Financing Energy Efficiency in Buildings in Ukraine: Analysis and Policy Recommendations

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Executive Summary

The Ukrainian government is right in its pursue of increasing energy efficiency of the whole economy. The benefits of doing so are manifold: increased energy efficiency improves affordability of energy – an important objective of economic policy. It also helps to increase Ukraine's energy independence and in turn energy security. With the building sector accounting for about 40% of final energy use, it has the potential to contribute significantly to reduced energy consumption and improved energy efficiency. Even more so, as international research shows that energy efficiency in buildings can be achieved cost-effectively with relatively short pay-back periods in case the necessary requirements are in place. Nevertheless, the investment volumes needed for increasing energy efficiency in buildings are huge and financing it requires a concerted effort by both, the state and the private sector. As such, the objective of this report is to assess the current and future potential for financing energy efficiency in buildings. Our analysis shows that the success of financing energy efficiency improvements in buildings depends on a number of factors:

- A conductive energy tariff policy,
- Sufficient long-term credit supply at reasonable costs,
- The outlook for the construction sector and,
- The availability of innovative financial instruments and programmes.

Our research suggests that currently all those factors mentioned above are less than optimal in order to finance the costs of increasing energy efficiency in buildings, a situation which requires a change in policy.

Investing in energy efficiency in buildings is held back by an **un-conductive energy tariff policy**. Indeed, household tariffs for heat, warm water and gas supply have remained below cost-recovery levels for a long time. With the utility tariffs as low as they are and their future path highly unclear, energy efficiency investment simply do not pay off. Consequently, there are currently hardly any incentives for private actors to engage in energy efficiency investments and financing activities on a wider scale.

Developments in the banking sector are a major obstacle for financing energy efficiency improvements in buildings. The **supply of credit** is tight due to structural problems in the banking sector, which were laid open during the global financial crisis 2008/09. On top of these problems, macroeconomic policies currently pursued aggravate the problems further. The strategy of fixing the exchange rate at an unsustainably high level has led to a tightening of monetary policy, which in turn is visible via a low credit supply at high interest rates. Mortgage approvals have halved since 2009, with no clear recovery in sight. Currently, interest rates on mortgage loans are about 19% for rather short maturities, meaning that only a handful of loans are being issued.

Indeed, the lack of external finance is the main factor contributing to the bleak **outlook for the residential construction sector**. Following the collapse of construction value by 35% during 2008/2009, the sector showed a robust recovery. However, the latest data suggest that this recovery has been short-lived, with output declining again in real terms in 2012. In addition to the lack of finance, the sector recovery is held back by high prices which undermine affordability. Planning and carrying out building energy efficiency projects needs to factor in and address these barriers of demand.

Finally, even if there were demand, our analysis shows a very **limited availability of financing options and programmes** for the construction sector in general, while the financing of investments in increased energy efficiency is even more difficult to realise due to a lack of innovative financial instruments.

To close this gap international experience demonstrates that **energy service companies (ESCOs)** could provide a valuable additional financing channel. However, a detailed analysis reveals many problems in legislation in Ukraine, such as the lack of a clear definition, a lack of long-term budget commitments, and lack of protection against default, to name only the most important ones. Thus, in order to develop this instrument further, lawmakers in Ukraine need to provide the required ESCO-enabling legislation before it can be applied for financing energy efficiency investments in residential buildings.

Apart from laying the groundwork for such new instruments, the state – in cooperation with IFIs – should provide additional funds to promote investments in energy efficiency in buildings. Currently, a number of IFI's and donors are indeed active with a range of projects in Ukraine in this area, but these projects have mainly a pilot character. Additionally, the state finds itself right now in a very tight budgetary situation, which prevents it from effectively implementing subsidised support programs similar to Germany's "Energy Efficient Construction" run by KfW. Here, shifting some of the massive funds used to universally subsidise household energy tariffs would go a long way in providing support for financing energy efficiency investments in buildings.

To sum up, this research shows that financing energy efficiency in the residential building sector is held back by a combination of unfavourable macroeconomic factors, tight credit supply, low tariffs as well as a lack suitable financing options and programmes. Overcoming these should be a common task for the government and the private sector. By providing the right legislative framework as well as a conductive macro-economic and tariff policy, the government would provide a huge boost to financing energy efficiency saving projects. With the main barriers removed, it is likely that innovative financial products will emerge, which would facilitate energy efficiency investments further. Finally, there is good reason to believe that international donors would step up their efforts once the state has done its homework. Combined this would provide a much needed stimulus for the construction sector and economic activity in general.

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1. Introduction

Ukraine's use of energy is very inefficient by international standards. Improving energy efficiency is thus an important objective for policy makers in the country. In this context, the building sector plays a key role in achieving this objective, as it is responsible for more than 40% of final energy demand in Ukraine, and provides a far-reaching potential for energy savings. This is true for the existing residential building stock, where renovations provide ample room for such savings, coupled with a general improvement in the buildings substance and an increase in the quality of living for its residents. However, a similar reasoning applies also to new residential buildings, where high standards of energy efficiency applied during the construction phase provide even higher benefits.

At the same time, investing in high standards of energy efficiency during construction increases initially the costs of the building, while it provides monetary benefits in terms of saved energy costs in the future. This additional increase in investment costs (as opposed to a "standard" building") must be financed, however. This report deals specifically with the availability of financing options for such investments in the context of Ukraine. In doing so, we pay special attention to the overall situation in the construction sector, as this sets the general background for investing into energy efficient new buildings.

The report is structured as follows: In the following chapter 2, we analyse the economic and financial situation in Ukraine over the last years, which is of major importance for the performance of the construction sector. Special attention will be paid to the macroeconomic situation, and the developments in the banking sector, which is the main provider of direct and indirect finance for construction activities. Chapter 3 deals in more detail with developments in Ukraine's construction sector over the last years, with a special focus on residential buildings. The following chapter 4 deals with financing options for energy efficiency in Ukraine. After a brief overview of the legislative framework, we review existing opportunities in Ukraine, putting a special focus on the potential for energy service companies (ESCOs). In the final chapter 5, we conclude and provide some policy recommendations on how to improve the situation.

2. Economic and Financial Context

An overview of the developments in the construction sector in Ukraine over the last couple of years should start with a short overview of the broader macroeconomic and financial picture. Only when seen in this context it is possible to fully understand the nature and background of the past development dynamics.

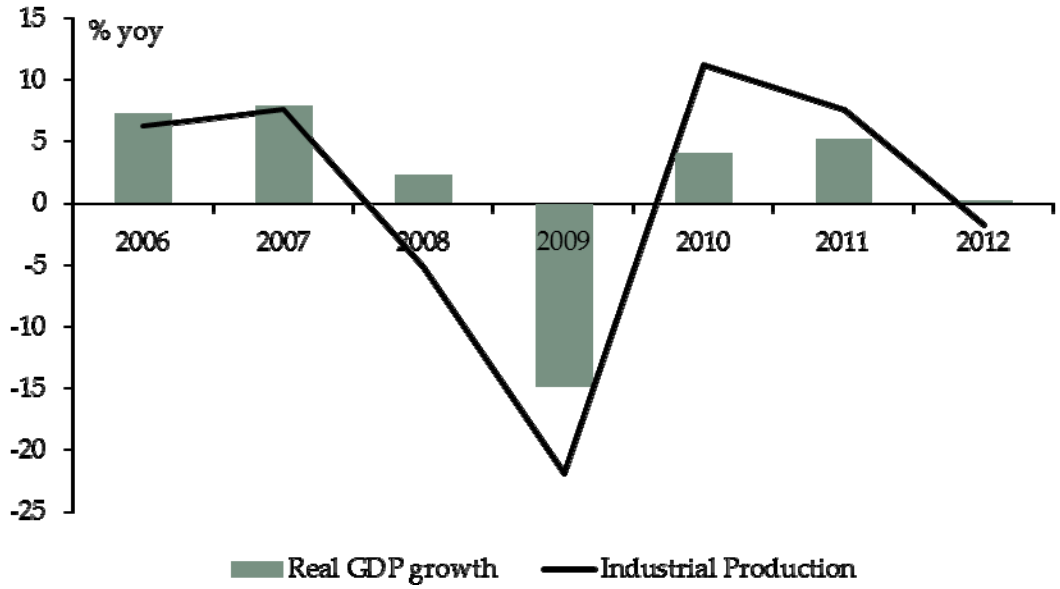
2.1. Macroeconomic Background and Implications for Construction

Ukraine's economy underwent some drastic shifts in growth pattern during the last couple of years. Starting at around the turn of this millennium, strong and relatively stable growth in real GDP was delivered, averaging around 7% until 2007.

These positive developments came to a sudden stop in September 2008, as the global financial crisis struck Ukraine to a significant degree. A "double" external shock to the

balance of payments via declining exports, coupled with a sudden stop in capital inflows led to a drastically worsened economic environment. Ukraine's real GDP dropped by almost 15% during 2009 in comparison to the previous year, one of the most dramatic GDP declines all over the world at that time. In line with the global recovery after the crisis, Ukraine returned to growth during 2010 and 2011, even though the recovery was relatively weak and fragile, and did not compensate for the output lost during the crisis. Starting in the second half of 2012, the economy went into recession again, as external risks (weak global growth, the crisis in the Eurozone) were amplified by an inadequate domestic policy response. Consequently, GDP stagnated during this year (0.2% real economic growth), a trend that continues well into 2013.

Figure 1: Development of Real GDP and Industrial Production



Source: State Committee of Statistics of Ukraine

Under current conditions, the politically motivated de-facto peg of the Hryvnia at an overvalued level versus the US-dollar implies a very tight monetary stance, and this explains in turn the prevalence of high interest rates/financing costs and a stagnating loan portfolio as a result. These developments are negative for the economy, as interest-rate and exchange-rate sensitive components of demand (i.e. investments and net exports) are suffering from this adverse policy mix. Consequently, re-starting economic growth requires a change in the macroeconomic policy mix towards more flexibility in the exchange rate.

2.2. Developments in the Banking Sector

As in every country, the construction sector is highly dependent on the availability of finance at affordable costs. The following section deals in more detail with the way construction activities have been financed in Ukraine over the last couple of years.

Before the global crisis, the banking sector was expanding rapidly in Ukraine, driven in part by the keen interest of foreign banks to enter an underpenetrated market. This led to loan

growth of around 80% in early 2008, a clearly unsustainable situation, as mounting risks were not adequately covered and priced. Another important feature, besides the rapid growth over the last years, is the currency structure of loans. Ukraine's economy is highly dollarised, in particular the banking system.

Consequently, the sudden stop in external finance during the crisis, as well as the disappointing growth performance since then has led to completely different development dynamics. The emergence of a „credit crunch" can be illustrated in Figure 2. Here, the exchange-rate adjusted growth of the total loan portfolio, as well as the respective growth of loans to households and to corporates is shown.

Loan growth dropped to a level of around 0% (implying stagnation in the loan portfolio) during 2010, and increased only slightly in the following year. In line with the recession during the second half of 2012, loan growth dropped again to a level that is only slightly positive. Both trends are visible in corporate and household lending, even though the situation in household lending is more difficult, as most lending used to be in foreign currency, and regulatory responses[1] taken during the crisis limited foreign currency lending to enterprises and households.

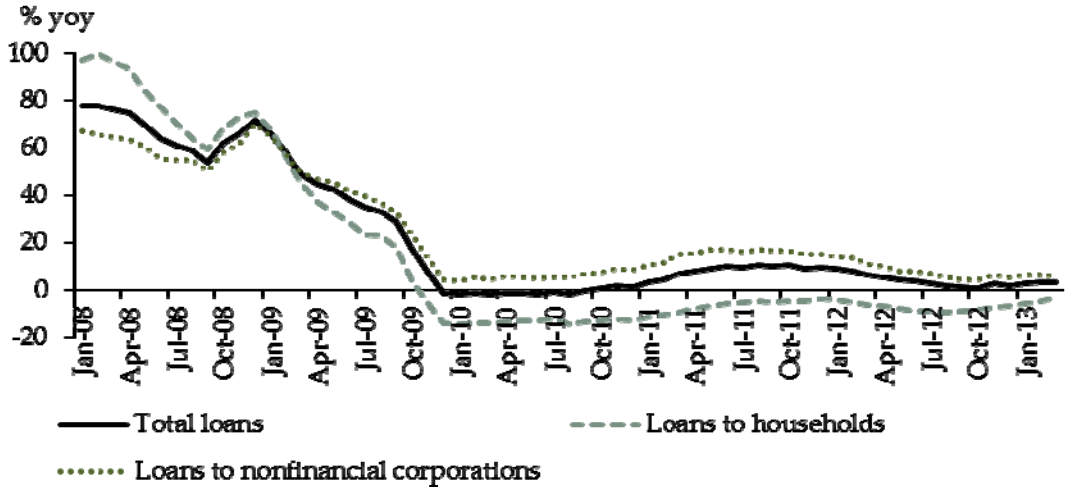
As banks continued to de-lever their portfolios, the quality of their loans became a critical issue. This can be seen in the continuous increase in the level of non-performing ("bad") loans (NPL)[2] in the banking sector until the peak in 2010, after which a slight improvement started to set in (Figure 7 in the Annex). However, when interpreting the numbers given in Figure 7, one should keep in mind that they are the official indicator published by the National Bank of Ukraine, and based on local accounting standards. According to international loan classification standards, financial analysts and rating agencies estimate that currently the true level of problem loans is likely much higher than the official figure, and is estimated at 35%[3] of the total loan book.

[1] Resolution 319 by the NBU limited foreign currency loans to households and enterprises without foreign currency income. The level of loans to such clients was "frozen" at the level of 13 October 2008, so that no new net lending was allowed. This resolution has been cancelled; however, the subsequent resolution 406 implies a huge increase in loan loss provisions for such loans, which makes foreign currency lending commercially unattractive.

[2] According to a standard IMF definition, a loan is non-performing ("bad") when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons — such as a debtor filing for bankruptcy—to doubt that payments will be made in full.

[3] See Moody's (2013): "Banking System Outlook Ukraine" May 2013.

Figure 2: Loan Growth

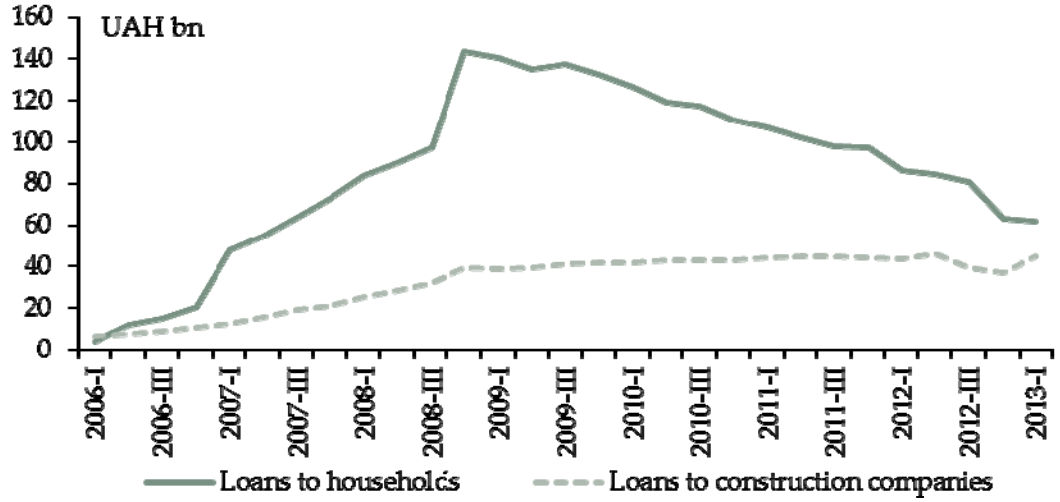


Source: NBU, own calculations

Turning to the situation with construction finance in detail, a more dramatic picture emerges. If we look at supply side financing, i.e. providing loans to developers and construction companies, the dynamics are roughly in line with the general banking sector trends. Loan volumes remained almost constant since the global financial crisis, with a slightly positive trend in recent times (a decrease in the second half of 2012 was compensated by an increase in Q1 2013). Figure 3 provides details on the relevant loan stock. One reason for the weak growth dynamics are the interest rates charged on loans to construction companies, which fluctuate at a rather high level of between 13% and 18% (Figure 8, Annex). The already mentioned loan quality, which is in the construction sector even worse than the average ratio, keeps lending rates high.

If we concentrate on demand side financing, the development of the mortgage loan market is of key importance. This loan category recorded a major boom before the crisis, as many banks entered this underdeveloped market in Ukraine. Just for comparison, in the end of 2012, mortgage loans amounted to around 4.7% of GDP, a ratio which is much lower than the respective values in Poland and Hungary (around 20%), Czech Republic (18%) and Romania (around 6%). Figure 6 in the Annex provides an overview. This dynamic development reversed completely during the crisis, a trend which still continues. One reason for this was that mortgage loans were issued mainly in foreign currencies, especially in USD. Since new foreign currency lending was practically forbidden during the crisis, and Hryvnia mortgage loans are hardly available at reasonable conditions (see Figure 7 in the Annex), the repayment of existing loans led to a steady shrinking of the stock of mortgage loans. Consequently, the share of foreign currency loans in total mortgage loans also decreased (from 77.5% at the end of 2011 to 67.3% at the end of 2012).

Figure 3: Development of Mortgage and Construction Loan Volumes



Source: NBU

State involvement

The state is involved in the financing of construction activities through different institutions and schemes. The State Mortgage Institution (SMI), whose equity capital is provided by the state, and who can borrow on the bond market under state guarantees, is involved in purchasing mortgages from banks (post-origination financing) and provides loans to banks to fund mortgages before origination. In return banks agree to issue loans in accordance to standards set by the SMI[4].

Government-owned banks created in 2012 the "Agency for refinancing residential loans". It is supposed to buy residential mortgage loans and securitise them into mortgage bonds. Current plans assume to buy UAH 4.7 bn of such loans by the end of 2013. However, as of now, only UAH 0.5 bn bonds have been issued.

The scale of these state activities is currently not very large, and thus does not impact market dynamics to a significant degree. This is not a surprise, as the budgetary situation is currently very tight. To give an example, the SMI had at end-2012 a relevant exposure of UAH 2.1 bn (USD 263 m) outstanding[5], which is only 3.3% of the overall mortgage market of UAH 63 bn at that time.

[4] To give an example, Ukrainian commercial banks issued 160 mortgage loans worth UAH 42 m to the public in the first quarter of 2012 under a program of partnership with the State Mortgage Institution (SMI). The average amount of a loan was UAH 262,500, the press service of the State Mortgage Institution reported.

[5] Out of this UAH 2.1 bn, UAH 1 bn was spent to purchase mortgages and the rest consisted of loans to banks supporting issuance of mortgages according to SMI rules.

Conclusions

Both the macroeconomic and the banking sector situation continue to remain fragile in the aftermath of the global financial crisis, which hit Ukraine very hard in 2008. Until 2008, the economy was growing strongly and the banking sector expanding rapidly, i.e. the availability of finance increased rapidly, while financing costs decreased in line. This unsustainable development came to a sudden stop with the arrival of the global financial crisis, when the economy dived into recession, and banks became unwilling to provide new loans, tightened their lending standards and increased lending costs significantly. These general trends are equally observable in the segment of construction finance, and in particular in the mortgage loan market. Taking into account the existing structural headwinds in the banking sector, and previously described adverse macroeconomic trends, an improvement in access to finance for construction activities seems very distant at the moment.

3. The Construction Sector in Ukraine

In this section we provide a short review of the construction sector – especially the residential construction sub-segment – given the importance for carrying out and achieving energy efficiency improvements in the housing sector. We first provide a quick snapshot of the past and current developments followed by an outlook for the sector.

3.1. Current Situation in the Construction Sector

The construction sector was at the core of the economic crisis of 2008/2009. This is highlighted in the 35% decline of the value of construction work observed in 2009 (see Table 1 below). If the value of construction output is used as indicator, it would also suggest that the sector has now successfully emerged from the crisis. Construction output reached an estimated UAH 123 bn in 2012 – close to the pre-crisis peak of UAH 129 bn observed in 2008.

However, looking at the quantity of construction output suggests a very different picture. Indeed, the index of completed construction works is currently less than half of the level seen in 2008. Furthermore, the data show that the number of construction works completed declined by 14% in 2012 indicating that the construction sector recovery has come to a halt. The latest employment numbers support this notion of an on-going consolidation of the sector. Employment has continuously declined over the last couple of years and is now 40% lower than during the 2007 peak. As such the data suggest that, following a brief and modest rebound, the construction sector recovery has come to a halt in 2012.

Table 1: Construction Sector Developments

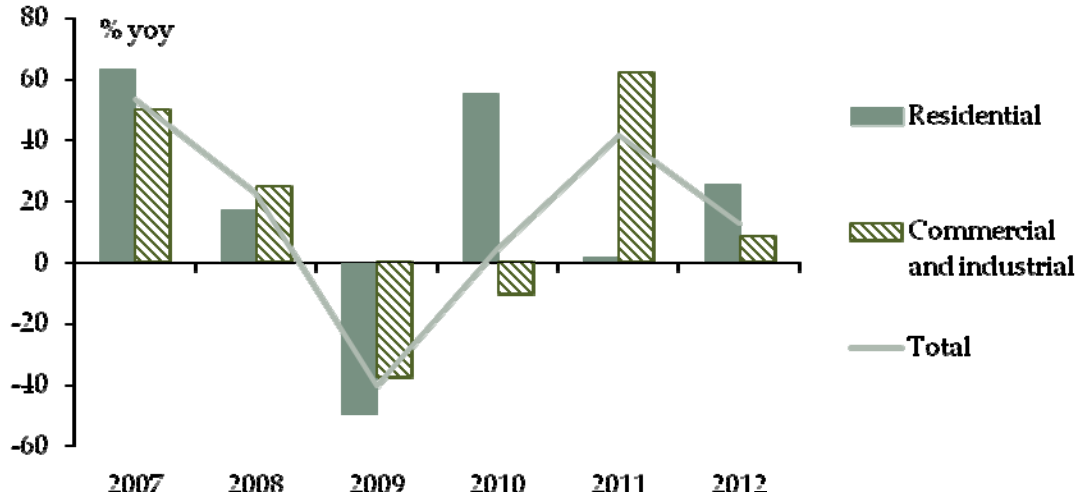
	2006	2007	2008	2009	2010	2011	2012
Construction output (current prices), UAH bn	72	107	129	84	87	109	*113**
Growth rate, % yoy	38.3	49.0	20.4	-34.9	3.6	25.3	*3.5**
Completed construction works (fixed prices, index 2006=100)	100	116	97	50	48	53	46
Growth rate, % yoy	9.9	15.6	-15.8	-48.2	-5.4	11.0	-14.0
Average annual number of employees engaged in construction (1,000)	668	679	653	509	447	409	n/a

*Source: State Committee of Statistics of Ukraine, * estimated*

Development of residential construction

Looking closer at the construction sector data shows that both main segments, the residential sector as well as the commercial part, were hit hard during the economic crisis. Indeed, investments in residential construction declined by a massive 49% in 2009. However, this decline has been mostly regained in value terms during the past couple of years since the crisis as investments (at current prices) in residential construction reached UAH 133.5 bn in 2012 – close to the UAH 134.7 bn observed in 2008 before the crisis hit. The share of residential construction investment of total construction investments is also back to 26% which more or less reflects the long term trend.

Figure 4: Comparison of Nominal Annual Growth Rates of Residential and Commercial Construction Investments



Source: State Committee of Statistics of Ukraine

However, by only looking at the current value of investments, the data may suggest a much more positive picture than is actually justified. Firstly, prices for construction services have continued rising unabated and explain a large share of the recovery in nominal terms. Indeed, construction prices increased by more than 50% since 2009 (see Table 3 on page 14) suggesting that residential construction output in real terms is still only half of the pre-crisis peak. Thus, it makes sense to consider other measures of residential construction output which strip out this price effect.

One such measure output is the number of completed buildings as shown in Table 2 below. It suggests that 10.75 m square metres (sqm) of residential building space was finished in 2012, the first year when this measure exceeded the pre-recession peak of 10.50 m sqm seen in 2008. However, most observers of the market agree that this vastly exaggerates the real output of the sector for two reasons. First, many developers stopped construction of almost finished buildings during the crisis in the hope for better times. Those mouth-balled projects have now been reactivated and completed and show up in the statistic as recently finished. Furthermore, there is anecdotal evidence that a considerable share of projects were finished earlier but only have been 'legalised' recently and thus only show up in the statistics now. Both explanations suggest that the increase seen in 2012 may actually only be a one-off and output of residential construction is struggling similarly as the whole construction sector.

Table 2: Residential Building Stock and Construction Activity

	Residential stock, million sqm	Residential housing per capita, sqm	Residential housing completed, million sqm	Change in residential housing completions, %
2006	1,049.2	22.2	8.63	10.4
2007	1,057.6	22.5	10.24	18.7
2008	1,066.6	22.8	10.50	2.5
2009	1,072.2	23.0	6.40	-39.0
2010	1,079.5	23.3	9.34	45.9
2011	1,086.0	23.5	9.41	0.7
2012	1,094.2	23.9	10.75	14.2

Source: State Committee of Statistics of Ukraine

3.2. Outlook for Residential Construction

As most of the building stock in Ukraine is from the Soviet era, there is large demand for replacement over the next decades. Typical building types are brick buildings from the 1950-1990, five storey panel buildings (so-called Khrushchovkas) from the 1960-1970s and taller panel buildings from the 1970s and 1980s. Some of them (especially the Khrushchovkas) have been projected for rather short lifetimes of about 25 years leading to an enormous replacement/modernisation demand already at present. However, this factor only represents latent demand which is only likely to be realised if fundamental factors such as finance and affordability are supportive.

Indeed, the key drivers for demand for residential construction are – in the short-term – the availability and costs of finance, growth disposable incomes of households and construction costs. In the long-term demand is also affected by the general demographic developments such as population growth, household formation and urbanisation.

In the short run one of the most important factors for residential construction demand is the availability of finance and interest rates. As outlined in the previous chapter, both the restricted quantity and high price of finance provide an extremely difficult environment. Thus, the lack of affordable long-term finance is one of the most restricting factors for residential construction. Without a change in monetary and exchange rate policy this is likely to suppress demand for residential construction in the foreseeable future.

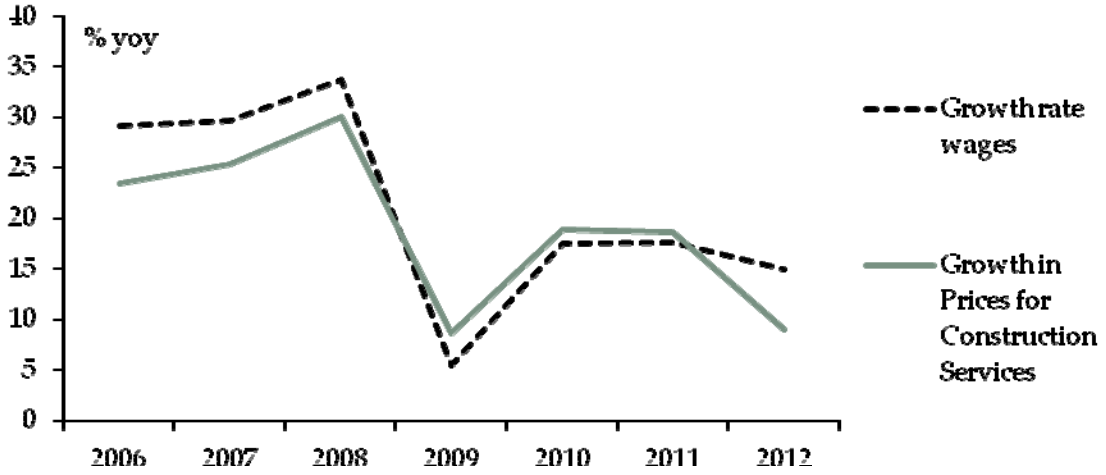
Table 3: Growth in Prices for Construction Services (%, end of year)

	2006	2007	2008	2009	2010	2011	2012
Overall	23.4	25.4	30.1	8.6	18.9	18.6	9.0
Commercial and residential construction, out of which	24.1	26.4	29.2	8.2	16.5	19.0	9.0
Residential construction	24.1	26.4	29.3	7.8	16.6	18.2	9.5
Commercial construction	23.2	26.9	28.9	8.6	16.5	18.8	8.8
Industrial construction, out of which	22.6	22.8	32.1	9.1	22.7	18.7	9.0
Transport construction	21.7	27.9	30.9	7.5	25.3	22.3	9.6
Pipelines communications and electricity lines	29.5	24.4	33.5	15.3	17.5	16.7	7.9
Complex industrial construction	18.2	22	33.9	6.8	26.5	19.1	9.8
Other engineering construction	6.5	24.2	26.2	5.7	15.4	14.0	8.9

Source: State Committee of Statistics of Ukraine

Furthermore demand is affected by the cost of construction services which affect affordability. Table 3 shows the observed growth rates of construction costs. The data suggest that construction costs have continued growing unabated, although some slowdown was observed during the crisis and another such slowdown was observed in 2012. However, while before the economic crisis wage growth could keep up with the increase, wage growth lagged behind the increase in construction costs during 2009-2011. With incomes growing less than the cost of construction there is strong indication that construction services are becoming less affordable, which is likely to be an additional drag on demand and thus the prospects of the sector.

Figure 5: Comparison of Wage and Construction Cost Growth



Source: State Committee of Statistics of Ukraine

With availability of finance and affordability, both main short-term factors point to lower demand residential construction. Additionally, in the long run, residential construction will also be affected by demographic factors - first of all by population growth. Here it is import to highlight that Ukraine currently features one of the fastest population declines among all countries with the population shrinking by -0.31% in 2012. The population forecast for 2050 of 38.2 m indicates that by 2050 Ukraine will have lost more than 16% of its population leading to sluggish demand for residential construction.[6]

Regional Developments

Despite the national perspective of our report it is worth noting that regional real estate prices and construction activities depend very much on the corresponding regional economic trends. Residential housing prices in Kyiv are roughly 2.4 times higher than those in the western Zakarpattya region. This mirrors annual real disposable income per capita distribution, where UAH 49,651 in Kyiv contrasts with UAH 15,824 in Zakarpattya in 2012. Consequently, regional construction development trends were also not homogenous. Completed construction works in Kyiv increased by 36% between 2010 and 2012 while the corresponding growth for Zakarpattya was 10%.

These regional divergences are fuelled not only by differences in disposable income but also by trends in internal migration and regional demographics. While the elderly and children mainly stay in rural areas the corresponding working age population seeks jobs in urban zones.

[6] See UN (2010) at: http://esa.un.org/unpd/wpp/Excel-Data/population.htm.

Conclusions

The recovery of the construction sector in general and residential construction in particular following the recession may prove short-lived. Indeed, real construction output – after having accounted for prices – already declined for the sector as a whole in 2012. It is currently only half the pre-crisis peak. There is strong indication that it is only due to a number of one-off factors that the statistics of residential construction output has not yet shown a decline. Indeed, the lack of finance at affordable prices and falling affordability make a challenging environment for most residential construction projects. Planning and carrying out building energy efficiency projects needs to factor in and address the barriers of demand.

4. Financing Increased Energy Efficiency in Buildings

4.1. Energy Efficiency Empowering Legislation in Ukraine

4.1.1. Legal Framework for Energy Efficiency and Energy Saving

The legislation of Ukraine stipulates the general framework of energy saving and energy efficiency. There are many laws in Ukraine addressing the issue of energy efficiency as a favourable part of the solution to address energy and environmental challenges. It is clear that Ukraine has made a notable commitment prioritizing energy efficiency in the State Energy Policy. The principles of energy efficiency are contained in several Ukrainian laws, however, in order to achieve the desired results normatively, further development is needed. In other words, principles need to be turned into actionable tools to be effective.

The "Law of Ukraine on Energy Savings" well addresses the need and obligations of different public entities to perform energy audits; defines what constitutes an energy audit and the different responsibilities and obligations needed to be fulfilled in an audit. However, the law stops short of providing actionable steps to implement the recommendation of the audits which are crucial to reach the targeted energy savings.

Tax incentives exist to encourage private sector entities to implement energy efficient retrofits. While this is commendable, tax incentives does not stimulate energy efficiency in the public sector, since municipalities, oblast governments or the state government do not pay taxes governments or the state government as all these entities do not pay taxes in the first place.

As part of the dialogue with the EU, the Protocol on Ukraine joining the treaty establishing the Energy Community is ratified by Law of Ukraine #2787-VI from 15 December 2010. This EU legislation would be the right step as it does include significant reforms needed but that the uncertainty comes for the lack of progress in implementation. In other words, Ukraine has joined an international treaty which introduced among other reforms, an EU directive on energy end use efficiency and energy services. As with all directives, member states have a period of time to adopt the appropriate national legislation to develop the legal content of the

directive (this is called transposition of directives). So, the EU legislation is mandatory since the day that Ukraine signed the treaty and ratified it.

4.1.2. ESCO Enabling Legislation and Government Policies

Ukrainian law mandates that all expenses of a budget institution shall be implemented according to the established estimates. As there is no definition for Energy Performance Contracts (EPC) and its content in the Ukrainian legislature, and it is obvious that such services and works are not included in the effective classifiers of goods, works and services applied in the budget process, there is a considerable risk for the investment not to be financed (returned) from the budget. At the same time, it cannot be excluded that even with registering budget obligations on Energy Performance Contracts at the State Treasury as construction or maintenance type of work, the State Treasury may refuse registration on the basis on non-compliance of obligations with the directions of spending budget funds according to the estimate. Moreover, considering decreased expenses spent on energy sources, which will be supported by invoices from suppliers, it may be expected that the budget line entitled for energy sources will be reduced in the following years as a consequence. Therefore, if the current legislation is not amended and the classical scheme of Energy Performance Contracts is used, considerable risks of underpayment of EPCs by Energy Service Companies (ESCO), which concluded the respective EPC with budget institutions remain in place.

An energy service company can be defined as a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria.

It should be noted that due to the lack of legal regulation, lack of experience, and lack of political will in Ukraine until today the mechanism for the implementation of projects using EPCs and the creation of an ESCO market has not been effective, which in recent years is booming in the United States and countries of the European Union. Among the legal barriers for implementation of ESCO projects in the municipal and government sector, the following must be mentioned:

Lack of ESCO definition in the Ukrainian legal framework**.** ESCO is not well defined in the laws of Ukraine as a viable option for contracting of energy services. The term "energy servicing company" is used in Law of Ukraine #2509-IV "On combined production of heat and power (cogeneration) and waste energy potential use" from 5 April 2005, but there is no definition in this law regarding an ESCO. According to Article 6 of Law of Ukraine "On combined production of heat and power (cogeneration) and waste energy potential use", the law defined the financing of projects development, purchase of technological equipment and constructions of cogeneration units conducted by own or credit funds of enterprises, partial use of funds of special accounts of techno parks, natural persons, including foreign investors, credits of energy servicing companies, and also by funds of relevant budgets, however, it does not address specific mechanisms of procurement of energy services. On the other hand, the concept of PPP (public-private-partnerships) is defined but it is vague and lacks a lot of specifics. In addition this PPP concept seems to have been designed for projects of significant

size, while we do not anticipate that a lot of ESCO projects will reach that level to make using PPPs practical[7]. The Law mandates certain rules and regulations in identification of the private partner through an open competition process which involves the same level of efforts as for projects of bigger size. Moreover, the same issues related to budget constrains exist, as there are no conditional budget obligations for the future payments to private partners in case of reaching certain levels of energy savings under energy performance contracts.

Lack of mechanisms to launch ESCO type projects. National regulations are designed to realize budgeted conventional contracting of projects with developed design and specifications and direct purchase transactions but did not include provisions for alternative approaches. Procurement mechanism for municipalities does not allow for evaluation of different types of contracts other than those provided by bidding procedure on certain predefined specifications. Municipalities experience is limited to what is mandated by law, lacking of capabilities and normative tools to procure performance based contracts with variable scope of works and sales price and service offering.

Lack of long term budget commitments. Ability of municipalities to borrow from financial institutions based on their budget is key. Although the budget code provides the facility for three year planning, the allocation of resources has to be approved on per year bases. In practice this jeopardizes a regular cash flow to lending institutions.

Different time lines between the energy savings benefits and the project payments. Budget laws have constrained the possibilities for local authorities to retain the benefit of energy savings. The budget law stipulates that spending of budget institutions shall be implemented based on codes of economic classification depending on the type of spending and the economic content of a payment. This means that if the utility expenditures were reduced after the implementation of a project, the utility budget for the following year will be reduced. Because project implementation payments comes from a different budget line item, budget institutions are not allowed to pay down energy efficiency projects from a utility expenditure line budget item.

According to the budget code there is no obligation to include future payments for the ESCO in future budgets even if there is an agreement in place. Also, reduction of utility cost as a result of project implementation will lead to reducing the utility budget for the following year without allowing the municipal client to pay back the project as part of the utility budget.

Lack of protection against non-payments from public parties. Civil laws cannot protect private parties (ESCOs and banks) for non-payment; if the municipalities stop paying, there is very little that can be done by ESCOs or private banks to enforce payments. The experience with ESCO Rivne was that it went as far as issuing a court order to seize the property of the City for non-payment, while it turned out that that court order was not enforceable due to the condition of municipality of the debtor. Although lease agreements provide good level of protection to the lender, municipalities and budget institutions like hospitals are not allowed to enter into such agreements.

[7] Big infrastructure PPP projects are most likely in the range of UAH 100 m – 10 bn, while ESCO projects for individual buildings will most likely amount to UAH 2 – 4 m.

4.1.3. *Construction Norms for Energy Efficiency in Buildings*

During the past few years Ukraine has made several important steps in adopting its legislation and norms to the current requirements for construction of energy efficient buildings including residential buildings. Those important stages for development of Ukrainian national regulatory framework in the field of energy efficiency of buildings are described below:

1994-1996. Requirements on resistance to heat transfer for building envelope structures increased by 2.0-2.5 times for residential and public buildings

2006-2007. A new generation of State Construction Norms (DBN) on energy efficiency of buildings was put into operation

2008-2010. The system of norms and standards with the requirements of regulation and methods of controlling the energy efficiency indicators

2012-2013. Harmonization with European standards, European standards implementation, development of norms and standards

One of the most important amendments (Amendment 1) to the State Construction Norm (DBN) ДБН В.2.6-31:2006 "Construction of buildings and structures. Thermal insulation of buildings" comes into force on 1 July 2013.

The amendment to the norm increases the requirement for energy efficiency parameters of buildings to be designed and constructed by bringing them to the existing requirements in European countries (such as UK, Germany, France and others).

Below is an example of the new energy efficiency requirements to buildings as recently amended (see Table 6 in the Annex for further examples):

Table 4: Minimum Allowed Value of the Resistance to Heat Transfer of Building Envelope Structures of Residential and Public Buildings (Rq min)

№	Type of envelope structure	Values of Rq min, $m^2 \cdot K/W$, for the temperature zones	
		I	II
1	Outside walls	3.3	2.8
2	Combined coverage	5.35	4.9
3	Attic floor covering and unheated attics coverings	4.95	4.5
4	Coverings over passages and on unheated basements	3.75	3.3
5	Translucent envelope	0.75	0.6
6	Entrance doors in residential and public buildings	0.5	0.45
7	Front door in low-rise buildings and apartments, which are located on the first floors of high-rise buildings	0.65	0.6

Source: State Construction Norm (DBN) ДБН В.2.6-31:2006 (Amended on July 1st, 2013)

Note: The R-value is the inverse of the U-value that is commonly used in the EU and the US, as well as other Western countries.

Moreover, starting from 1 July 2013, the Eurocode for building structures will be used in Ukraine as part of adaptation process of local construction standards to Eurocodes. As seen

from the example above, starting from 1 July 2013, any new building shall be built in accordance with energy efficiency requirements which are in line with European norms.

Moreover, the implementation of the "Law on regulation of urban planning" from 2011 (with the latest amendments adopted in 2013) has significantly simplified the procedure for obtaining construction permits by cutting the number of permits twice and decreasing the term for obtaining construction permit from 60 days to 5 or 10 working days, depending on the complexity of the project. In addition, for some projects the permit to start the construction is not required anymore, the developer has only to notify the Inspection for architectural and construction control on the fact of commencement of construction works.

4.2. Overview of Financing Options in Ukraine

Despite the significant progress in technical issues during last years, there is little legislation aimed at enhancing the financing of energy efficient buildings. Therefore, the issue is more general, as it relates to financing new buildings construction.

In the housing sector, the financial mechanism provided by the Law of Ukraine "On Financial and Credit Mechanisms and Administration of Assets in Housing Construction and Real Estate Operations" has been dominating in Ukraine for years, and has been subject to criticism due to lack of control from the investors' (mostly physical persons) side. The investors in housing construction do not have a working mechanism to influence decisions of the trustor and the general contractor. The trustees are also not protected against the risk of potential damage caused by the actions or decisions of the trustor and/or general contractor as the requirement for obligatory insurance of their professional liability is not envisaged by the law.

At the same time, housing construction cooperatives, although formally allowed under Ukrainian legislation, are still poorly regulated by outdated laws and sub-laws. Thus, the provisions of the Housing Code still makes the housing construction cooperatives formally dependent on the local authorities, and the "Sample Charter of Housing Construction Cooperative" contains a number of limitations and constraints of the cooperatives' rights.

To give people an alternative to the mechanism provided by the Law of Ukraine "On Financial and Credit Mechanisms and Administration of Assets in Housing Construction and Real Estate Operations", the following amendments deem to be necessary:

To the Housing Code of Ukrainian SSR: Articles regulating housing construction cooperatives (133-149) have to be excluded or at least amended (local governments' control over the cooperatives has to be cancelled),

To the Sample Charter of Housing Construction Cooperatives: The Charter has to be fully redrafted in accordance with modern Ukrainian legislation.

When it goes about local governments, the main legal constraints for financing energy efficient building construction are provided by the Budget Code of Ukraine. While generally the Code allows the local governments to finance the construction of new buildings, in practice not so many municipalities have enough money for that. Borrowing money could be a solution, but the poorest municipalities – villages and towns – are not allowed to make

borrowings at all, therefore Article 16 of the Budget Code of Ukraine should be amended, allowing villages and towns to make *local borrowings*.

4.2.1. Bank Programs for Energy Efficiency Financing

Apart from bank programs supported by IFI's, which are described in the section on International Donor activities, and which are mostly aimed at private business and municipalities, there are several initiatives to create a lending facility for Home owners' associations (HOA's):

As part of its "Ukraine Residential Energy Efficiency Project" which is designed to create an effective legal and institutional platform to support Ukrainian HOA's and housing management companies in obtaining access to finance for the energy-efficient modernization of multifamily buildings, IFC works closely with Ukrainian banks, and Kredobank in particular.

Metabank from Zaporizhzhia has developed a new program at the banking market of Ukraine: non-collateral loans for HOA's and Housing cooperatives based on the principles of trust and partnership.

The lending program is mainly aimed at the reconstruction and capital and current repairs (thermal insulation of protecting designs, housing modernization of networks and systems, installation of individual heating units, repair of elevators, lighting of common areas, etc.) of objects of housing and communal services.

Major loan characteristics are the following:

Table 5: Non-Collateral Loans for HOA's and Housing Cooperatives

Loan parameters	"Capital"	"Current"
Maximum loan period, years	2	1
Loan Initiation fee, UAH	0	0
Annual loan fee, %	20	20
Monthly fee for loan servicing	0	0
Loan Interest rate, %	0.01	0.01
Maximum monthly financial burden per apartment, UAH	170	50

Source: Metabank

It has to be noted that as of June 2013 there were no loans disbursed so far, however the bank builds up trust relationships with its client HOA's and Housing cooperatives in order to develop financing facilities that would serve best their clients' needs.

At the same time both banks (Kredobank and Metabank) realize that under current conditions, it would not be economically viable for HOA to finance major energy efficiency rehabilitation measures in buildings as savings will not cover the cost of financing with the current pricing of energy in form of too low tariffs.

This tariff problem seems to be a major problem for all commercial banks interested in this sector, and explains to a large extent their current hesitation to supply funds for energy

efficiency measures in the building sector. However, it should be noted that this is not the only problem they face in their operations, as HOA are generally not considered viable borrowers. Another critical issue is the availability of collateral to secure such loans. Building structures cannot be pledged by HOA to banks as collateral, which is another key problem. Similarly, there is no clear enforcement mechanism for debt collection from the side of the bank. Another problem specifically for energy efficiency investments regards their certification, which should follow appropriate standards. Currently, such certification is not available, which decreases transparency and trust in the system.

4.2.2. State Programs and Government Projects

There are three major programs to support citizens in obtaining affordable housing that were launched by the government in the last 2 years. Those programs are aimed to provide support to those families that are on the waiting list for improvement of housing conditions. As of today there are more than one million families on the waiting list for those qualified for improvement of housing conditions, at the same time the Ministry for Regional Development, Housing and Municipal Economy estimates that the real number of families that require improvement of housing conditions is lower and falls within the amount of 700,000 families. The discrepancy in figures is due to the fact that many of those who resolved the issue of improvement of the housing conditions or moved to another area are still on the list as currently there is no unified single electronic register, and the Ministry has identified the development and implementation of the Register as one of its priorities. Among the programs for affordable housing are the following:

1) Affordable housing financing program for young families/individuals (who are under 35). Under this program a young family is able to obtain a subsidized mortgage loan for a period of up to 30 years at 3% p.a.. Moreover, under this program, young families get additional bonuses if they have children: 1 child – no need to pay interest, 2 children – 25 % of the principal amount will be written off, 3 children – 50% of the principle amount will be written off.

In 2013, up to date 361 loans were granted to young families for the purchase of housing. The program ranks the most popular in the country with an overall demand for about 12,000 loans, which cannot be met at the moment due to lack of funding by the state budget.

2) "70/30" affordable housing construction program. Under this program, citizens who require improvement of housing conditions are able to get a state subsidy for purchasing the housing in the amount of 30% of the cost of housing; the remaining 70% shall be invested by the applicant him-/herself.

In the year 2012, 1,222 apartments were bought by families participating in the program. The state support to the program constituted UAH 156.6 m. The overall investment into construction industry under the program constituted UAH 490 m. According to the Ministry, about UAH 89 m is envisaged in the state budget for 2013, which will allow purchasing affordable housing for about 710 families.

3) "13/3" subsidized mortgage loan program for those who require improvement of housing conditions. Under this program, citizens are able to obtain mortgage financing for 15 years at 16% interest rate p.a., while the government takes an obligation to compensate 13% and the

borrower compensates only 3%. In the year 2012, 1,233 families participated in the program and obtained subsidized loans to purchase affordable housing.

In 2013, the banks participating in the program have issued 600 loans up to date; in general there is an amount of UAH 300 m envisaged in the state budget for 2013 which shall provide about an allocation of about 1,300 subsidized loans.

It is evident that participation in the government programs for affordable housing is interesting not only for end consumers but for developers of housing as well. The Ministry selects through a competitive procedure a number of developers in each region, giving preference to those who are reliable and stable market players. Those developers preselected for participation in any of the 3 state programs for affordable housing get some privileges: VAT exemption for products purchased under state programs, land tax exemption, participation of the local authorities in building infrastructure for residential buildings etc.

The issue of affordable financing for housing construction is acute as it was described in the previous sections. Even taken together, the state programs for affordable housing construction would account for only about 2% of the total annual housing construction output, which is obviously not enough to support the sector.

4) Subsidized loans for legal entities including Home Owners Associations (HOA's) for capital and current repair of housing. Home owners' Associations (HOA) are legal entities formed by apartment owners in multifamily buildings for effective joint management and maintenance of common property of residential building and protection of building co-owner's rights. In 2012, the number of HOA's formed in Ukraine was estimated at about 14,000 which is 17% of all multifamily buildings in Ukraine.

In 2012, the government launched a subsidized loan facility program to finance housing and utility repairs and reconstruction. The facility is available for legal entities, including HOA's.

Detailed terms and conditions and a list of all necessary documents for a loan application can be found in the Decree of the Cabinet of Ministers of Ukraine #599 "On approval of the procedure for the use of funds provided by the State budget for subsidized financing of legal entities, including HOA's for reconstruction, capital and current repair of objects of housing and communal services" from 31 May 2012. The program is administered by the „State Fund for promotion of youth housing construction". The state fund's representative offices are located in all regions of Ukraine.

In the project selecting process, preference is given to those projects that reduce resource consumption, completely solve the problems of the locality or group of residential buildings located in a single technological scheme.

The loan facility has the following basic characteristics: the loan period is up to 10 years, with the possibility of early repayment. The size of the loan interest rate is 3% per annum. The repayment of principal starts only after a year, and the repayment of interest start after 3 month from the date of the loan disbursement.

In 2012, the fund allocated loans for the total amount of UAH 40 m. Out of those, UAH 8 m were allocated to 13 HOA's. By the end of 2012, the fund's chairman Leonid Risukhin reported there were 36 applications for a total amount of UAH 83.5 m. In 2013, the fund operates with the amount of UAH 18 m, moreover, the "State program to boost economic development for 2013-2014" described below envisages UAH 100 m in 2013 and 2014 each.

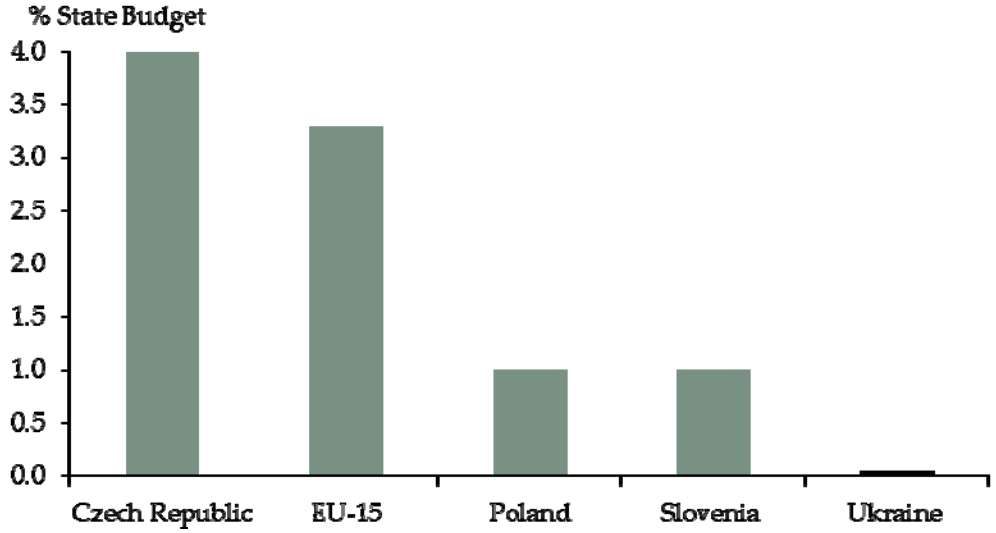
According to the Ministry, an additional UAH 300 m facility is expected to be included into Fund's operations later in 2013 as part of a joint program with EBRD.

5) "State program to boost economic development for 2013-2014". The program that was adopted by the Decree of the Cabinet of Ministers #187 on 27 February 2013 identifies several priorities for economic development, among them housing and utility infrastructure economic development as well as housing and civil construction development and energy efficient rehabilitation. The government estimates to invest in all measures identified by the program about UAH 47 bn of state budget funds and about UAH 14 bn of municipal budgets within two years. At the same time, the program envisages attraction of additional funding from other sources: IFI's loans of UAH 21 bn and other sources, including private equity financing and state guaranteed borrowings in the amount of UAH 379 bn. Thus the overall funding for program implementation is estimated at UAH 461 bn, which is equal to 31% of GDP (2013) and thus constitutes a massive amount of money. Questions regarding the likely realisation of these plans in light of the currently very tight budget stance remain thus high on the agenda.

For the programs to support purchase of affordable housing, it is estimated to attract about UAH 900 m for each program every year. The government plans to support pilot projects for energy efficiency rehabilitation of housing quarters in the cities of Lviv, Ternopil, Cherkasy, Chernivtsi, Zhovkva, Berdiansk and Novovolynsk (including a planned EBRD loan contribution of EUR 20 m). The total project cost is estimated at UAH 680 m.

It should be mentioned that the share of state budget expenditures on different housing programs in Ukraine is very low in international comparison. While an exact comparison is very difficult to obtain due to the distinct characteristics and scope of individual support programs in different countries, some rough comparison can be made. While a number of Eastern European peer countries spent around 1-4% of their annual budget expenditure on housing programs (EU-15 average is 3.3%), Ukraine spends currently only 0.04% of its annual expenditures on the programs mentioned under 1) – 3) in the beginning of this chapter.

Figure 6: State Housing Spending in International Comparison



Source: Ministry of Regional Development, own calculations, Institute for Real Estate, Construction and Housing
Note: Data for Ukraine as of 2012, data for other countries as of 2006

4.2.3. Municipal Initiatives

The Covenant of Mayors is the mainstream European movement involving local and regional authorities, voluntarily committing to increasing energy efficiency and use of renewable energy sources on their territories. By their commitment, Covenant signatories aim to meet and exceed the European Union's 20% CO2 reduction objective by 2020. After the adoption of the EU Climate and Energy Package in 2008, the European Commission launched the Covenant of Mayors to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies. Indeed, local governments play a crucial role in mitigating the effects of climate change, all the more so when considering that 80% of energy consumption and CO2 emissions is associated with urban activity.

The signatories of the Covenant of Mayors are provided with all types of technical, political and methodological support from the Cabinet of Ministers as well as other EU institutions including financial support from the European Investment Bank, which assists local authorities in unlocking their investment potentials.

Up to date there are 39 municipalities in Ukraine who joined the Covenant of Mayors and are implementing the program in their localities. The size of participating municipalities varies considerably and is not an issue on the way to municipal energy sustainability: among them Kyiv with 2.8 m residents as well as the small town of Korop with only 5505 residents.

There are many municipalities in Ukraine, including those leaders mentioned above, which develop and support energy efficient renovation of housing and public buildings as well as utility infrastructure. Among them, it is worth mentioning the initiative by Vinnitsa that established a municipal fund for financing energy efficiency measures in housing. The funding is available to HOA's of the city in the amount of up to 20% of the total cost of energy efficiency measures for 5 years at an interest rate of 10% p.a. Apart from financing,

the municipality supports HOA's with grants for the development of project design and installation works for energy efficient equipment.

4.2.4. International Donor Activities and Pilot Projects

There are several IFI's and donor organizations implementing energy efficiency and renewable energy projects in Ukraine providing technical assistance, methodological, political and financial support to the national and municipal governments as well as to municipal and private enterprises.

It would not be an exaggeration to state that without IFI's and donor organizations multifaceted support to energy efficient building rehabilitation and energy efficiency sector development in Ukraine today's results would not have been achieved. At the same time, as stressed by IFI's and donor organizations in many ways there is still little progress on behalf of the Ukrainian government to widespread support of all existing initiatives in order to make them sustainable.

One issue that restricts lending support to some extent is the issue of exchange rate risk. Basically all donors issue their loans in foreign currency, which means the foreign exchange risk is passed on to the intermediating bank, or the ultimate borrower. However, some recent developments are encouraging in this respect. A recent law passed on 04 July 2013 allows IFIs active in Ukraine to issue local currency bonds, and use the proceeds to provide (long-term) financing to local entities. This might facilitate the provision of such loans from EBRD, IFC, EIB, etc. in the future.

Before the first bonds can be issued the Law requires, however, a number of other legislative acts to be adopted by the National Securities and Stock Market Commission and other Ukrainian state authorities. In particular, the Law includes the following conditions: First, all payments relating to the offering, sale and redemption have to be made in UAH. Second, IFI bonds must be offered publicly on stock exchanges in Ukraine and selected by the National Securities and Stock Market Commission by a tender. Third, the issue of IFI bonds needs to be approved by the Ministry of Finance and the National Bank. Fourth, the proceeds from the bond issue may be invested in Ukraine in accordance with relevant constitutional documents or international agreements of an IFI. If Ukraine is not a member of an IFI or a party to an international treaty with an IFI, the proceeds from the bond issue may be used only as approved by the Cabinet of Ministers of Ukraine. Thus, in order to start the issuance of local currency bonds, aforementioned legal acts need to be adopted.

Below is some brief information on some energy efficiency projects implemented by IFI's and donor organizations in Ukraine:

German Technical Cooperation (GIZ)

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is currently working in the framework of two projects on behalf of the German government to support energy efficiency in buildings in Ukraine:

Energy efficient pilot project (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (as part of the International Climate Initiative))

Based on a new complex of residential and office buildings in Kiev, energy-efficient and building concepts using modern, environmentally-friendly technologies are being planned and implemented. The results of this pilot project are then being disseminated more widely throughout the Ukrainian construction sector.

Energy Efficiency in buildings (German Federal Ministry for Economic Cooperation and Development (BMZ))

The project provides assistance to four Ukrainian cities with energy audits, business plans and energy monitoring systems and trainings. The project supported the development of business plans for the Energy Saving Credit Facility by NEFCO in Chernigiv, Ivano-Frankivsk, Myrogorod and Novograd-Volynskyy cities.

German Financial Cooperation (KfW)

The KfW is engaged in a number of energy efficiency projects in the banking, energy and municipal infrastructure sectors in Ukraine. In the banking sector, KfW provides financial and technical assistance to ProCredit Bank for energy efficiency lending to MSMEs[8] and households. The credit line amounts to EUR 35 m, with maturity of 7 years. Another project, which starts in 2013, relates to the German-Ukrainian Fund. The new financial product „Energy efficiency loans for SME" is launched at selected partner institutions, while KfW provides financial support in the initial amount of EUR 5 m (later planned to be increased) to the German-Ukrainian Fund. Besides those two projects, there is a further program in the banking sector under preparation, which deals with energy efficiency and renewable energy lending for SMEs (approximately EUR 40 m).

In the energy sector, there is a project dealing with an increase in energy efficiency in the transmission sector, which involves the rehabilitation of five substations. The subsidized loan for this project amounts to EUR 65 m, plus EUR 1.8 m of EU grant.

Municipal infrastructure is currently represented by two projects. The first one is the Municipal Climate Protection Program, where the investment activity is used to improve energy efficiency in the water and wastewater segments. The initial loan of EUR 17 m is planned for Chernivtsi (an increase is foreseen) whereas other cities are being considered for further investments. The second one is the "Ukrainian Social Investment Fund" that aims to improve the social and economic infrastructure in the villages and small towns with the direct and active participation of the local residents. Currently, stage 4 of the project is under preparation, with a strong focus on energy efficiency measures (grant of EUR 12 m by the German Federal Ministry of Economic Cooperation and Development).

Green for Growth Fund, Southeast Europe (GGF)

Initiated in December 2009 by KfW Entwicklungsbank (The German Development Bank) and the European Investment Bank (EIB) with the financial support of the European Commission and the European Bank for Reconstruction and Development (EBRD), the Green for Growth Fund, Southeast Europe (GGF) is dedicated to enhancing energy efficiency and fostering

[8] Micro, Small and Medium Enterprises.

renewable energies in Southeast Europe as well as in the nearby European Neighborhood region. Finance in Motion acts as investment advisor for the GGF.

In Ukraine, the Fund has signed in 2012 a credit line of USD 10 m with local bank Megabank. This line supports energy efficiency investments for SME clients.

EU

Capacity building for the State Agency on Energy Efficiency and Energy Saving (SAEE)

The EU contribution to the project is EUR 2.7 m. The objective of this project is to strengthen the overall capacity of SAEE in order to foster EU-Ukraine cooperation in the area of energy efficiency.

Energy Savings in the building sector (ESIB)

ESIB stands for "Energy Saving Initiative in the Building Sector". ESIB is a project funded by the European Union within the framework of the INOGATE programme. The INOGATE programme supports energy policy cooperation between the European Union and the INOGATE partner countries. ESIB will be implemented in INOGATE partner countries until January 2014.

Support to energy efficiency measures in small Ukrainian cities

Ten small Ukrainian cities will benefit from EU assistance to implement energy efficiency measures at municipal level within the EU-funded project "Support to energy efficiency measures in small Ukrainian cities". They were selected after the Call for Proposals launched by the Delegation of the European Union to Ukraine. The overall amount available under this Call for Proposals is EUR 1.5 m.

Eastern Europe Energy Efficiency and Environment Partnership Fund" (E5P)

One of the most recent projects is the establishment of the "Eastern Europe Energy Efficiency and Environment Partnership Fund" (E5P) with an EU contribution of EUR 15 m.

World Bank

The Energy Efficiency Project

The main purpose of the project is to contribute to improved energy efficiency by industrial and commercial companies, municipalities, municipal sector enterprises and energy service companies by facilitating sustainable financial intermediation for the financing of energy efficiency investments. The total budget of the project is USD 200 m. Ukreximbank is mentioned as the most prominent partner bank under the project. The project will cover the district heating sector of the country.

The Ukraine Urban Infrastructure Project

The Project aims to assist participating utilities in moving towards higher quality and reliability of services and reducing the costs of service through a series of institutional improvements and selective investments in rehabilitation and replacement of deteriorated water supply, wastewater and solid waste systems. The total budget of the project is USD 140

m. The project became effective in 2008 and now commitments amount to around 90% of the loan amount and about 110 contracts are under implementation in fourteen cities (incl. small cities). The project envisages sovereign loans.

IFC

Ukraine Residential Energy Efficiency Project

The project provides assistance in Ukraine to facilitate investment in energy-efficient renovations of residential multifamily buildings. Specific actions include: 1) developing legislation to enable local condominium associations and management companies to access finance to improve the energy efficiency of multifamily buildings; 2) working with three to five partner Ukrainian banks to develop and market financially viable energy-efficient housing loan products targeted at condominium associations and housing management companies; and 3) increasing the awareness of key market stakeholders regarding residential energy efficiency. The objective is to facilitate at least USD 50 m of investment in energy-efficient renovations of residential multifamily buildings, resulting in an annual reduction of CO2 by at least 200,000 tons.

EBRD

Municipal and Environmental Infrastructure Projects

The Bank allocates sub-sovereign loans complemented with E5P grants for energy efficient and environmental projects for Ukrainian municipalities. The Bank is active in almost all regional centres of Ukraine.

Ukraine Energy Efficiency Programme (UKEEP)

UKEEP is a credit facility targeting Ukrainian private companies in all sectors looking to invest in energy efficiency or renewable energy projects – investments that will decrease energy consumption, increase own energy production or make energy usage more efficient. UKEEP provides free technical assistance by international energy efficiency consultants for companies with project ideas that are eligible for UKEEP financing. The Program can provide debt financing for the project through the partner banks. Earlier UKEEP facilities have already committed more than USD 100 m to energy efficiency projects in various sectors. EBRD has dedicated EUR 60 m to the UKEEP Small and Medium Enterprise (SME) facility. Each loan can be up to USD 2.5-3 m.

Planned Projects with Ukrainian banks

One of the projects in the pipeline is with Ukreximbank, where EBRD approved providing a 5-year senior loan of up to USD 50 m to the bank to finance sub-loans for sustainable energy efficiency investments by Ukrainian SMEs.

USAID

Municipal Heating Reform Project (MHRP)

The USAID project cooperates with the government and local authorities on implementation of positive systemic changes in the heating sector on the three relevant levels: national, regional and consumer. The project is aimed at enhancing the capacity of municipalities to plan, manage, and fund the development of heating systems. The project selected 38 cities including five in Crimea for the implementation of pilot projects. 16 partner cities of the project applied to NEFCO for financing and MHRP supported business plans development for most of them.

Swiss Cooperation Office Ukraine

Energy Efficiency and Renewable Energy Infrastructure in Vinnytsa

The objective of the project is to improve municipal infrastructure and its energy efficiency, including increasing energy efficiency in the district heating system, building capacity and raising awareness about energy efficiency and renewable energy. The project is structured to provide a grant to Vinnytsa in the amount of CHF 16 m (USD 17.1 m).

4.2.5. Summary of available financing options

In the previous chapters it became clear that a considerable amount of instruments and financing programs exist in Ukraine, even though only a very small share is dedicated specifically to financing energy efficiency investments in residential buildings. The main part of these (limited) funds is for the more general purpose of financing new buildings, or the renovation of existing ones. As very different stakeholders (state, commercial banks, and donors) are engaged in such financing activities, it makes sense to provide a summary overview of the main available options in the following table:

Table 6: Overview of Financing Options and Programmes

Source of Funding	Name of Programme/ Instrument/Project	Target Group	Characteristics	Volume	Comment
Banks	Mortgage lending	Private households	Avg. interest rate 17.3% (UAH), 9.8% (USD) in 2012	**UAH 63.2 bn** (2012)	Overall outstanding loan stock, no strict link to energy efficiency
Banks	Construction lending	Developers	Avg. interest rate 16.6% in 2012	**UAH 37.1 bn** (2012)	Overall outstanding loan stock, no strict link to energy efficiency
Meta-bank	n/a	Home owner associations	1-2 year loans without collateral ca. 20% interest	n/a	No uptake to date since interest rate exceeds potential savings due to low energy tariffs

State	Affordable housing for young families	Private households	Low interest rates circa of 3% p.a., partial discount of repayment	361 loans in 2012	Low approval rate due to lack of state funding
State	"70/30" affordable housing construction programme	Private households	State pays for 30% of housing costs	**UAH 156 m** for circa 1,200 projects	General support, no strict link to energy efficiency
State	"13/3" subsidised mortgage programme	Private households, Developers	15 year loan at effectively 3% interest rate,	**UAH 300 m** for 1,200 loans	General support, no strict link to energy efficiency
State	Subsidised loans for legal entities including home owners associations	Home owner associations	Up to 10 year loan period 3% interest p.a. 3 year initial payback break	**UAH 40 m**	Preference to projects that aim at reducing energy efficiency
State	Affordable housing component of the state programme to boost economic development for 2013-2014	Developers, Home owner associations	n/a	Planned **UAH 680m** in 2013	Planning stage, only adopted in February 2013 Extend and purpose unclear
State	Municipal Initiatives (various programmes)	Home owner associations	Conditions differ, Municipal fund Vinnitsa: 5 year loans at 10% interest rate for up to 20% of project costs	n/a	
Donors	Ukraine Residential Energy Efficiency Project (IFC)	Home owner associations	Technical and financial assistance to improve access to finance for home owners associations	Aim to support **USD 50 m** of investments	Combined technical and financial assistance
Donors	Municipal Heating Reform Project (USAid)	Home owners associations, Municipalities	Main focus on technical assistance and heating sector but also some financial support	n/a	

Source: Own display based on official data

4.3. International Experience

In the EU there is currently a wide variety of support programs to achieve the overall objective of increasing energy efficiency in various sectors of the economy. In Germany alone, there are currently more than 1,000 programs implemented at various levels of government (federal, state, and local) as well as by non-government state institutions (e.g. Development Bank KfW, Energy Efficiency Agency).

In order to increase energy efficiency in new residential buildings, the development and tightening of respective standards and regulations plays a key role for policy makers. An equally important role plays the achievement of a cost recovery level in utility prices (i.e. heat and warm water), as this is the key incentive for residents to change their behavior and invest

in energy efficient housing. However, both components are often not sufficient to guarantee a level of energy efficiency that can be considered adequate from a social point of view. Thus, apart from state regulations and adequate tariff settings, financial support programmes form an important 3rd pillar in the public quest for increasing energy efficiency.

It should be mentioned that the construction of new buildings is not a direct focus of most international financial support programmes, as energy savings for new buildings are usually achieved by appropriate government regulations and standards. In terms of supporting the construction of energy efficient residential buildings, certain technical requirements in terms of energy consumed need to be fulfilled in order to be eligible for such support. Usually, these technical requirements are above the requirements set by the efficiency standards currently in force. Thus, financial support is granted if a building is more efficient as the current regulations foresee. In case the building qualifies for support, this can come through very different instruments, e.g. long-term subsidies loans, a grant, or a loan guarantee. Often, these instruments are also combined, to maximize their impact.

In the following, we provide more detailed information on two selected support programmes in the EU, the "Energy Efficient Construction Programme" (Germany) and the "Low Carbon Homes Programme" (Ireland). It is also interesting to note that in Central and Eastern Europe no special programs for new buildings are known. Here, the focus is clearly on renovation of existing structures.

Example 1: Programme "Energy Efficient Construction" (Germany)

Target group:

- All persons that invest in new homes or rent residential buildings and condominiums
- First acquisition of new residential buildings or condominiums

Description:

- Option 1: Promotes the construction or first purchase of energy-efficient houses of the KfW 40 standard[9] (including passive houses[10])
- Option 2: Promotes the construction or first purchase of energy-efficient houses of the KfW 55 standard[11] (including passive houses)
- Option 3: Promotes the construction or first purchase of energy-efficient houses of the KfW 70 standard[12]

To reach the KfW Efficiency House Standard 55, the following measures can be promoted:

- Wood pellet and biomass heating or heat pump
- Solar panels for water heating

[9] KfW 40 standard implies that the energy consumption is only at 40% of the value specified by the current Energy Saving Ordinance for new buildings. This implies that there is a 60% reduction in primary energy than a standard new building. Maximum annual primary energy requirement is 30 kWh/sqm. Additionally the transmission heat losses should be at least 45% lower than a reference value.

[10] The annual primary energy demand must not exceed 30 kWh per m² building and the annual heat demand not more than 15 kWh per sqm.

[11] KfW 55 standard implies a maximum annual primary energy requirement of 35 kWh/sqm. Additionally, the transmission heat losses should be at least 30% lower than a reference value.

[12] KfW 70 standard implies a maximum annual primary energy requirement of 45 kWh/sqm. Additionally, the transmission heat losses should be at least 15% lower than a reference value.

- External wall insulation
- Roof insulation and new windows with triple glazing and special kind of promotion:

Type of funding:
- Subsidised loan

Scope of funding:
- Special interest rates for up to 100% of costs, max. € 50,000 per housing unit
- Currently 1.40% (June 2013) for a time period between 4 and 10 years, 1.50% (11 to 20 years) and 1.60% (21 to 30 years)
- For the KfW 40 standard there is an additional 10% redemption grant (5% for the KfW 55 standard)

Funding institition:
- KfW development bank through other commercial banks

Assessment of the effectiveness / Additional Comments:
- In 2010-2011 funding commitments of EUR 7.3 billion were given to 165 thsd. housing units (KfW-Research 2012)
- Final energy consumption was reduced by 337 GWh in 2009

Source: KfW

Example 2: "Low Carbon Homes Programme" (Ireland)

Target group:
- Programme open to proposals from both developers and individuals with the aim to construct new residential buildings

Description:
- The Low Carbon Homes Programme is the successor to SEAI's successful "House of Tomorrow" Programme and specially designed to promote new buildings.
- The new buildings had to meet the following criteria:
  - Achieve a Building Energy Rating (BER) of A2 or better (≤50 kWh/sqm/yr) for each unit in the project
  - Achieve an energy performance coefficient (EPC1) less than 0.25, what was far below the former standard of 0.6
  - Achieve a carbon dioxide performance coefficient less than 0.30, what again was far below the former standard of 0.69
  - Generate electricity onsite (for supply or export) per unit to the equivalent of 10 kWh/sqm/yr (primary) or greater.
  - There are additional requirements, for example for the use of energy saving light bulbs and eco-friendly household appliances

Type of funding:
- Grant

Scope of funding:
- Up to 40% of eligible expenditure, up to a maximum of €15,000 per unit

Funding institition:
- Direct application to Sustainable Energy Ireland (SEI), a national Energy Agency

Assessment of the effectiveness / Additional Comments:
- It had a volume of EUR 9 million for the period 2008 to 2011
- The program was very ambitious especially in promoting flagship projects

Source: Sustainable Energy Authority of Ireland (SEAI)

5. Summary and Policy Recommendations

5.1. Summary

Financing for investments into energy efficiency in buildings is too low in Ukraine to achieve the government's ambitious energy efficiency targets of aligning Ukraine energy intensity with those of other industrialised nations. Currently, the barriers to financing and implementing energy efficiency projects in the building sector are manifold and explain the low level. Overcoming these barriers is a joint task of the state and the private sector, with additional support by IFIs and other donors. Indeed, only after the state has provided the necessary prerequisites will the private actors have sufficient incentives for financing and implementing energy efficiency improvements in buildings.

For the state the main focus should lie on providing a **supportive policy framework, especially in the area of energy tariff policy, legislation that enables innovative financial instruments as well as a coherent macroeconomic framework.**

An immediate focus of the government should be on providing a more supportive macro-economic policy framework, especially an **easing of the restrictive monetary policy that is connected with targeting an overvalued exchange rate**. Such a loosening of monetary policy would go a long way in increasing credit, especially mortgage supply, reducing punishingly high interest rates and thus improving construction sector outlook, the main channel of implementing energy efficiency in buildings.

An additional focus, and pre-requisite for financing energy efficiency projects, is a **suitable energy tariff policy.** Clearly, with household tariffs universally subsidised (see Figure 11 in the Annex for more information) there is little economic sense in investing in energy efficiency projects. The low tariffs for heating and gas make most energy efficiency investments unprofitable with no or little cash flow to service external financing.

Once these shortcomings are addressed, the state should think of creating **financial support programs** to boost investments into energy efficiency. While the current budgetary stance is currently very tight, the savings associated with a cost-recovering tariff-setting can be used at least partially to implement such support schemes according to well-established international benchmark programs. Apart from the immediate impact on energy savings, such programs would be associated with a number of further benefits in terms of their sectoral as well as economy-wide impact.

5.2. Policy Recommendations for Developing ESCOs

Finally, there seems to be lack of innovative financial schemes and instruments, especially energy service companies (ESCOs). It was already mentioned that the currently available financing options for residential construction activities, let alone for the additional investments needed for energy efficient housing are extremely limited. While this is partly due to lack in demand for energy efficiency improvements in general, the supply of financial instruments is also hampered by a lack of enabling legislation. As such, the **government has to provide an appropriate legal framework that regulates the provision of innovative**

financial instruments that can be used to provide the funds needed for energy efficiency improvements. According to the Ministry of Regional Development, a working group consisting of lawyers from leading Law firms as well as representatives from the Ministry and the Ministry for Economic Development and Trade have developed and submitted to the relevant Committee of the Verkhovna Rada an ESCO enabling legislation to address the following points:

1. Defining an ESCO

An energy service company (ESCO) shall be defined in legislation.

2. Contracting Mechanism(s)

In developing such a structure, three contract type possibilities shall be considered:

a. "Scope of work"-based, where the contractor is retained to execute a specific scope of work that would lead to improve efficiency in a certain building. The contractor in this case is not required to calculate or guarantee the energy savings as an obligation. This structure is not recommended as it does not incentivize the ESCO to perform and a significant part of the risk is on the municipal client, by the same token it will minimize the need to perform any amendments to procurement laws and regulations. This should be considered as a fall-back position.

b. Performance-based, where an energy services contractor is hired to evaluate the energy consumption of a facility and propose energy conservation measures (ECM). The ESCO bears the entire initial cost of making improvements; In return, the municipality makes monthly payments that are tied to the level of energy savings generated. The payments are structured so the owner does not experience a negative cash flow. The ESCO guarantees that actual savings will always exceed scheduled payments. If savings fall short, the ESCO absorbs the difference. This option is rather realistic and would serve as a good incentive to promote ESCOs especially from the private sector.

c. Chauffage or guaranteed benefits; in this type of financing agreement, the ESCO guarantees that the facility owner's energy costs will be lower than they would have been without an energy performance contract. The ESCO assumes responsibility for paying the facility energy bills over the term of the agreement. In return, the facility owner pays a specified percentage of the energy costs that would have been incurred, discounted from an agreed base year of energy costs (e.g., historical energy costs less a discount of up to 15 percent). The chauffage contract is usually very extensive, often involving a total energy management plan, including retrofits and maintenance. It is generally considered appropriate only for large scale energy users, where the value of potential savings is substantial, such as hospitals, universities, and large office complexes. This kind of agreement is often used in Europe to contract municipal services. The length of a chauffage contract is usually between seven and 10 years. We recommend such contracts are better served under PPP laws and no amendments are needed on the short term.

3. Procurement process

The procurement of energy efficiency works or projects for the public and government entities is very different than a normal bidding procedure based on developed design and specifications due to the fact that in an energy performance contract the scope of work is not defined and we rely on the contractor to specify the scope of work. That stresses the need to establish regulations to address a specific procurement mechanism for energy services in public buildings, enabling the evaluation of proposals with different scope, implementation costs, energy savings and financial performance.

The evaluation of multiple proposals with different scopes, costs and values is a lengthy process. In order to evaluate only proposals from qualified bidders, a prequalification process is recommended to limit the number of proposals to a manageable size, eliminating non-qualified bidders. The prequalification should be based on capability of managing the development and implementation of multiple EPC projects based on sound technical approach and proven ability to manage a site-specific project. At the same time, municipalities should be entitled to enter into EPC specifies that savings guarantees are mandatory and that Measurement and Verification (M&V) protocols will be used to verify that the guaranteed savings are achieved.

4. Budget Code provisions

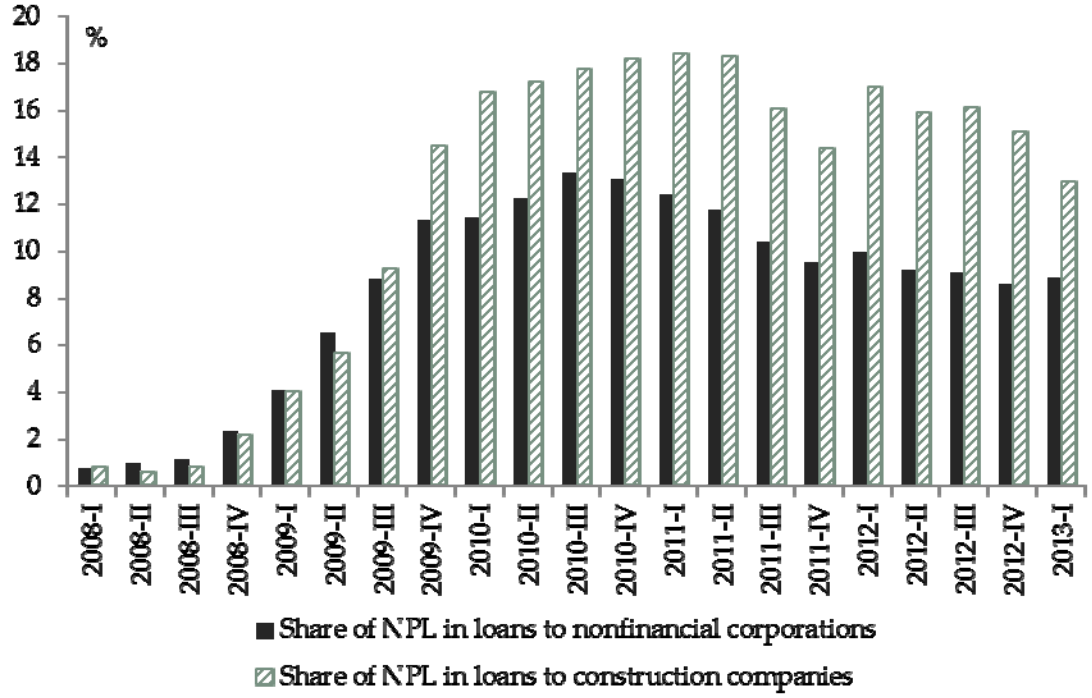
The Budget Code provisions should allow the project financing without disruptions by paying for energy efficiency improvements as part of the utility budget or at least ensure and allow reduced utilities cost due the fact that a project is transferred directly to another line budget item to be used to pay down the project. The point is to make sure that the budget for following years is not reduced hindering the progress and basically penalising the customer for performing well. Public institutions should be obligated to include in their budget all payments that have been approved by city council in previous years and should be approved mandatory for future years as a condition for approving the contract in the first place.

5. Protection for private parties

It is necessary to provide protection for ESCOs and lenders to obligate municipalities to make payments as envisaged by the ESCO contract and provide enforcement mechanism for collection of payment.

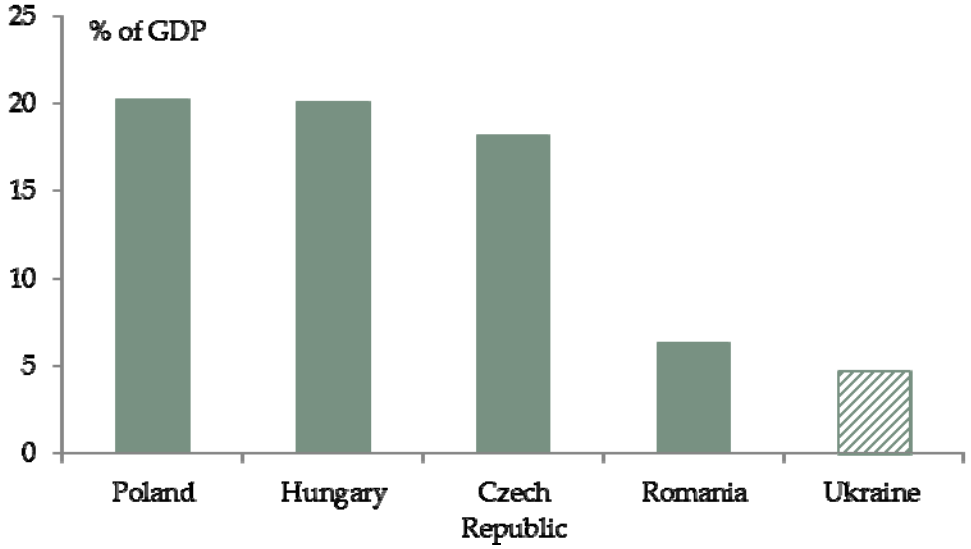
Annex

Figure 7: Share of Non-Performing Loans (NPLs)



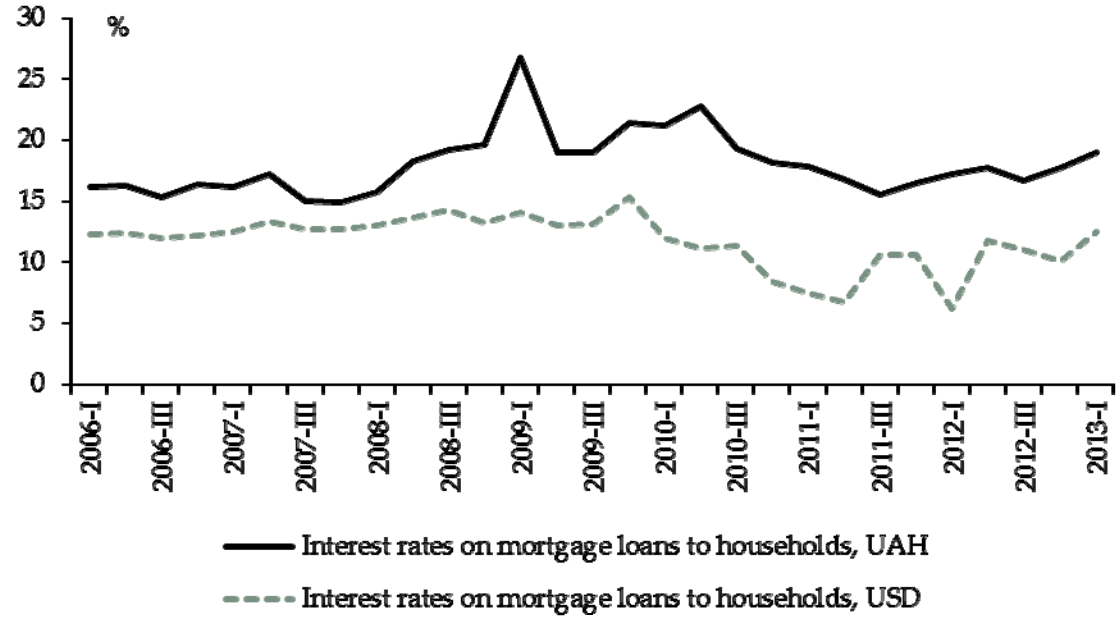
Source: NBU, own calculations

Figure 8: Mortgage Loans in Per Cent of GDP



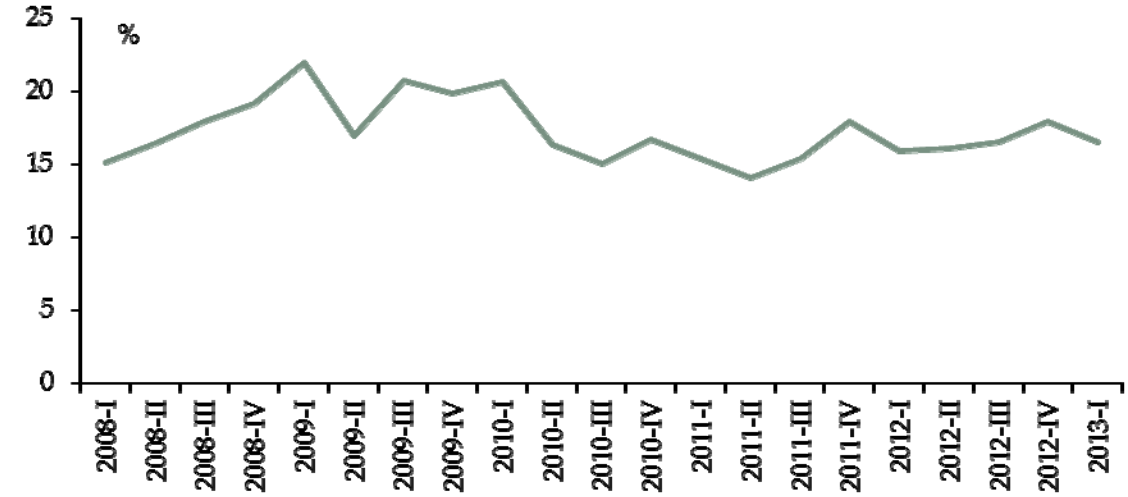
Source: Raiffeisen RESEARCH, CEE Banking Sector Report May 2013

Figure 9: Interest Rates on Mortgage Loans to Households



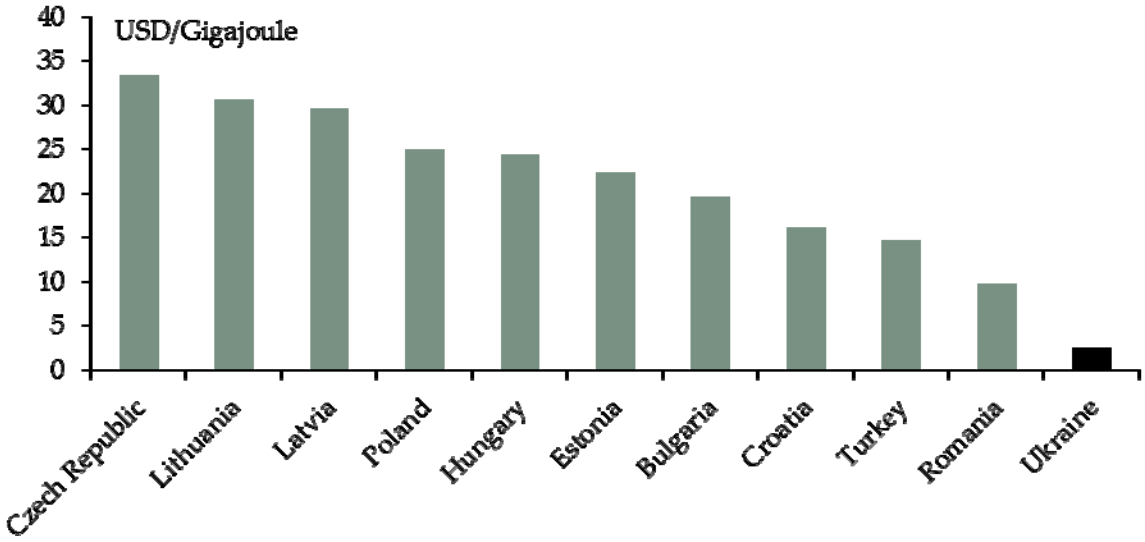
Source: NBU, own calculations; Note: From 2008-IV on the interest rates for construction loans to households are used

Figure 10: Interest Rates on Loans to Construction Companies



Source: NBU, own calculations

Figure 11: Gas tariffs for household consumers (2012)



Source: Eurostat, ПАТ "Тернопільміськгаз", OANDA, own calculations

Note: Ukraine tariff for consumers without a gas meter for a consumption up to 2500 m³ (95 Gigajoule), with a gas meter the tariff is still lower; all other countries tariffs for a consumption up to 20 Gigajoule (all taxes included)

Table 7: Maximum Normative Heat Usage Parameters of Residential and Civil Buildings (Emax)

#	Building designation	Values of Emax , kWh/m², [kWh/m³], for temperature zones of Ukraine	
		I	II
1	2	3	4
1	Residential buildings with the following number of floors:		
	1	$600 \times Fh^{-1/4}$	$500 \times Fh^{-1/4}$
	from 2 to 3	$470 \times Fh^{-1/4}$	$400 \times Fh^{-1/4}$
	from 4 to 9	55	48
	from 10 to 16	48	42
	from 17 to 24	43	38
	25 and more	40	35
2	Civil buildings and structures apart from those in group 3-6 with the following number of floors:		
	from 1 to 3	$[230 \times Vh^{-1/3}]$	$[200 \times Vh^{-1/3}]$
	from 4 to 9	[15]	[13]
	from 10 to 16	[14]	[12]
	from 17 to 24	[13]	[11]
	25 and more	[12]	[11]
3	Buildings and structures of educational facilities	[31]	[28]
4	Buildings and structures of pre-school educational facilities	[36]	[33]
5	Health care facilities	[47]	[42]
6	Retail trading facilities	[15]	[12]
7	Hotels	51	44
	Note: Fh – heated area of a residential building, m²; Vh – heated volume of a civil building or structure, m³.		

Source: State Construction Norm (DBN) ДБН В.2.6-31:2006 (Amended on July 1st, 2013)