildings and the potential level of economies in systems with centralized and independent thermoelectric stations (TES), to identify the reasons for the hold-up in implementing programs for reducing energy use in the residential services sector (RSS), and to offer rational changes in government approaches to launching effective programs for modernizing the cogeneration system and using alternative sources of energy to keep them going.

Energy use in the RSS, comparison to other countries, domestic trends

Every year, Ukraine's heating system for residential, community, educational and other budget-funded facilities, together with public catering services, consumes nearly 30 billion cu m of natural gas. Yet, Ukraine extracts nearly 20bn of natural gas itself, with the remaining 10bn imported from Russia. Most of the country's 30,000 municipal boilers in the centralized cogeneration system are **in critical state**. The equipment in nearly all state-owned boilers—more than 100,000 nationwide—has already **depreciated more than 80%**.

According to data published in December 2011 at a Collegium of the State Agency for Energy Efficiency, losses of both water and heat in these networks are increasing by 1.5-2% annually. This is due to the depreciated state of the networks and the equipment belonging to the RSS providers. At the same time, the Current State Energy Efficiency Program of Ukraine has a declared goal to seriously cut heating losses by 2015.



1. Thermal generation

According to the Association of thermal power companies in Ukraine, nearly two thirds of the country's boilers have a COE below 80%, a third are below 60%, and one tenth are actually below 40%.

“On average, Ukraine consumes one third more fuel to generate a single gigacalorie of heat than any other European country,” Anatoliy Blyzniuk, Ukraine's Minister of Regional Development, Construction and the Residential Services System (RSS), acknowledged in September 2011.

At the gas combustion stage, **30% of the fuel**—for which Ukraine pays with essentially borrowed currency and at a price that is three times higher than what Germany pays for natural gas—goes up in smoke. **Only 70% of it goes to its intended purposes in the nation's boilers.**

2. Heat transmission

A portion of the heat used to warm up the heating system is lost in transmission through the network of underground and above-ground piping. The **official level of permissible heat loss in Ukraine's pipelines is 13%**, but in fact, losses range from 25% to 40%. Thus, of the heat generated by boilers, a quarter is lost during transmission, which means that at 70% of fuel efficiency, only 52.5% is useful by the time the heating gets to the designated building or facility. In other words, **nearly half of the heat is lost before it even gets to the consumer's building.**

By comparison, in neighboring Poland, that 1994 permissible level of heat loss was 13%, but the actual level is currently 3-4%. This means, that Ukraine loses six times more heat during transmission than its nearest EU neighbor.

3. Unproductive costs in the RSS

Heat loss in residential and administrative buildings in Ukraine's cities surpasses that of European levels by 3-6 times. That is, by the most conservative estimates, potential economies in the country's buildings are in the 60% range. If we consider the officially established levels, this means that **of 100 m³ of gas burned to heat buildings, Ukrainians actually only use about 21 m³.** Fully 79 m³ are used unproductively and effectively wasted.

The potential economies are not even across the board, of course. They will depend on the kind of building being heated and the current state of the heating system. The current rate of pay is based on the metric area of the premises and does not reflect the levels actually consumed. This undermines public confidence in the fairness of the rates being charged.

The average consumption of energy in Ukraine's buildings is estimated at around 275 kWh/m², although most of these buildings have poor efficiency ratings, are insufficiently heated and are not comfortable for people to live or work in. On the other hand, some buildings are overheated and consume up to 600 kWh/m². Meanwhile, the rest of Europe is working towards reducing this indicator to around 40 kWh/ m².

POOR ENERGY EFFICIENCY in the RSS

The current system for paying for heating and electricity services rendered is typically opaque, uncompetitive and effectively amounts to state lobbying of the interests of those selling thermal power and gas. As the main consumers of fuel resources, cities were the first to come up against continuous and large rises in rates for electricity and an ever-greater leaching of their financial resources to cover these costs. Ukraine's cities basically have no energy management systems, no qualified energy professionals, and no understanding of the depth of the problem.

The efforts of government agencies are generally aimed at maintaining a reliable supply of the necessary services and covering any shortfalls in revenues in the system to ensure its smooth and safe operation. In this situation, the state effectively takes on all the risks of all sides in the process and compensates the losses of all players on the thermal generation market. Huge sums of money are regularly pumped into the NAK Naftogaz Ukrainy system by the national budget and state banks. Maintaining politically popular low rates for residential users and the free supply of serious volumes of gas to many categories of consumers have conspired to remove any incentive to economize.

ENERGY EFFICIENCY WEAKS:

Lack of metering devices

At the beginning of 2012, more than 40% of domestic cogeneration enterprises were not equipped with metering devices for what they transmitted to the network and accounts were done on a guesstimate basis. In fact, only 31.6% of residential stock is outfitted with meters for heating and only these consumers are paying for actual amounts used. Nearly 70% of heating customers pay on the basis of official norms that do not reflect actual consumption.

According to Derzhkomstat, the state statistics agency, 13.5 million apartments and private houses in Ukraine were hooked up to natural gas in 2011. According to Premier Mykola Azarov, 8.2 million consumers are currently equipped with gas meters, which means that 40% of consumers are not being charged for actual consumption.

Gas rates for various categories of consumers in USD/1,000 m²:

- cost of natural gas extracted domestically US \$30-35
- minimum rate for residential consumers
- average cost of mix of Ukrainian and Russian gas for residential use
- cost of gas for cogeneration plants (TKE) from US \$170 (officially) to US \$760 (in practice)
- cost of Russian gas US \$426 (actually US \$526 without supposedly cumulative discount)
- cost of gas to budget-funded organizations and industries US \$440-600
- cost of gas to metal and chemical industries
- cost of gas to makers of chemical fertilizers US \$280.

Ukrainian and imported gas travels through a single pipeline at seven different rates. Without metering devices at every step, the opportunities for abuse are endless. Moreover, the calculation of rates does not reflect the caloric value of gas from different sources, although chemists say that domestically extracted gas is of better quality—more heat-generating) than the gas Russia exports to Ukraine.

Ukraine urgently needs for its sellers and consumers of gas to all be equipped with meters in order to put a stop to the abuse in the system. But a April 25, 2012 ruling by the National Electricity Regulatory Commission (NERC) requires that all apartments and private houses using natural gas to heat water and prepare food must be equipped with gas meters only by January 1, 2016, while apartments and private houses using natural gas only for cooking must do so only by January 1, 2018. This effectively postpones the regulation of this market by another four to six years, meaning, quite simply, that the Government is incapable of bringing order to this sector and has thus relieved itself of any responsibility for doing so.

no means of regulating heat

Equipping buildings with heat meters will not resolve the problem of regulating consumption, whether in buildings or in apartments. Without meters, often the only way to maintain a suitable temperature in overheated buildings is to open windows, which means that a large portion of the heat is being expended unproductively. Equipping radiators with thermostats could require changing single-pipe risers to dual-pipe risers or even installing individual ones for each apartment.

unfair competition

Unfair competition distorts the energy market and destroys any incentive to economize on fuel or to invest in reducing consumption. Thus, companies that use biomass and alternative energy sources to generate thermal power that they purchase at market prices are forced to compete with enterprises that use gas that they purchase at a discounted rate. Effectively, this gives “green rates” to natural gas rather than alternative energy—moreover to imported gas!

discounts

Some of the general population belongs to a variety of special categories, such as retired military pensioners, who get up to 600 m³ of gas for free. Researchers have been unable to establish the extent of such benefits being enjoyed in Ukraine today.

public funds for upgrading generation rather than reducing consumption

The cost of gas for consumers who have installed individual furnaces is much lower than gas that is being used by cogeneration plants (TKE), raising unrealistic hopes among homeowners that they will be able to economize by leaving the centralized system. Because the country suffers from a myth about the convenience and economy of individual heating system, once gas rates are equalized for all users, a large share of individual consumers will suffer losses. This is situation that could lead to social protests. But offering some users better rates than others undermines competition and eventually will destroy the cogeneration system. Prior to leveling rates, there should be an informational campaign to revive faith in cogeneration utilities, based on the transparency of the operations of these providers.

no system of incentives for comprehensive thermal upgrades of buildings

The Government has failed to set up a system of incentives to encourage comprehensive thermal upgrades of buildings. Oblast-level programs to compensate interest on loans for partial renovations such as replacing windows are inadequate in terms of real timeframes and challenges. Having failed to act effectively, central and local budget organizations are modernizing only on the basis of budget funding, while ordinary consumers have begun the process of insulating multi-unit dwellings, mostly in a fragmentary manner. This kind of insulating distorts the external view of the buildings and speeds up the deterioration of external walls as they are subjected to wide swings in surface temperature. This practice carries the hidden threat of "envelop" construction. Moreover, once the building is completely insulated, all the bits and pieces will likely be removed, which means those who had the initiative will essentially be paying twice.

uncompetitive privatization of power and cogeneration assets and inappropriate use of the capital generated by it

Power industry and cogeneration assets are being privatized in an uncompetitive fashion. At the same time, the money from these sales has been used to cover the budget deficit rather than being invested in upgrading the system and network or the targeted reduction of energy consumption. This kind of approach virtually guarantees that the sector will never be able to get out of its crisis.

aprotracted, costly system for designing and costing documentation, approvals and oversight

One major restriction that even puts the brake on the process is the expensive and time-consuming process of preparing design and cost estimate documentation to install heat meters. The cost of developing technical documentation, evaluating and approving a heating meter is often as much as 50% of the budgeted installation cost and can take up

to five months even with the complete cooperation of the local government office. But the logic of public interest requires that the state intervene in this instance and drastically reduce the cost of such documentation, the number of bureaucrats involved in the process and the time for going through all the procedures. With buildings of a standard design, standard solutions should apply, without any additional technical documentation. Responsibility for the proper operation of the system should belong to the company that installs the equipment.

the growing cost of estimates due to the current state procurement system

The current state procurement system requires that a major part, 80-100%, of the cost of work of thermally upgrading be paid up front. The same is true for other areas involving procurement. Because this kind of work requires that a considerable amount of materials be purchased up front, the risk that payments will be delayed and work held up, even without any corruption—such as official or unofficial fees to the state building inspection agency, the state construction oversight agency and local offices of Government Accountability Administration—involved, contractors normally include up to 40% of such expenses and risks in the contract on the basis of loans.¹By changing procurement procedures in this sector, the state could significantly reduce its costs for energy efficiency measures and get considerably more services for the same money.

lack of understanding of the need for municipal energy management

Today EU cities consume nearly 70% of energy. As Ukraine urbanizes, it is getting closer to this number. However, the country's municipalities have no comprehensive energy management systems. Executive councils have no departments for monitoring energy consumption or reduced energy use, or for planning sustainable urban energy development. Positive examples of cities that have set up such departments—Lviv, Cherkasy, Kamianets-Podilskiy and a few others—show that such departments pay for themselves completely, that there is a need to introduce training for municipalities, to establish job descriptions, and to develop energy management in all cities. In many cities, political stand-offs between mayors and their councils make it impossible to expand staff and set up energy management offices.

little understanding of energy conservation among managers of public institutions that consume energy and commission thermal upgrade works

In general, the managers of public institutions are completely responsible for commissioning thermal upgrades of various components of local heating systems. But most often these individuals lack the necessary knowledge to be able to put together appropriate technical specifications for changing windows, upgrading ventilation systems or heating equipment, or insulating walls.

¹ Information gathered through an anonymous survey of construction companies.

This means that education departments or energy management offices could make a point of having specialists who can formulate the necessary specs for works to be performed on such facilities. The use of simple energy audits should be expanded at these facilities, as well as the range of companies that can offer the necessary consulting services. One important element in thermo upgrading facilities is to alter the behavior of consumers when it comes to using automated systems and properly ventilating rooms. Technological changes should always be accompanied by brief workshops for staff and the preparation of written instructions on how to use the systems. Otherwise, changes could paradoxically lead to greater consumption, rather than to less.

ANALYSIS of current RSS and public sector energy conservation programs

The RSS Energy Efficiency and Energy Conservation Program for 2010–2014 adopted in November 2009 listed the problems, priorities and measures for state policy in this sector. The main focus of this program was to switch generating capacities and to introduce alternative sources of energy. Today, the program still has not come up with a mechanism to encourage energy efficiency measures in buildings using non-budgetary funds.

The main operative state energy conservation program - is the State Targeted Economic Energy Efficiency Program for 2010-2015. Two months after the program was adopted, Cabinet Resolution №243 of March 1, 2010 changed the name, adding to it, "and the Development of Fuel Production from Renewable Sources and Alternative Fuels for 2010–2015." Overall, the logic of the program and the way in which it is being implemented are not directed at energy conservation but at developing alternative sources. Most of the funding is going into the construction of alternative energy transmission networks and upgrading high transmission lines. The program executor, the State Energy Efficiency Agency, has put most of its attention into industrial energy conservation and the development of alternative sources of energy. The program's planned budget is **UAH 250 bn**, including **UAH 30.1bn** from the State Budget, **UAH 15bn** from local budgets, and **UAH 204.9** from "other sources." Given the unrealistic nature of the program's financial parameters, it is hardly surprising that in the last two years it has not been implemented. Funding from the State Budget was supposed to go to upgrading networks, while all thermal upgrades of facilities are the burden of local budgets and "other sources," to the tune of nearly UAH 205bn. Yet no incentives have been provided to attract investment to this program, so the likelihood that any additional funding will appear by 2015 is extremely small, if things continue on as today.

The Ministry of Regional Development, Construction and the Residential Services Sector of Ukraine has been putting its efforts mostly into upgrading the cogeneration system and its transmission network. The problem of large-scale thermal upgrading for buildings and reducing consumption remains essentially outside the state's current efforts.

Over the last three years, much attention was paid to certifying buildings for energy efficiency. Today, a program for mandatory energy audits is being drafted to apply to all public facilities. However, this kind of action is meaningful only if the results of such reviews are actually applied appropriately. If an energy audit does not lead to practical measures to upgrade a building thermally, it is simply a waste of time and money.

The cost of doing nothing

A continuing situation where the market is ruled by chaos, real information about energy consumption remains unavailable so consumers continue to get power below cost and

any incentive to economize is lost, will lead to the continued leaching of working capital at Naftogaz Ukrainy and of the local power utility capital and the capital of the country as a whole. To prevent the collapse of the cogeneration system, the Government should immediately provide a series of incentivizing and compensatory mechanisms to launch a nationwide program of thermal upgrading based on an integrated energy management system.

Otherwise, lack of energy conservation in Ukraine's RSS could lead to the complete collapse of municipal heating systems. This means that consumers will find themselves unable to pay for thermal power (natural gas) because its price continues to rise, while utility companies will be unable to deliver it because they will run out of money. The time could come when urban Ukrainians will be left without hot water, without the ability to cook, and without heating in wintertime.

The growth of power generation from alternative sources has not affected consumer behavior one iota but it leaches out enormous costs to pay out green rates, which are the highest in Europe today.

Until there is serious progress in reducing energy consumption, it makes little sense to waste public money on alternative sources of energy because it simply dilutes both money and efforts. Nor will it lead to significant results: cost-benefit analyses do not favor such solutions.

How should reforms be undertaken?

Mistakes made by Ukraine's neighbors and how to avoid them

In the process of reforming the RSS system, many countries began precisely with modernizing their generating capacities or decided against centralized heating systems in urban areas. As a result, when buildings and piping networks were upgraded, the **modernized heat generating systems** saw demand for heating actually go down. In neighboring Poland, two-thirds of the upgraded boilers have been mothballed because they are no longer needed for now.

If, as is likely, heat consumption goes down as the entire RSS chain is upgraded, then consumption could easily go down from 30bn m³ to 15bn m³, and the option for Ukraine to completely cover domestic needs for natural gas will become quite realistic.

At the end of the 1990s and early 2000s, heating pumps, solar panels and photovoltaic cells were the fad. In practice, however, such systems are not competitive with traditional heating sources in most countries, did not break even, and cannot be installed without major support from the state in the form of subsidies or green rates. The exception is those locations without an infrastructure of traditional networks, which makes installing autonomous systems more convenient economically than expanding engineered networks. Meanwhile, the continuously rising cost of energy is shortening the return on investment in installing these systems.

A look at spending on programs for cutting energy costs in Ukraine shows that budget funds go mostly towards modernizing generating capacities or delivery systems, not on reducing energy consumption. This is true for modernizing boilers, developing solar power, and installing heating pumps. Efforts at comprehensive thermal upgrades of facilities are barely a drop in the ocean of budget spending.

Until there is serious progress in reducing energy consumption, it makes little sense to waste public money on alternative sources of energy because it simply dilutes both money and efforts. Nor will it lead to significant results: cost-benefit analyses do not favor such solutions.

Let's start with the cities

The main place to start reducing energy costs is Ukraine's cities, which are the biggest consumers and provide the most room for economies. Cities bear the burden of most energy costs for municipal and budget-funded institutions and they pay the highest rates among all consumer groups. **The cost of thermal power has grown across Ukraine's cities between 800% and 1,300% since 2006, while the share of municipal budgets that goes towards energy has increased from 2.5% to 7.5% and continues to rise.** If cities do nothing to stop this growth, soon they could find themselves unable to ensure access to energy services for their residents.

This makes cities a single, organized and interested party capable of opposing the monopoly and pressure of suppliers. At the state level, this means recognizing local governments as the main party capable of carrying out state policy for sustainable energy development and of formulating and carrying out local energy conservation and energy provision programs. All possible resources should be directed towards cities, along with the right to dispose of them. Central executive bodies should only establish framework mechanisms for incentivizing and training programs for specialists.

And it is the cities that should, within the context of sustainable energy development programs, determine their own actions in **the basic components of sectoral reform:**

- generation;
- transportation;
- consumption;
- changes to consumer behavior;
- alternative energy sources;
- incentives to do mass-scale thermal upgrades to existing facilities;
- institutional and human capacity to support energy conservation efforts;
- higher standards for new buildings.

Options for instituting and incentivizing reforms:

- State Budget funds;
- municipal funds;
- facility owners' funds;
- bank loans;
- new, untraditional financial instruments.

The current State Targeted Economic Energy Efficiency Program for 2010-2015 is the only document that offers an approximate estimate of the resources necessary for a widespread energy conservation program: UAH 250 billion. However, a closer look at the numbers laid out in the program reveals that these figures are not based on any detailed

calculations and could be quite different from the real amounts needed. Regardless of doubts about the accuracy of this estimation, the current state of implementation of this program demonstrates one thing clearly: the government is incapable of allocating and organizing the sources for such funding.

This makes the question of removing obstacles to setting up incentives to economize energy and market mechanisms to attract low-interest commercial loans particularly important.

Public and residential consumers: We all need incentives!

Budget-funded buildings such as schools, kindergartens, hospitals and administrative facilities are generally the ones that are overheated and typically ignore the cost of keeping the temperature at least 21°C—often even higher. Here is one source of major savings, adding up to 77% in some instances according to energy auditors. The current approach of depending mostly on using purely budget funds is clearly unrealistic given that the country doesn't have that kind of money.

Budget institutions should be granted the right to transfer the savings from their economies to pay for bank loans. That way these institutions will be able to pay for thermal upgrades using commercial loans, rather than public funds. Today, this is almost impossible to do because reducing the cost of energy in the current year automatically means a reduced budget in the following one, making all efforts pointless.

Budget Code: Two quick changes

1) **budget-funded energy consumers** should have the option of setting energy and capital resource consumption in a monetary equivalent per energy unit and to use any savings from insulating the building as a guarantee that a commercial loan will be paid off. The difference should stay with the consumer until the debt is paid off. Part of the savings could also be used by the director to develop the facility;

2) **the Budget Code** limits municipal borrowing, tying it to development budgets that, in many cities since the crisis began, have become very small or are essentially non-existent. This rule needs to be changed to tie municipal borrowing for local energy conservation programs to the municipal budget for purchasing energy services. It is this budget, not the development budget, that can systematize energy conservation. It is here that economies can be made that will make it possible to pay off any loans and it is this budget, not the development budget, that can provide a guarantee that the loan will be paid off.

In the housing sector, the only anticipated formula for financing thermal upgrades will be using owners' funds, loans and money from incentive funds that could partly cover any loans.

Funds to encourage upgrading

Funds need to be set up to incentivize thermo upgrades, with specific sources of revenue and clearly stated principles for spending. Following Poland's example, it makes sense to institute a thermal upgrade bonus whereby, if a building is upgraded based on a previously verified energy audit, the Finance Ministry will return 25% of the value of the bank loan directly to the lending bank. The logic of public interest in reducing fuel procurements from abroad led to the return of a portion of taxes and budget contributions from the entire thermo-upgrade chain, from the manufacture of insulating materials to the income tax of the builders who worked on the project. Some estimates are that the contributions and fees across the chain add up to 35-40% of the cost to the budget of a thermal upgrade project.

Take advantage of oblast eco funds—please!

In the industrial East, cities will find that oblast ecological funds could be a serious source of funding for thermal upgrades. Today, 50% of the cost remains locally, 20% goes to the oblast, and 30% ends up in the State Budget. The nature of these funds complicates the use of their capital for energy conservation and a simpler procedure is needed. Because of how complicated it is to use the money, every year, 20-30% of the local income fails to be used and is transferred to the State Budget. This practice needs to be changed so that most or all of this benefit remains where it was collected and it is protected so that the community that suffered environmental damage can fully use the money to its own benefit. Any money in the local fund that is not used by the end of the year should be transferred to the oblast fund where, should it still not be used, it will remain for the following year.

Attention: Attics for sale

Another atypical source of revenue could be for the owners of buildings (condominiums) to sell off the roof areas for the construction of lofts or penthouses. The money received could become a major contribution to undertaking comprehensive thermal upgrades of buildings.

IMF: Giving credit where credit is needed

The money from selling energy sector assets should be directed at modernizing infrastructure, that is, the privatization of generation facilities should serve to upgrade distribution networks and facilities that use energy. Low-interest loans that Ukraine can get from the IMF could, instead of financing the budget deficit, better be directed at setting up revolving funds to provide loans to municipal energy conservation programs. Low interest rates will foster a quick return on investment in projects and the return of the loans. The program will be completely self-sufficient and servicing this debt will not be a burden on the State Budget of Ukraine.

How can the public best be informed about energy reforms?

As written up in an analytical brief by Yuriy Antoniuk called “Financing Energy Conservation Projects,” the energy efficiency and energy conservation market is a system of complex interrelations among various players—suppliers, consumers, local and central executive bodies, and so on—who all have a financial and non-financial interest in lobbying and directly implementing energy conservation projects.

Participants in this relatively new market compete with players in other sectors, such as the fuel and energy sector for energy users, the banking sector for investment capital, industry for consumers of energy-saving technology, and so on.

Among all the many players in the energy conservation market, the main ones are actually only consumers and suppliers of energy and energy-saving technologies and materials. The remaining participants form the infrastructure of the energy conservation market. It should be clear that this division is arbitrary, given that many participants combine more than one role, such as local government bodies that are both consumers and regulators, and so on.

The biggest source of resistance will be energy suppliers, for whom effective energy conservation programs will reduce their market severalfold. On the other hand, a high level of consumption and a major share of state subsidies threaten the collapse of the cogeneration system should the state become unable to cover these subsidies. So suppliers should really be prepared to meet halfway any carefully weighed and controlled reduction of the market and investments in energy conservation as unavoidable alternatives to total collapse.

The most supportive source will be the construction sector. In the absence of fiscally viable demand for new housing, thermal upgrading programs could provide hundreds of thousands of jobs to construction workers and trades specialists.

How can resistance among various groups be handled?

The reduction of what is actually excessive consumption of energy will naturally reduce the natural gas market and lead to resistance on the part of suppliers. To mitigate this, it will be important to propose an approach that would allow them to sell their free volumes to other markets, including for export.

Increasing energy prices to market levels will raise protest among ordinary consumers who will find themselves paying two or three times what they are currently paying. It will be important to explain to them that one way to reduce their energy costs will be to reduce their consumption through the residential thermal upgrade program. It should also be made clear that the comprehensive thermal upgrading of buildings will give residences a more aesthetic external appearance as well as greater living comfort and major reductions in heating bills once any loans are paid off. Finally, it is important to state that taking out loans for this purpose will not increase monthly energy bills over the normal bill: after insulating the building, a bigger portion of monthly payments will go to pay off the loan and not for energy, as the actual consumption of energy goes noticeably down.

Given that ordinary Ukrainians are traditionally paternalistic and passive, the main burden of carrying out comprehensive local programs in thermal upgrading will be on the municipalities and condominium owners. Their capacities need to be built up in a hurry to plan and undertake sustainable energy development programs and to work with banks and managing companies. Cities also need to foster the expansion of the market of managing companies.

Municipalities—the vanguard of reform

As the territories with the greatest concentrations of consumers, suppliers and infrastructure, not to mention capital flows for energy consumption, cities are the main centers of change. The transition to a new quality of functioning in this sector will only be possible if a comprehensive programs for sustainable energy development are introduced in urban areas: fragmented renovations of individual elements will not save the situation if the resources used and the costs reach such heights that, even with all the subsidies in the world, consumers become unable to pay for them.

This means that the main attention must be on immediately developing municipal capacities to develop and institute local programs for sustainable energy development, especially in terms of setting up permanent sub-units under municipal executive councils, training their staff using both international donor resources and short-term teaching and professional development programs.

Given the scattered nature of the functions and objectives of the energy conservation field, there is a need to set up an interagency group to coordinate the efforts of national and international agencies in this area.

A complete inventory of energy resources needs to be undertaken at all levels of extracting, transporting and consuming energy. The capacities of Ukrainian manufacturers of heat and gas meters is currently only at 20%, which means that all households could be equipped within a year. This requires that project planning and permit procedures for the installation of meters be reduced to the absolute minimum.

An understandable and accessible system of financial support for thermal upgrade programs needs to be set up as soon as possible, based on cheap loans. The IMF credit and loans from European banks could be a great source, as could partial refunds on loans in the form of tax rebates as thermal upgrade bonuses and money from oblast environmental funds.

In choosing standards for thermal upgrading, it would be better to orient on the EU target level for consumption in buildings, under 40 kWh/m², rather than the current EU average of 120 kWh/m².

The system for getting blueprints for thermal upgrades of buildings approved should be simplified to the maximum and made inexpensive. In most cities, buildings have been built according to standard plans, so blueprints for insulating them should also be standard and it should be possible to make any adjustments to them on the spot with the assistance of a contracting firm, based on a study of the actual state of the building and an energy audit.