

Removing Barriers to Residential Energy Efficiency in Southeast Europe and the Commonwealth of Independent States

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I. Executive Summary

Energy efficiency in the residential sector of Southeast Europe and the Commonwealth of Independent States (CIS) can play a critical role in improving the health and livelihoods of the local population, and decreasing the financial burden of traditional energy service subsidies. The Alliance recently held a workshop entitled “Removing Barriers to Residential Energy Efficiency in Central and Eastern Europe”, on February 6-7, 2006 in Kiev, Ukraine, bringing together key stakeholders from throughout the region to explore the current situation of energy efficiency in the residential sector and examine the most persistent barriers to the implementation of residential energy efficiency projects. The findings from the workshop, specifically the opportunities and recommendations for overcoming those barriers in the countries of Southeast Europe and the CIS are detailed in this paper including economic, policy and fiscal, institutional, and behavioral barriers.

Discussions during the workshop revealed that energy efficiency project implementation in the region is impeded by several major factors:

- Energy tariffs that are below cost-recovery level,
- Weak or non-existent markets for energy efficiency products and services,
- Underdeveloped financial structures that lack incentives preclude appropriate lending for energy efficiency improvements or projects,
- Lack of a mature laws and legal institutions that address barriers to EE and stimulate financing and management improvements
- Insufficient knowledge and capabilities on the part of housing maintenance companies and homeowners associations, and
- Lack of consumer driven demand-side energy management initiatives.

To overcome these barriers, the Alliance to Save Energy proposes a series of recommendations to enhance energy efficiency in the region’s multifamily residential sector. The first is a widespread information campaign to inform municipalities, local governments, housing maintenance companies, homeowners associations and end-users about energy efficiency and its benefits. The second is the need to raise tariffs for energy and water to cost-recovery levels, which would make energy efficiency economically feasible and stimulate local energy efficiency markets, while building targeted social safety programs for low-income households. Finally, the Alliance believes that national and local legislators need to pass legislation and policies accelerating the markets and providing incentives for improving energy efficiency. Overall, to enable effective and robust energy efficiency drivers, an integrated and comprehensive approach with a national government champion is needed. These recommendations are achievable, but they require awareness and a joint effort of all relevant stakeholders, adequate financial resources, and the factor of time.

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II. Background

One of the legacies of Soviet-style planned economies has been unsustainably high levels of energy intensity in all economic sectors, with the residential sector showing by far the lowest reductions in energy intensity over time. On the residential scale, a high level of energy intensity means that large amounts of energy are used to generate a given quantity of benefit, such as heat. In post-Soviet economies, energy intensities in all sectors remain high despite the decline of industrial production¹ throughout the last fifteen years, generating energy waste, increasing fuel poverty, burdening national and local budgets, and in many cases endangering national security through increased reliance on imported fossil fuels.² The social and environmental impacts of this inefficient use of energy in the residential sector are increasingly severe in the poorer regions of Southeast Europe (SEE) and the Commonwealth of Independent States (CIS).

Although every economic sector in the region could benefit from energy efficiency improvements, the residential sector may be the neediest due to the slowest rate of investments in this sector. In many post-Soviet countries, the residential sector is the greatest consumer of water, heat energy and electricity, and is characterized by extremely low energy efficiency. The main reasons for such inefficiency are the compulsive and unwise privatization of housing stock at the start of the economic transition period: poor quality residential property management; inappropriate or inadequate models for addressing common property issues in multifamily buildings; and the lack of institutional, policy and market frameworks that can encourage investments in energy efficiency in homes. These are combined with the slow development and strengthening of the role and services provided by municipal/local governments and rapid depreciation of municipal assets involved in maintenance and utility supply of residential buildings. Heat prices are heavily subsidized in many countries, but rising world fuel prices are making it difficult for governments to maintain these payments. In several SEE and CIS countries consumer energy prices are already rising, increasing the percentage of household income spent on energy. Few countries have examined the impact of rising energy prices on vulnerable households, but aside from the traditional approach of subsidizing utility services for the poor, end-use energy efficiency is perhaps the only cost-effective way—to ease this burden while improving indoor comfort. For example, multi-apartment buildings in the countries of Southeast Europe and the CIS can generally save anywhere from 20 to 60 percent of current energy use through energy efficiency improvements such as weather stripping, efficient boilers, and window repairs.³ In order to capture these opportunities, however, better institutional capacity on energy efficiency is needed within both the housing sector and the markets.

There are several important factors that justify the immediate need for improving energy efficiency in the residential sector. First, in light of rising energy costs that lower income households find increasingly hard to pay, energy efficiency measures can be used to save financial resources. Second, by easing the burden of rising energy costs on vulnerable households, energy efficiency diminishes the need for government subsidies. Third, energy-

¹ In fact, dropping industrial output is one of the key reasons for high energy intensities due to under-utilized installed industrial production capacities, the low rate of replacement of outdated production facilities, and the loss of economies of scale.

² For a further discussion on energy intensity, see EBRD Transition Report 2001.

³ This range of energy savings in residential buildings is evidenced through numerous pilot projects, energy audits, and monitoring of energy projects undertaken in the region by the Alliance to Save Energy and other partners since 1998.

efficiency measures reduce greenhouse gas and other air pollution emissions, lessening damage to the environment and public health. Fourth, energy efficiency helps countries achieve energy independence and energy security. In short, energy efficiency not only improves the economic productivity of a country, but also increases the social welfare of its citizens, directly contributing to the Millennium Development Goals.

This report analyzes present barriers to the implementation of energy efficiency projects in light of the economic, financial, political, institutional and behavioral conditions present in Southeast Europe and the CIS. It also provides recommendations and identifies opportunities for the application of energy efficiency to alleviate some of the negative effects of high energy intensity on the residential sector.

The subsection of the residential sector targeted in this analysis is the large number of urban multi-apartment buildings built prior to 1989. There are numerous opportunities for energy-efficiency improvements in other types of housing and in rural residences, but those subsets of the overall housing sector are beyond the scope of this project. The term *low-income household* is used interchangeably in this paper with *vulnerable household*, and in general refers to that category of the population (within the region and within each country) that spends more than fifteen percent of its monthly income on utility payments (including electricity, heat, gas, water, and wastewater services).⁴



Apartment unit in a Moscow building of 1960s construction with a poorly insulated attic and open windows to release heat from the overheated radiators within.

III. Current State of the Residential Sector in Southeast Europe and the CIS

Consisting primarily of multi-apartment buildings, today's urban residential sector in Southeast Europe and the CIS inherited the deteriorating buildings and utility network infrastructure and Soviet-cultivated housing management system. The state has been the owner and manager of the residential sector, overseeing all activities ranging from assigning living space to individuals and families to building maintenance and bill collection. The communal service enterprises known as ZheKHs⁵ were usually understaffed and lacked the financial resources necessary to address all housing needs. When the Soviet Union dissolved, ZheKHs remained intact in many countries or were reformed in name only; and by that time there was even less money available to repair and maintain these typically large residential complexes made of relatively low-quality construction materials. Policy reforms to privatize housing were undertaken without the requisite investment in institutions (either public or market-based) to service them. In addition, most residents to this day possess little or no prior experience with the responsibilities of private ownership, nor did the policy reforms undertaken throughout the past fifteen years adequately develop guidelines, legal framework

⁴ This affordability ratio is one used quite often by other experts researching affordability and trends in household income and expenditure. See Fankhauser, S. and Sladjana Tepic, 2005 for a detailed discussion on the affordability of utilities by the poor in transition economies, and Komives, et al., 2005

⁵ Russian abbreviation for 'Housing Communal Economy'

or ownership structures to enforce responsibility for effective management and maintenance of common areas in multi-apartment residential buildings.

Moreover, in most cases, the state continues to be the provider of electricity, water, sanitation, and heating services to each unit within a building, and the consistency and quality of these services varies significantly. Billing for water consumption and gas was – and still is – often based on the number of household members or on occupied square meters, with the only utility cost based on actual consumption being kilowatts of electricity per hour. The perpetuation of this system of residential property maintenance and management and utility service has not only been cumbersome and yielded low collections, but it has also failed to foster the necessary skills, incentives and ability to: 1) provide reliable services to residential consumers; and 2) generate revenue to function in the quasi-market economy of the countries in SEE and the CIS.

Consequently, energy inefficiencies in the common areas of multi-apartment buildings (e.g. attics, basements, stairwells, entryways, etc.) as well as inside the apartment units are very common, using copious quantities of energy while failing to keep the residents comfortable. Problems inherent to the common areas include, but are not limited to, poorly insulated basements and attics, broken or absent windows in stairwells, under-heated stairwells, inefficient indoor lighting, poorly insulated internal infrastructure pipelines and damaged or missing entrance doors. Within the individual apartment units, energy inefficiency is most commonly witnessed in overheated radiators without control valves, drafty and leaking windows, running taps and toilets, and thermal losses through exterior walls due to aged or absent insulation materials, just to name a few. Within the walls of apartment units internal pipes transporting heat and hot water are often corroded, leaky or damaged resulting in further inefficiencies and discomfort. In general, metering and control systems for heating and hot water are widely used; energy audit requirements and standard procedures are not available, and if they do exist, are not clearly outlined, and building energy codes are outdated.

Some countries and communities have made noteworthy progress in addressing these problems, both from a technical and managerial point of view. By sharing the lessons learned from these efforts, countries undergoing economic transition in Central and Southeast Europe and the CIS countries can more effectively adopt and implement energy efficiency solutions to address residential energy needs. The Alliance to Save Energy—through its Municipal Network for Energy Efficiency (MUNEE) program and related work supported by the Renewable Energy and Energy Efficiency Partnership (REEEP) and U.S. Agency for International Development (USAID)—has identified some of the success stories and lessons learned in residential sector management over the past decade, and more recently initiated some approaches to improve the conditions of multi-apartment buildings. This documentation is provided in the proceedings from the workshop “Removing Barriers to Residential Energy Efficiency in Central and Eastern Europe”, which can be found on the site of the Alliance’s Municipal Network for Energy Efficiency www.munee.org. Seven case studies that were documented in the region can also be located at www.munee.org. The case studies demonstrate the practical experiences and research analysis in cities of Armenia, Bulgaria, Latvia, Poland and Ukraine. The following is the list of case studies presented on the website:

- “Providing heat supply service support to condominiums.” Cities of Yerevan and Gyumri, Armenia
- “Energy efficiency for end-users of district heating.” City of Pleven, Bulgaria.
- “Demand-side management project.” City of Valmiera, Latvia

- “Thermo-modernization of a residential building.” City of Warsaw, Poland
- “Window weatherization in a multifamily building.” City of Lviv, Ukraine
- “Heating subsidy analysis for residential buildings.” City of Lviv, Ukraine
- “Study of Potential for Energy Efficiency Retrofits of Residential Buildings.” City of Uzhgorod, Ukraine.

IV. Barriers to Residential Energy-Efficiency Projects in Southeast Europe and the CIS

In order to understand and address the reasons behind the widespread energy inefficiencies throughout the residential sector, it is necessary to analyze the barriers to energy efficiency improvements, even the most basic and cost-effective ones. Barriers to energy efficiency in the residential sector occur on many levels: economic, policy, institutional and behavioral. A clear understanding of these barriers, their impacts, and their relation to one another allows for more appropriately designed legislative and fiscal policies and approaches to stimulate energy efficiency within the residential sector.

A. Economic Barriers

In order to generate financial savings from an energy efficiency project, it is often necessary to make an upfront capital investment in the project, even though the investment will often pay for itself rapidly. However, as incomes lag behind rising cost-of-living expenses, some households’ are unable to meet their utility bills, let alone make even the most basic energy efficiency improvements. The situation is exacerbated by artificially low energy prices that make payback periods too long to be attractive. The willingness to pay for efficiency is also low if residents have not actually seen or felt the benefits of energy efficiency investments. In addition, energy-efficiency products and services in the SEE and CIS countries are generally subject to high taxes, which further adds to the up-front costs of these investments.

Although public financing options (e.g. from municipal budgets) are present to some extent, they are typically used for matters viewed as higher priority than energy efficiency, or they are insufficiently large to have a meaningful impact. This is mostly a result of the fact that the state holds financial control of municipalities. Where public financing is available, the inability of a municipality or local government to retain the financial savings obtained from energy saving projects discourages expending resources for saving energy. When municipalities spend less than projected in a given year due to energy savings, their budgets are decreased by the “under-spent amount” for the next fiscal year, which serves as a disincentive for a budgeted enterprise to consider energy-saving projects.

In the case of Moldova, where the housing sector is subject to difficult climatic and geological conditions, e.g. floods and earthquakes, 20 percent of annual GDP, or approximately US \$200 million, is directed towards natural disaster recovery. Understandably, there is incredible pressure and need to reserve scarce public funds for such unanticipated and urgent expenditures, but the irony is that energy efficiency investments could help to curtail the overall impact of climate-related disasters – particularly those that can trigger energy crises. Whatever the specific reasons in a given country, the fact remains that energy efficiency spending is still widely considered to be discretionary and a luxury of wealthier countries (Ciobotaru, 2006).

In general, immature mortgage markets impede smooth lending and borrowing transactions. Commercial lending institutions generally perceive residential borrowers in Southeast Europe and the CIS as “high risk,” and thus do not lend to such clients – especially not to the multi-

apartment building dwellers who often need such investments the most. Without experience in mortgage lending and without clearly defined common property rights to establish conditions for collateral to secure loans, such hesitation from commercial banks is understandable. Another barrier emerges from the underdeveloped concept of home equity loan facility. The unavailability of home equity loans for apartment owners makes it impossible to finance higher cost energy efficiency improvements. In addition, obtaining resources for projects through other methods of commercial financing such as traditional loan mechanisms is precluded by long payback periods, high interest rates, a lack of borrowers' credit history and inability to secure reliable loan guarantees.

B. Policy and Fiscal Barriers

During the formulation of housing legislation in the 1990s, policymakers in many countries throughout Central and Southeast Europe and the CIS overlooked matters related to the ownership of common areas within a building, and thus the responsibility for these areas was not properly assigned. As a result, while individual apartment units are privatized in most (but not all) countries, common areas may be left to the maintenance services (the former ZheKHs) offered by the municipality. In other countries, where home-owner associations or condominiums are created with due legal provisions, the privatized apartment owners also receive common-share ownership over the common areas, which results in a typical tragedy of commons⁶ situation where everyone reaps the benefits from using the common space, everyone observes the damage to the infrastructures, while no single owner wants to invest in their repairs and maintenance. In both cases, there can be a Good Samaritan – a volunteer who conducts maintenance based on his own initiative, without particular training or pay and without a systematic schedule.

Another constraint is the political pressure that often exists on municipal councils and local governments to keep energy tariffs below cost-recovery levels due to poor payment discipline. This serves as a disincentive for end-user energy efficiency because consumers are not paying the real costs of the energy they consume. Incentives for energy suppliers and energy service companies to invest in energy efficiency remain low for the same reason, especially when consumer payment discipline is low and there is little hope of recovering costs from energy-efficiency investments through tariffs. However, there is some demand for efficiency providers in those cases where utilities can decrease their operational costs through supply-side energy efficiency investments. Even in this case, the providers of energy efficiency services have to compete with the grandfathered municipal enterprises and cannot develop a market niche unless legislation gives them access to the energy service market through building codes, energy passports and labeling, audits, competitive provision of residential utilities, guaranteed energy purchases from efficient small-scale generators, etc.

Finally, energy legislation tends to focus more on supply needs, while neglecting the fact that energy saved is also an energy resource. Therefore, important energy efficiency opportunities are usually omitted from national and local policies, especially with regard to the residential sector. Also, housing policies, condominium laws, energy laws, etc. are often not coordinated, leading to confusion and mismanagement of properties and the basic services offered to residents. For example, the ownership rights and responsibilities for common areas are unclear, and when it comes time to perform repairs, it is unclear who should undertake the duties – the residents or the housing maintenance companies. Combined with the economically low housing service fees (charged both by condominiums

⁶ For more information about the “tragedy of commons” see Hardin, G. 1968.

and municipal enterprises) accommodating the low paying capacity of households, results in poor maintenance and low efficiency of the aging building stock.

C. Institutional Barriers

Information. One of the main institutional barriers to energy efficiency is the lack of accurate, verifiable and appropriately targeted information about the current uses of energy, and the benefits of energy efficiency. In those cases where it is available, the information is not readily available to the public, or is not disseminated effectively if at all and thus does not reach the intended audience. For example, Ukraine, like most CIS countries, currently lacks an accurate and verifiable record of its energy balance, which would inform policy makers and consumers alike of energy production and high per-capita consumption rates and help the country project future energy consumption patterns, fuel demands and develop an important baseline for determining a strategy to reduce energy intensity. As a result, the country is unable to properly evaluate its inefficiencies and make appropriate strategic, managerial and operational decisions for energy efficiency. Moreover, in rare cases when efficiency programs are implemented, it is hard to measure their success due to lack of baseline data, which weakens the political weight of such efforts.

Public Agencies. Public agencies—ranging from state ministries to local governments—are inadequately staffed, poorly informed, lacking in incentives to promote energy efficiency policies and practices, and most importantly lacking the financial resources needed to tackle the dire situation in the residential sector. In the case of post-war Bosnia & Herzegovina, the current political structure is overly complicated, making it difficult to pass effective laws in a timely fashion. Also, capacity of the institutional structures to implement laws that could promote energy efficiency is low. In particular, national energy agencies, where they do exist, are functioning without a budget, autonomous decision-making, and adequate training. Institutions responsible for setting standards, for example for household electric appliance standards and building construction, either do not exist or lacking the power to test, monitor and enforce compliance. In addition, the disempowered media sector, both private and government sponsored, is often discouraged by the state government from reporting freely on residential energy issues.

The Housing Sector. Another institutional barrier is the deficient organizational structure of the housing sector, and the resulting inadequate management, service and maintenance practices regarding the housing infrastructure. Cooperatives and homeowner associations, condominiums, housing maintenance and management companies are often weak, lack initiative, funding, and the operational and managerial capacity to cooperate and address issues of building maintenance in a timely and cost-effective manner. This weakness is evidenced in the results of the Uzhgorod research project⁷, conducted jointly by the City of Uzhgorod, Ukraine, the City of Michalovce, Slovak Republic and the Housing and Environment Institute of Darmstadt – Institut für Wohnen und Umwelt (IWU). The analysis of the housing situation in the city of Uzhgorod project, conducted between 2001 and 2003, showed that implementation of energy efficiency projects was hindered because Ukrainian national legislation failed to clearly define legal and administrative responsibilities for the housing management companies. The implementing partners of the project concluded that, in order to ensure successful project implementation in Ukraine, state intervention into housing renovation, management and maintenance is still needed. In Armenia, although the Law on

⁷ This research project is highlighted in a case study titled “Study of Potential for Energy Efficiency Retrofits for Residential Buildings, City of Uzhgorod, Ukraine”, located on www.munee.org.

Condominiums grants shared ownership of roofs, among other common areas, to the owners of privatized housing, the legal ownership documentation (measurement metrics, cadastre certificates, etc. needed for leasing, submission as collateral, etc.) of these assets is not transferred to the condominiums. Moreover, such documents do not even exist for the common areas; and their issuance and processing requires substantive government involvement and resources.

Providers of Energy Efficiency. The market for suppliers of heating, water and electricity services for end-user efficiency remains weak because of tariffs that do not match market rates and the resulting inability of the utilities to benefit from investments in energy efficiency measures. The result is an under-developed market for energy efficiency products and services that lacks the competition needed to ensure high quality service and products, and the lower prices affordable to the average consumer. In addition, Western companies with their vast range of energy efficiency products and services have been slow to tap the markets of the region because of policy, economic, and logistical barriers to successful market transformation.

Residents. Resident lack the information needed to correlate their energy use within the household with their utility bills. Even if a resident wants to improve the efficiency of their energy use, they lack information on energy auditors and refurbishment projects, let alone knowledge of who is responsible for repairing and maintaining the energy and water systems within the “property lines” of the apartment. Unfortunately, this problem exists in the United States as well and is a subject of much effort on the part of domestic utilities and advocacy groups. In SEE and CIS, even if a resident implements demand-side management (DSM) energy efficiency measures and installs metering equipment to measure energy savings, the legal framework does not always allow he or she to pay for their actual consumption, since in many places norm-based billing is still in place, metering is non-existent, and consumption-based contracts or any other efficiency incentives are rarely used. In addition, municipalities also often resist DSM control and metering because of the large losses of the depreciated infrastructures which, if metered, will no longer be included in the end-users bill.

D. Behavioral Barriers

Perhaps the most difficult to identify and classify behavioral barrier to implementing energy efficiency projects stems from a lack of awareness of the part of the public about energy efficiency benefits. The public tends to understand the benefits when presented with concrete demonstrations of successful projects and tangible results, but in the countries of Southeast Europe and the CIS many consumers feel that energy efficiency is the job of donors or a luxury for rich countries. This is a “Catch-22” situation, because in order to demonstrate examples of success, projects need to be implemented. When no one dares to implement them, there are no demonstrative examples to increase people’s understanding and trust in the projects. This is heightened by the fact that even if benefits are demonstrated, the end-users do not always take the initiative, hoping that someone else (e.g. the neighbor, the housing maintenance company, the municipality) shall take care of the problem – a behavior cultivated throughout the past decades that is highly resistant to change.

The second behavioral obstacle comes from the perception that energy efficiency issues can be addressed only after other more pressing socioeconomic issues have been alleviated within a country. This approach stems from the misconception that energy efficiency is a luxury measure. The irony is that energy efficiency improvements can contribute significantly to the

process of alleviating some socioeconomic pressures; unfortunately, the evidence of the socioeconomic benefits of improved efficiency are not systematically documented and communicated to the public.

The third obstacle emerges from the absence of experience in many of the region's countries related to the responsibilities inherent in property ownership. Even once they have become private owners of the flats they inhabit, residents often prefer to pass the responsibility of maintaining their property—and finding solutions to energy efficiency problems—to the state or local government. Where the awareness and collective initiative from the residents of a homeowners association exist, the heterogeneity of the economic status of the residents of a building sometimes precludes agreement on project financing due to the varied willingness and ability to pay for the energy efficiency improvements.

Another barrier is the misconception that energy-efficiency project implementation is entirely market-based and therefore dismisses the promotional role of the government in the process. This barrier is also linked to the historically low energy tariffs, which created a tradition of wasteful use of energy, such as 24-hour stairway lighting or open entrance doors.

Finally, the mass media throughout Central and Southeast Europe, and the CIS does not adequately address the role of energy efficiency in increasing financial savings, comfort levels, and affordability of services for average consumers and particularly not for low-income consumers.

V. Recommendations and Opportunities for Residential Energy-Efficiency Projects in Southeast Europe and the CIS

The cross-border disputes over natural gas exports from Russia to Ukraine that were heightened in January and February 2006⁸ helped to raise awareness that energy efficiency can and should be viewed as a financial and physical resource. Effective and robust energy efficiency policies can help generate increased utilization of the domestic energy resources where available, increase energy security of a country, and alleviate the problems of fuel poverty.

It is crucial to understand that in order for energy efficiency to become a widespread and standard measure in the residential sector throughout the region, it needs to be embedded not only in energy reform, but also in reforms of the housing sector, poverty alleviation, and fiscal and local financing issues. In order for energy efficiency to provide effective economic and social benefits in the residential sector, it is necessary to assure that:

- Building codes are updated and comprehensive;
- Building energy passports are put to wide use;⁹
- Appliance and labeling standards are properly formulated to enable easy enforcement and penalties in the case of non-compliance;

⁸ For a detailed report on the conflict between Ukraine and Russia in early 2006, see special report “Energy Security” in *The Economist*.

⁹ The European Union requires energy passports for all residential and commercial buildings. These passports outline the building's performance in accordance to the established minimum standards. It is necessary to have an energy passport before any construction is granted a building permit. In Southeast Europe and CIS, such passports can provide the information on the consumption and losses of a building's mechanism, and enable effective progress monitoring for energy efficiency improvements. For further information, see *Doing More with Less: Green Paper on Energy Efficiency 2005*.

- Energy auditing and audit licensing procedures are consistent and transparent.

It is also crucial that utility tariffs are raised to cost-recovery levels and services are commercialized to enable market stimulation, while being attentive not to worsen payment discipline.

In order to ensure that financing for energy efficiency projects is adequate and accessible, legislative frameworks must be developed that facilitate borrowing by homeowner associations and housing maintenance companies, while enforcing liabilities inherent to such lending practices and minimizing risks for loan repayment. In addition to grants, which are being gradually phased out throughout the region, the local commercial and public financing markets need to be developed and stimulated. The following project financing mechanisms can be encouraged while taking care to target assistance for energy efficiency projects to vulnerable households:

- Housing renovation and modernization loans
- Municipal funds
- Energy efficiency revolving funds
- Social subsidy funds
- State housing development, repair and maintenance funds
- Mortgage lending
- Commercial bank credits from commercial banks
- Leasing
- Vendor credits
- Guarantee funds
- Carbon finance

The rising costs of utility services can stimulate end-users to invest in energy efficient technologies and services by making efficiency measures more cost-effective. Significant cost savings and cost recovery opportunities can be achieved by implementing quality metering on the building level through block meters - an effective mechanism of consumption-based metering that is successfully practiced in Western Europe. If consumption varies widely among households, apartment level meters can be installed. As a result, neighbors' bills will not be affected by each others consumption habits.

Consumption-based billing will also stimulate the market for metering technologies, lowering prices and making the technologies more affordable for the average consumer¹⁰. However, it is necessary to assure that the utility services and energy efficiency improvements are of adequate quality, which can be done through effectively written and enforced norms and standards for supply provision, construction and technology, and consistent monitoring techniques. It bears mentioning, that individual metering with its large upfront costs—is a cost-effective investment only if substantive savings can be achieved as a result of the energy efficiency incentives provided by consumption-based billing.

Since many of the above mentioned barriers relate to a lack of quality information and effective dissemination of such information, it is beneficial for the media to assume a more

¹⁰ This practice, when applied to water consumption metering, can be hindered by the vertical design of water pipes that is widespread in Central and Eastern Europe.

dynamic role in generating and disseminating information on the current situation, efforts, financing and benefits of energy efficiency within a country. Also, informational support and advisory services should be organized to assist residents directly with measures they can take to improve the quality and affordability of their household utilities, and the comfort of their homes. Forming new partnerships and strengthening existing ones between and among municipalities, NGOs, public and private sectors and energy service companies can greatly enhance the development and implementation of such services.

VI. Conclusion

From the analysis of the economic, policy, institutional and behavioral barriers to residential energy efficiency presented above, the workshop titled “Removing Barriers to Residential Energy Efficiency in Central and Eastern Europe” that took place in Kiev, Ukraine on February 6-7, 2006, and the case studies collected as a result of this project¹¹, it is possible to conclude the following:

- More rigorous and detailed documentation of real examples of end-use energy efficiency experiences and lessons learned is needed.
- A widespread and sustained public awareness campaign is needed to increase the understanding of the benefits of energy efficiency to end-users, and methods of implementing of such projects.
- Consumption based billing and tariffs set at cost-recovery levels, combined with targeted social assistance to low-income households, are essential for making energy efficiency benefits economical, as well as replicable on a broader scale.
- Setting up affordable and flexible financing mechanisms is critical for facilitating energy efficiency improvements before financial markets of transition economies mature;
- The reasons for lack of progress in residential end-use energy efficiency in Southeast Europe and the CIS need to be better understood, communicated to policy makers, donors, and NGOs working on housing and social issues.
- Donors and governments should collect detailed statistics about energy end-use, project the growing energy demands in the region, and assess the potential for energy saving; as well as take advantage of energy efficiency opportunities in residential buildings.
- Regional cooperation and information exchange on energy efficiency standards, building codes, energy auditing procedures, building passportization and successful energy efficiency models in general will help stimulate energy efficiency and disseminate best practices.
- All policies and programs supporting energy and resource improvements need to consider measures that will improve and optimize energy efficiency in the supply and demand of energy and water; and promote competition and public-private partnerships among utility supply and energy service companies.
- Identifying and working with a national champion – a Government official who would believe in, commit to and provide political support to the legal reform and enforcement of promotional regulations for energy efficiency. Such support is necessary from as senior a level as possible and is probably the most important factor in determining whether an energy efficiency and housing policy framework will be successful.¹²

¹¹ The case studies are located on the website of the Municipal Network for Energy Efficiency www.munee.org

¹² The successes from around the region generally stem from people. For instance, Serbia has not been able to develop an effective energy regulatory framework because the political will does not exist, but a few dedicated individuals were able to develop the World Bank fund. Romania has not had a very effective energy regime but a few individuals at the ministry of natural resources have made Romania the leader in climate change and Joint Implementation. Czech is one of the few places where the institutions have really bought into the concept of

Overall, what is needed in the countries of Southeast Europe and CIS is an integrated and comprehensive approach to energy efficiency in the residential sector, and a national champion that can act as a catalyst for replicable success.

energy efficiency holistically. In Armenia, the leadership in Energy Saving and Renewable Energy policy reform could achieve only partial incentives for this field, due to stronger political championship and opposition from the Ministry of Finance and Economy. For further discussion of the concept of a national champion and energy efficiency policies throughout the region, see Pasoyan, A. and Eric Carlson, 2004

VII. References

- Ciobotaru, I. 2006. "Incentives and Shortcomings of Housing Legislation and its Influence on Implementation of Energy Efficiency Projects in Multifamily Buildings". Removing Barriers to Residential Energy Efficiency in Central and Eastern Europe. Alliance to Save Energy/REEEP Workshop. Kiev, Ukraine. February 6-7. <http://www.munee.org/go.idecs?m=library>.
- Doing More with Less: Green Paper on Energy Efficiency. 2005. European Commission. http://europa.eu.int/comm/energy/efficiency/doc/2005_06_green_paper_book_en.pdf.
- EBRD Transition Report. 2001. "Energy in Transition". London. <http://www.ebrd.com/pubs/tr/>
- EBRD Transition Report. 2001. "Update 2002." London. <http://www.ebrd.com/pubs/tr/>
- Energy Security - Special Report. 2006. The Economist. Jan 7-13th: 61-63.
- Fankhauser, Samuel and Sladjana Tepic. 2005. "Can Poor Consumers Pay for Energy and Water? An Affordability Analysis for Transition Countries." EBRD Working Paper No. 92. May. <http://www.ebrd.com/pubs/econo/wp0092.pdf>.
- Hardin, G. 1968. "The Tragedy of the Commons". Science. Dec 13: 1,243-48.
- Komives, K., Foster, V. et al. 2005. *Water, Electricity and the Poor: Who Benefits from Utility Subsidies?* The World Bank.
- Pasoyan, Astghine, and Eric Carlson. 2004. Survey of Energy Efficiency Laws and Policy Provisions in 22 Countries and Two Regions: Recommendations for Policymakers. Alliance to Save Energy. http://www.munee.org/media_center/files/Survey%20EE%20Laws%20210504.pdf
- Removing Barriers to Residential Energy Efficiency in Central and Eastern Europe. Workshop. 2006. Presentations. Alliance to Save Energy/REEEP Workshop. Kiev, Ukraine. February 6-7. <http://www.munee.org/go.idecs?m=library>.