

Energy Management as a First Step toward Integrated Urban Planning in Ukrainian Cities

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1. Introduction

During the last years Ukraine was undergoing a lot of various ups and downs – orange revolution, gas and financial crises etc. The national political system is weak and municipalities are struggling with low institutional and financial support as well as lack of capacity to deal with new challenges. Some cities are almost shrinking some cities are fast growing. The growth is dictated by developers – and infrastructure planning is far behind. The existing building stock and infrastructure systems are outdated, regulatory frameworks are insufficient and hardly implemented and corruption is everywhere. In face of the financial crises and rising gas prices cities are left alone by the national Government. Some municipalities understand that they need to take on responsibility for their future and start to look for solutions on their own to meet the challenges.

Taking the manifold problems into account and having in mind, that structural changes and institutional capacity development needs a lot of time the question is where to start. With a strong dependence on Russian gas imports and rising gas prizes one of the pressing problems is saving energy and becomes more energy efficient. Introducing energy management in municipalities can be a first step to strengthen local governments and prepare them step by step for other challenges regarding sustainable urban development.

1.1. *The Political Situation in Ukraine*

Ukraine became independent in 1991 when the Soviet Union dissolved. Starting a transition period to a market economy Ukraine stuck about eight years in a recession. Then the GDP started to grow and the construction sector was booming especially the big cities like Kyiv, Donetsk, Kharkiv or Odessa. Some cities were experiencing a rapid urban growth – but with no proper urban planning or steering though the city administration. Municipalities are not yet prepared to deal with private investors and to not take on the responsibility to set the framework for an integrated urban development.

In 2005 the program “Reform of the administrative territorial system” was initiated by President Yushchenko. Basically this program should serve as a framework for the municipal self-government. The Ministry for regional development and construction was in charge of developing a concept for municipal self-government which was approved by the national government in July 2009. Within this reform duties of different administrative levels should be clarified as well as their collaboration among each other. Furthermore, the communication between municipalities should be fostered and the role of local decision makers should become more important.

In 2009 reforms were announced and the constitutions were discussed with the communities. The willingness to implement reforms emerged from the understanding, that municipalities are not able to implement their duties and responsibilities sufficiently. But almost nothing happens - the public administration in Ukraine is still centralized. Reform efforts mainly failed due to the general political situation in Ukraine which was characterized by rivalry between the political elite. Governmental changes, parliament liquidation and snap elections lead to the fact, that the drafted reforms from the Ministry didn't get political support.

As a result the municipalities are still not able to deliver proper services; the procedures are still more or less the same like in the soviet periods. Beside the institutional and personal

capacity a lack of finance is one of the main reasons. The municipal budgets are low, they depend on decisions from the national level made in Kyiv and with no clear perspective. Agreements were made – but they can also be retracted, there is no stability for medium or long term investment planning.

1.2. Urban Structures

Based on their history municipalities are struggling with several challenges concerning urban development. Mainly in the Western Ukraine cities have historical medieval European city centres. Some cities already realized the cultural value and try to find means for conservation like in Lviv. In the eastern Donbass area cities are complete soviet style settlements developed in the framework of state combines. Those cities often struggle with a shrinking population due to the collapse of the industrial plants. A few cities are facing uncontrolled growth. The fact that new developments are driven by private investors, who only wants to make profit often leads to poor construction and lack of infrastructure. The administration is not willing or able to cope with that situation.

All bigger Ukrainian cities have one phenomenon in common – they do have a vast amount of huge settlements from the soviet period. On one hand they are characterized by building blocks in brick construction from Khrushchev era and on the other hand prefabricated slab buildings. All of these settlements are in poor conditions due to bad construction quality and outdated heating systems. Therefore, one question is posed to all cities – how to deal with the large housing settlements from the soviet period in the future?

1.3. The Importance of Large Scale Soviet Housing Stock

Almost two-thirds of the urban population in the transition countries in eastern Europe and Commonwealth of Independent States (CIS) are living in large scale housing settlements from the soviet period. In many cases social infrastructure like schools, Kindergartens and services as well as the connection to the public transport is fairly enough.



Figure 1: Typical settlement from soviet period in Kyiv

A lot of cities especially those with a better economy are lacking of affordable housing space. In general the average square meter per person is about 22m² while in Germany it is 42m². New apartments are extremely expensive and only affordable for a minor group of higher

middle income population. For the majority of the citizens it will not be affordable to move into a new apartment in a foreseeable future. That means that the existing settlements from the soviet period will still be a major component also in growing cities to provide housing space in the next decades – especially for socially weaker people.

2. The Initial Situation Concerning Urban Development

Today municipal administrations find themselves in front of massive problems. They are struggling with outdated infrastructure and a proper delivery of public services. The need for action concerning urban development as such is not recognized. Only the fact that the existing building stock is extremely energy inefficient brings the buildings and therewith those settlements in the focus. But so far, an integrated urban development perspective is not addressed – it is more a collection of one dimensional perceptions.

In general there are challenges to face such as

- no awareness
- insufficient legal framework
- no adequate technical and institutional capacity
- corruption
- lack of financing

2.1. Challenges

More in detail, the challenges are concerning different perspectives which need to be addressed:

Technical perspective

Today the condition of many existing buildings is extremely poor. The main reasons are

- poor construction work
- huge delay in maintenance
- enormous loss of energy due to leakages, defect windows and missing insulation resulting in negative ecological and economic impact
- low comfort due to inadequate heating
- the structural construction is partly in a dangerous stage due to steel corrosion at broken slabs
- outdated supply systems with dilapidated pipes

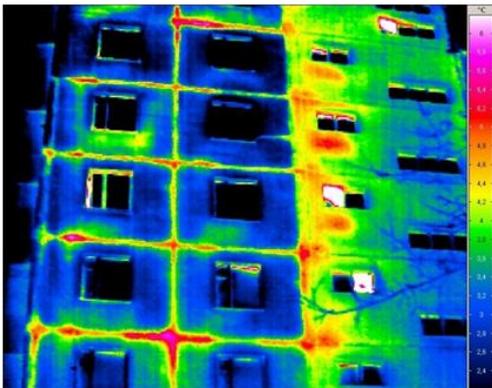


Figure 1: Heat losses in prefabricated slab buildings in Chernihiv

Social perspective

Almost 90% of the apartments in multifamily houses are privatized – but the privatization process was not well thought-out. The privatization ended “behind the wall paper” – the main

building structure like outer walls, staircases and roofs are still owned and - more or less – poorly “maintained” by the municipalities. The following necessary procedure of creating so called condominiums is still slow. In general, there are still general questions to be solved and condominium associations as well as apartment owners need assistance in understanding about building operation and maintenance.

Another effect especially in growing cities with new housing is the social segregation. Everybody who can afford it will move to a new flat and only socially weak people will stay – which makes the possibility of financial involvement of inhabitants in maintenance or renewal processes even worse. Only the very poor apartment owners will stay in the degenerated housing stock.

There is a serious danger that those settlements turn into slums. Growing poverty, growing crime rate and a loss of private economic value will be the result, if municipalities will not develop adaptive strategies to work against this phenomenon. There is a lack of awareness about the obligation of ownership and no knowledge how to keep the value of real estate. Without strategies and effective measures the irreversible deterioration of those settlements seems to be only a question of time.

Institutional perspective

Institutional and personal capacities to deal with the challenges are weak. There are no adequate planning guidelines – and in case they do exist they are not implemented properly by the local governments. Corruption is everywhere. The real estate market is not transparent at all and so far there is no sign that this will change soon. It has its own rules within a legal vacuum.

Planning institutes, which are in charge of design and project planning are not prepared to deal with the retrofitting projects in a holistic way – not in technical nor in organizational respect. Too, they cannot provide adequate guidance to the city administration or to condominium associations.

The capacity and skills of companies with regard to retrofitting are insufficient. For example this can be seen if windows are exchanged – but still with leaking connection to the walls.

There are now programs assisting poorer people to invest – almost in each building there are e.g. retired persons who are not willing or able to invest – so far no institution is taking the lead in this respect.

2.2. Obstacles for Retrofitting

Altogether, the above illustrated setting describes the obstacles for the implementation of a retrofitting process. A key problem is the lack of a proper legal framework after the privatization of the outdated building stock – inhabitants get their apartment almost for free – but now they are facing the need for investment for preservation of their buildings. The political goal is to force the owners to build condominium associations – but still their legal status is not sufficient to subscribe contracts and the financial problems are not solved as well.

This fact leads to a complicated situation when it comes to the planning of comprehensive renovation. Municipalities are still involved – and now have to deal with poor owners. They need their participation and private investment – but there are no rules and processes approved for implementation of holistic retrofitting measures. Nobody is officially in charge to steer the required multi-stakeholder process.

The lack of strategies leads furthermore to the fact that those private owners who can afford investments carrying out their own initiatives such as exchange of windows. In some cases they even insulate their apartment – so buildings can be seen with insulation only for one apartment – for example in the 10th floor. But these activities do not prevent the rest of the building from degradation – it just improves the level of comfort in concerned apartment.



Figure 3: Single insulation activity for two apartments

And the general situation even gets worse. These single activities are constraints for holistic solutions – as soon as owners had done an investment, they will not be able or willing to invest again into a solution for the whole building.

2.3. Technical Urban Infrastructure

In general, the settlements are connected to large scale district heating systems. They are predominantly outdated and not properly maintained. Renewal is urgently needed – otherwise the collapse of the systems could lead to a catastrophe like in the city of Alchevsk in eastern Ukraine. In winter 2006, the district heating system collapsed after an underground heat pipe line cracked. It was extremely cold weather (nearly -40 C) and as a result, heating equipment in the majority of the buildings was frozen and ruptured, leaving about 60,000 residents only with the protection of individual electric heaters. The technical urban infrastructure is a serious threat, which is not addressed adequately. There are huge investments necessary for renewal – and in many cases it would be necessary to think about new concepts rather than changing boilers or other equipment.

Systematic long term strategies would be necessary, taking into account the infrastructure in an urban development context. It is obvious, that all concerned stakeholders in the process of development and retrofitting of the settlements need support interms of financing and capacity building. The municipalities need to take over a leading role in the process and – sooner or later they need have an sustainable urban development strategy.



Figure 4: outdated technical urban infrastructure

3. The Project “Energy Efficiency in Buildings”

In 2007 the project “Energy efficiency in buildings” started. This is a technical assistance project in the framework of the German-Ukrainian bilateral cooperation. It is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH - German Agency for International Cooperation). The main goal of the project is the improvement of an effective policy on national and communal level to increase energy efficiency in buildings and reduce CO₂ emissions.

Therefore, the following tasks for assistance are identified together with the local partners:

- development of concepts, strategies and implementation instruments
- capacity building and training
- setting up information and awareness raising campaigns

The political partner in Ukraine is the ministry for regional development, building and housing.

3.1. The Approach –Bottom-up vs Top Down

The project addresses three levels

- national
- communal
- individual

The main partner at the national level is the Ministry for regional development and housing. The project supports the ministry in the setting up a legal framework in line with the European building directive. Since February 2011 Ukraine is a member of the energy community that means that the Ukrainian Government is in bond to implement several European guidelines. The second topic at the national level is addressing the incentive mechanisms. It deals with the design and implementation of a transparent funding program for retrofitting.

On the community level the main goal is the implementation of municipal energy management and starting pilot projects within that framework.

The individual level concerns the population. Awareness raising and information campaigns are implemented as well as training for experts and institutions.

Despite of the necessity of a national policy framework the main focus of the project addresses the municipal level. This decision was made because the national Government is unstable, ineffective and slow. In the communities the situation is more stable, mayors are closer to the problems and they are really willing to address the topic energy efficiency with action. Within the project it was a strategic decision to focus mainly on the city level, starting a bottom-up approach which is an unusual situation for the stakeholder in a centralized political system.

How to find pilot cities - the selection process

The first challenge was to find cities, really willing to change something by their own – not waiting for instructions of the central Government in Kyiv. In the beginning of 2008 the selection procedure to find four pilot cities were carried out. A call for tender was started together with the Ministry. All cities with a minimum of 50.000 inhabitants and up to 300.000 inhabitants could participate. The bigger cities were excluded due to the fact that big city governments are slow. A lot of different political interests made it more complicated to work with big cities as processes are slower and the implementation often take too much time.

Cities could apply by submitting the necessary documents. Within a two-staged process local and international experts assessed 49 submissions to get a short list. Ten cities were visited; discussions with the mayors, opposition parties and experts of relevant municipal departments lead finally to the selection. One of the main aspects was the willingness and implementation capacity. Also some strategic topics like size and location were taken into account. Finally two Oblast capitals – Ivano-Frankivsk (215.300 inhabitants) and Chernihiv (299.000 inhabitants) and two smaller cities –Novograd-Volynskiy (57.000 inhabitants) and Myrgorod (42.000 inhabitants) were chosen.

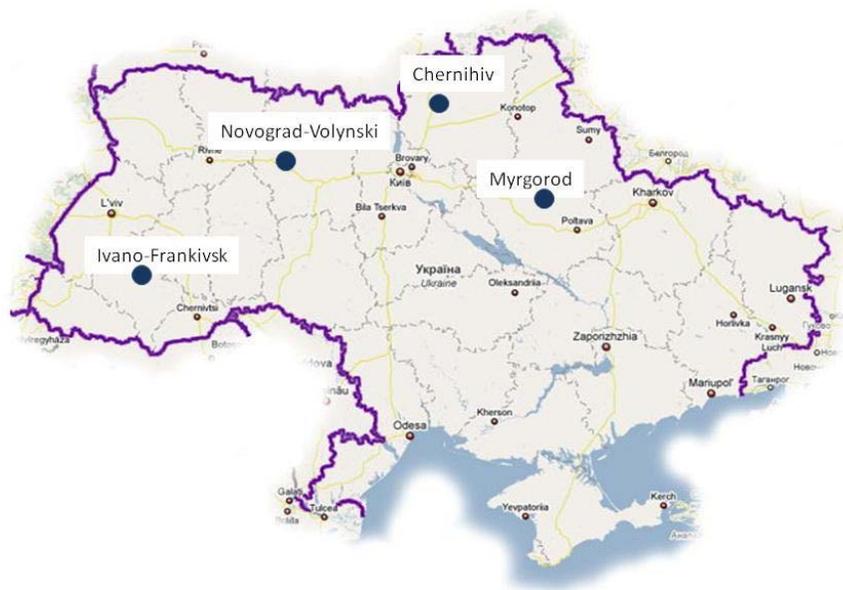


Figure 5: Four pilot cities in Ukraine

3.2. Introducing Municipal Energy Management

The obligation for all of them was to draft an energy action plan for the municipal building sector and set the process in action. Later on each city could choose the activities for implementation they wanted to start with.

First an “energy unit” was installed and energy managers were trained. The unit was often connected to the economic department of the cities. Concerning the building stock there is no specialized department which is responsible for all municipal buildings – hospitals belongs to the health department, schools to the educational department etc. In addition that means that the data about buildings is spread all over the municipal administration.

The energy unit has now to deal with all different departments to collect data – which partly already create problems and need to establish new procedures within the city administration. All four cities started with a slightly different approach. Chernihiv wanted to assess all their public buildings and get the data about energy consumption and related costs in a proper data base. As soon as the first results have shown the advantage the other cities followed that example. Novograd Volynskyi started with awareness raising projects in schools. The kids became energy detectives, got measuring devices and made posters for their schoolmates where they described how to save energy. This program again was also implemented by other cities later on.

The main focus was on the public buildings where the city administration is in charge and controls the budget. But due to the fact that cities are still concerned with the housing blocks – at least in provision of subsidies for the heating cost – all cities also had an interest in supporting the condominiums to organize the process of retrofitting. Currently pilot retrofitting projects are in the planning phase. For the implementation a financial contribution from the national Government is promised. The rest comes from the municipal budget and in case of the housing projects from the owners. Concerning public building retrofitting Ivano-Frankivsk now prepared with the support of experts a bankable project and received funding from the Nordic Environment Finance Corporation (NEFCO) for retrofitting of their schools.

How was it implemented?

The pilot cities are supported by an international interdisciplinary expert team regarding:

- implementation of an energy efficiency unit within the city government
- data collection about energy use and demand in buildings
- development of a long-term strategy (energy plan, including measures for demand side management)
- development of an action plan for implementation
- public awareness raising campaigns
- setting up a monitoring and reporting system

Regular held two-day workshops brought together all energy managers from the pilot cities. International experts guided the process and giving advice. During the workshops the energy managers could discuss about their draft plans and exchange experiences with their colleagues. Additionally, representatives of other interested cities could take part as observers. Each half year so called high-level workshops were carried out. The workshops also serve as a platform to present the results to other cities, mayors, representative of the ministries and other relevant institutions.

Support was also provided by local experts who were trained so that they can now continue to support other cities in collecting data and asses their building stock.

Creating a learning network

During the project all energy managers from the different cities met regularly in order to present their results and learn from each other – this is also a new experience for the city administrative staff to have this kind of knowledge exchange. Within the framework of the GIZ project a new association was supported in development. The “Association of energy efficient cities in Ukraine” was founded as an NGO in 2007. The initiators were convinced that Ukrainian cities can learn from European cities how to implement energy management. Working with such a new association has a big advantage – it is more complicated to change

existing structures in old institutions to overcome their preconceptions against new ideas than assisting new institutions to strengthen their capacity. Two international integrated experts were supporting the association. In cooperation with the association and the “Institute for energy saving and energy management (IEE)”, Kyiv Polytechnic Institute trainers were trained to give an initial support to cities. The association furthermore is pushing the process of joining the European Covenant of mayors. 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 20% CO₂ reduction objective by 2020.”

Meanwhile 25 cities all over Ukraine signed the covenant of mayors and preparing sustainable energy action plans. Preparing an energy action plan already need to involve all sectors in a city – so it is the next step coming from the building perspective, including the transportation sector, industry and urban infrastructure.



Figure 6: Ukrainian signatories of the Covenant of Mayors

3.3. Lessons Learnt

Municipalities are still learning how to implement decentralized self Government. Introducing energy management by drafting energy and implementing action plans is a good exercise for self Government. New administrative units were installed and new procedures need to be established. Beside the technical knowhow learning the process how to implement energy management is even more important.

The decision about implementing energy management and setting up an energy action plan was made by the municipal Government itself and did not come from the national level. There is no control by the national Government – the city Government itself is setting their own goals and assesses the results by their own. It is necessary to include several departments and implement a mechanism for reporting.

When the project started mayors would have liked to directly start with some retrofitting rather than developing plans and strategies. It took time to get a first understanding and acceptance for procedure of analyses and prioritization. But still there is no understanding,

that for the future it will be necessary to include the urban perspective and develop a strategy for effectively steering the investments which is the focus for the further project activities.

Starting with four pilot cities had two advantages – on one hand there was the competition aspect that each city wanted to demonstrate results, on the other hand the learning procedure from each other. This was even more fostered by including other “observer” cities in the workshops. The network of the association now is ensuring a long term platform for continuous knowledge exchange and input of international experts.

4. Next Steps – from the Building to the Urban Perspective

Retrofitting of single buildings without a medium term urban perspective of the further development of the settlements doesn't make sense. The experience in former eastern Germany has shown that without a medium term development plan buildings might be nicely renewed but in the worst case they are not needed any more and finally were demolished. But even in not so extreme cases, Ukraine will not be able to retrofit all of their old soviet buildings in an appropriate or necessary time anyway – so for the cities an urban development strategy with focus setting is needed.

This becomes even more important regarding the technical infrastructure. Especially the district heating systems cannot be seen in a single perspective. Some cities are already facing problems due to non existing strategies. In those cases where city administrations allowed individual disconnection from the district heating they realized, that the district heating systems is now even more inefficient because it still needs to be maintained also for a few connected apartments. As single heating units too will be not affordable for all citizens – so the municipalities have to develop concepts for serving the basic needs and providing affordable solutions in the medium and long turn. The size of the urban infrastructure has to meet the needs of the future. Therefore cities require development strategies with regard to demographic changes and expected migration processes.

5. Conclusions

Cities in the post soviet time are facing a wide range of challenges. In Ukraine the national Government is not functioning very well, and at present nobody knows which direction in terms of decentralization will be driven. But regardless of the unstable situation cities have to play a major role and they have the chance to act and they should be supported in local self government.

Integrated urban development is not yet on the municipal agenda. The municipalities cannot address all at once. Starting with the topic of energy efficiency which is on top of the political agenda by introducing energy management is strengthening the local governments. They already need to integrate different aspects and related stakeholders. Step by step the scope can be widened from the buildings to the neighborhoods and urban perspectives.

The GIZ project approach shows, that time and guidance is intensively needed. Flanking the pilot measures with individual training and fostering a learning network by providing a platform for knowledge exchange is extremely effective. Cities that are doing their first steps are extremely proud of what they achieved and like to share the knowledge. Demonstrating best practices under local conditions does not lead to the excuse that the framework conditions do not allow to go a step forward.

The first steps are made. Sooner or later cities will realize and understand the need to decide, which settlements they want to develop further, renewal and adapt to new demands and where they want to have new developments. Especially in connection with the urban

infrastructure where the cities have to take on the running costs by their own they need to find appropriate solutions. Scarce budgets finally will force them to have longer perspective strategies.

References

Homepage GIZ Project “Energy efficiency in building”

www.eeib.org.ua

Homepage GIZ Project “Communal development and historical urban renewal in Lviv”

www.urban-project.lviv.ua/de/index

Homepage GIZ Project “Improving municipal services in Lugansk region”

www.ims-ukraine.org/en

Homepage “GIZ Projects in Ukraine”

www.giz.de/de/weltweit/302.html

Homepage “Association of energy efficient cities in Ukraine”

www.enefcities.org.ua

Homepage “Institute for energy saving and energy management”

<http://iee.kpi.ua/en/>

Homepage “EU Covenant of mayors”

www.eumayors.eu/index_en.html