

Energy efficiency policy and action for multi-family residential building renovation in Central and Eastern Europe: the tale of four cities

Dr Catalina Turcu
University College London
Central House, 14 Upper Woburn Place
London WC1H 0NN
UK
catalina.turcu@ucl.ac.uk

Agneta Persson
Global Director Future Cities
WSP Sverige AB
SE-121 88 Stockholm-Globen
Sweden
agneta.persson@wspgroup.se

Keywords

building retrofitting, built environment, energy efficiency action plans, European cities, existing buildings, policy, urban planning, Eastern Europe

Abstract

The current energy-efficiency agenda is a 'no-regret option' for Europe, addressed by both short-term and long-term EU policy. It is one of the three Horizon 2020 research challenges, but also an area of growing interest within decision-making bodies and lobby networks such as the Covenant of Mayors, Energy Cities or Climate Alliance. At the same time, Europe's built environment is responsible for 40 % of EU's final energy demand and is therefore seen as a primary area of action for energy-efficiency retrofit. Current European retrofit trends, however, are not encouraging: only 1.2 % of the existing built stock is renovated every year, compared to a 2–3 % yearly rate needed to meet our 80 % by 2050 target. Moreover, some countries are in a better position than others, with countries such as Germany, Sweden and Denmark at the forefront of the energy-efficiency agenda, while countries from the former Eastern European block are lagging well behind.

Proportional to its size and population, Central and Eastern Europe holds the biggest potential for energy-efficiency in Europe. However, energy efficiency in buildings action has only been modest to date. Explanations for this concern four types of factors: economic (i.e. restructuring, access to finance, payback time, opportunity costs, asymmetry of information, pricing distortions), technological (i.e. product availability, installation and use), social (i.e. behaviour, awareness and information, custom and habit), and, to a certain extent, institutional (i.e. regulatory and planning issues, structural, multiple

stakeholders). Recent literature also suggests that variations across Eastern European countries are significant, in terms of energy efficiency framing but also outcomes: some countries strive towards more concerted, strategic planning of overall retrofit action, while others roll out building retrofit in a very unplanned, decentralized and piece-meal fashion. This paper argues that it is important to understand these variations and looks at four countries (Romania, Hungary, Estonia and Latvia) and their capital cities (Bucharest, Budapest, Riga and Tallinn).

Introduction

There are nearly 50 million flats in multi-family residential buildings in Central and Eastern Europe (CEE) (SIEMENS, 2009).¹ This type of housing was mostly built 1950–1990 and exhibits poor overall conditions due to the lack of investment during the socialist regime and/or Soviet occupation, but also lenient building standards and regulations; it also displays very high (above 90–95 %) home ownership rates (EUI, 2015).

It is estimated that energy efficiency measures applied to this building stock can reduce annual carbon emissions by between 1 and 1.4 tons per flat (SIEMENS, 2009) and so can play an important role in meeting EU's CO₂ reduction targets by 2020. Energy efficiency in buildings is led by two Directives at the European level: the Energy Efficiency Directive (2012 Recast) which includes a requirement for all Member States

1. Central and Eastern Europe (CEE) refers to the following ten EU27 countries: Bulgaria, the Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia and Slovakia. This classification is used by the Building Performance Institute Europe (BPIE) and is based on 'the climatic, building typology and market similarities' of the region (BPIE, 2011) p. 8.

to develop long term strategies for the “renovation” of their national building stock; and Energy Performance of Buildings Directive (2010 Recast) which sets out requirements for Energy Performance Certificates (EPCs) and/ or minimum energy performance standards for buildings undergoing renovation. However, despite legislation and push for a common “energy roadmap” at the European level, “planning for energy” stays a matter of national interest for Member States, and so is “planning for energy efficiency” of multi-family residential buildings. However, more recently, the Covenant of Mayors has played an important role in lobbying and delivering such “planning” at the city level in the regions via Sustainable Energy Action Plans (SEAPs). SEAPs are “plans” developed by participant cities or municipalities, which describe how CO₂ targets are to be achieved by 2020 and sets up emissions inventories.

Our four focus cities (Bucharest, Sofia, Tallinn and Riga) share a number of similarities in relation to urban energy efficiency action and planning, and multi-family residential stock. They all have a vast majority of their population living in this type of housing and little control over it, as it is almost entirely privately owned. All four capitals are also at the bottom of Siemens’ Green City Index in terms of environmental, CO₂ emissions, energy and building performance; and display a range of initiatives and programmes that deal with the energy efficiency of multi-family housing. They all have produced SEAPs by 2014, and their respective countries all have National Renovation Strategies. A number of differences are also present. They are all of different size and administrative make-up – also shaped by previous socialist or Soviet rule; only one municipality (Sector 1) in Bucharest is a signatory for the Covenant of Mayors and as such, Bucharest does not have a city-wide SEAP when compared to the other three cities; the two Baltic countries have joined earlier the EU and Covenant of Mayors (2004 and 2008, respectively) than the two Balkan Countries (2007 and 2011, respectively); they have achieved different outcomes at the ground level.

There is a wider perception at the European level that Estonia and Latvia have been “doing better” since their accession into the European Union (when compared to Romania and Bulgaria) despite a lower starting point and geopolitical wariness that Russia will try to make the region the next conflict spot.² They have managed their budgets well and have higher GDP per capita when compared to Romania and Bulgaria i.e. \$22,400 (Estonia) and \$19,100 (Latvia), compared to \$14,400 for both Romania and Bulgaria, respectively (IMF, 2013). This is explained by a faster recovery following the 2008 crisis, strong electronics and communications sectors and trade with other Baltic countries (Finland and Sweden) in the case of Estonia; and strong transit services, wood and food processing, machinery manufacturing and electronics industry in the case of Latvia. They both have also stayed committed to fiscal prudence and reducing their fiscal deficit.³

In contrast, Romania and Bulgaria have been slower to get on the reform train and are still seen as challenged by corruption and a ‘Balkanised mentality’, which are holding back their attractiveness to international investment. Romania has,

however, more recently seen an acceleration of the economic growth, driven by strong industrial exports and good agricultural outputs; yet, progress on structural reforms is uneven and the economy is still seen as vulnerable to shocks. Bulgaria has a relatively more favorable investment regime which is supported by a flat corporate tax, but significant challenges remain. Corruption in public administration, a weak judiciary, and the presence of organized crime continue to hamper the country’s investment climate and economic prospects.⁴

This paper aims to look at energy efficiency policy and actions in relation to multi-family residential building renovation in these four capital cities in CEE. We draw on ongoing research at the University College London and on research undertaken within the EU Project, COMBAT (2009–2011).

Case Study 1: Bucharest, Romania

Overall energy efficiency policy in Romania is considered weak, but with potential for improvements (Energy Efficiency Watch, 2013d). Moreover, the 2007–2008 economic recession has significantly impacted on Romania’s progress as public budgets and spending on energy efficiency has been reduced. Energy efficiency in the residential sector has seen some progress. This includes the introduction of EPCs since 2013; energy agencies established at the local, regional and national level; energy advice and audits provided by municipalities to residents; and economic incentives for energy efficiency such as support for thermal insulation, elimination of heating subsidies and use of structural funds and bank credits with governmental warranty. There is also a number of barriers that hinder progress in multi-family housing renovation, including lack of knowledge, information and communication; lack of clear minimum energy performance standards; and lack of coordination between financing mechanisms (Energy Efficiency Watch, 2013d). In addition, institutional frameworks for energy efficiency in residential buildings are still weak and funding unevenly spread (Turcu, 2015).

In Romania, 48 % of all residential buildings (or 3.1 million dwellings) are located in multi-family buildings, 94 % of which are in private ownership. A significant proportion of these (72 %) are situated in urban areas and found in large multi-family buildings, averaging almost 40 apartments per block. Average heating energy demand of this type of building represents around 55 % of the overall energy use in apartments and over half of all multi-family buildings are connected to district heating networks with 92 % of the energy supplied by CHP systems (BPIE, 2014b). Current programmes for the renovation of multi-family residential buildings are:

- National Programme for Thermal Rehabilitation of Apartment Buildings⁵ (since 2006);

4. IndexMundi (2015), Romania versus Bulgaria, <http://www.indexmundi.com/factbook/compare/romania.bulgaria>, accessed March 2015.

5. The programme A strategy for the energy renovation of Romania’s building stock (Programul National de Reabilitarea Termica a Blocurilor de Locuinte) aims to deliver thermal rehabilitation and increase the energy performance of apartment buildings built between 1950 and 1990, which are particularly seen as poor energy performers. Co-funded initially on a with 1/3 of the costs as national grants, 1/3 local government subsidies and/or EU funds and 1/3 by the property owner, then 50 % by the national government, 30 % by the local government subsidies and/or EU funds and: 20 % by the property owner and currently 50 % by the national government, 50 % by the local government subsidies and/or EU funds and no property owner’s own funding.

2. Financial Times (2014), Baltic security: Tensions on the frontier, by Richard Milne and Neil Buckley, 20 October.

3. IndexMundi (2015), Estonia versus Latvia, <http://www.indexmundi.com/>, accessed March 2015.

- Low Greenhouse Gas Emissions (LGGE) in Buildings: Improving Energy Efficiency in Low-Income Households and Regions⁶ (since 2011); and
- Thermal Rehabilitation of Apartment Buildings in Areas of Urban Deprivation⁷ (since 2004).

City of Bucharest as a whole has not endorsed the Covenant of Mayors principles and requirements. Only one local municipality, Sector 1, out of Bucharest's six local municipalities,⁸ is a signatory of the Covenant since 2011, and as such, it has a SEAP committing to 24 % reductions in CO₂ emissions by 2020 within its administrative boundaries. Action and outcomes of multi-family housing renovation varies across Bucharest's six municipalities; two municipalities make "good progress" while the rest lag behind. There is no clear city-wide data and planning; and a fragmented and weak legislative and policy framework at the city level to stimulate deep renovation. Existing planning and action takes place in a piece-meal approach, depending on municipal leadership and priorities, human and financial resources. There is little coherent political support across the city and little discussion of wider benefits of residential renovation such as health and fuel poverty. Links between renovation programmes and those that target energy generation (renewable energy) and district heating in buildings do not exist.

Case Study 2: Sofia, Bulgaria

Overall energy efficiency policy in Bulgaria is clearly described in current policy documents, but lacks in implementation (Energy Efficiency Watch, 2013a). Energy efficiency in the residential sector, however, has seen some progress more recently. This include an executive energy agency at the national level, the Sustainable Energy Development Agency (SEDA); direct subsidies (up to 20 %), loans with governmental warranty and overall coordination at the national level of various financial mechanisms; demonstration projects; education and training to stakeholders offered by six academic centres; and clear minimum energy performance standards. A number of shortfalls are also present including lack of an overall strategy for tackling energy efficiency in the residential sector; no EPCs for residential buildings smaller than 1,000 m²; lack of knowledge, poor energy advice and audits; and lack of information tools for the building sector (Energy Efficiency Watch, 2013a).

In Bulgaria there are more than 80,000 multifamily buildings with about 700,000 residential units which house approximately 2 million inhabitants; 97 % of these are privately owned and 50 % need urgent intervention, more generally. Only an estimated 27 multifamily buildings were renovated, with 27 undergoing renovation in 2010 (SQUARE, 2010). These buildings are also dependent on district heating which needs urgent upgrading. It has been estimated that an investment of 4 billion Euros might be needed to deal with the renovation of this particular housing stock. Current programmes for the renovation of multi-family residential buildings include:

- EBRD – JESSICA Housing Renovation Programme (2012 – present);⁹
- Kozloduy International Decommissioning Support Fund¹⁰ towards the 'Rehabilitation of the district heating network in Sofia' and 'New electricity meters in private households' projects (on-going); and
- National Programme for Energy Renovation of Multi-family Residential Buildings (2015–2017).¹¹

City of Sofia signed the Covenant of Mayors as a whole in 2011 and committed to 22 % CO₂ reductions by 2020. Sofia's SEAP was submitted in 2014 and supported by the LEAP project, which Sofia joined in 2012 to shadow and learn from other cities. Energy efficiency is a key objective in Sofia and it is incorporated into the Municipal Development Plan 2007–2013 which aims to improve sustainability development as well as raise awareness to the expanding population of the impact of energy consumption in order to motivate and achieve changes in energy saving behaviour. The municipality has participated in a number of energy-efficiency initiatives during the last two years to model, analyse, demonstrate and promote an improved sustainability approach in the municipality. Energy assessments indicate that the municipality experiences high energy consumption rates, and the municipality is aiming for a potential decrease of between 40–50 % (99 GWh per year). In addition, Sofia has a unique and very large combined heat and power (CHP) plant. Virtually the entire city (900,000 households and 5,900 businesses) is centrally heated, using residual heat from electricity generation and gas- and oil-fired heating furnaces. The heat distribution piping network is 900 km long and comprises 14,000 substations and 10,000 heated buildings (LEAP Project, 2012).

6. This programme is delivered under the Global: LGGE Framework for Promoting Low Greenhouse Gas Emission Buildings (LGGE in Buildings). The programme targets fuel poverty across the residential stock i.e. aims to improve energy efficiency and living conditions among poorer households (GEF, 2011). The project was granted USD 2.94 million from the Global Environment Facility (GEF) in June 2011.

7. The programme was established in 2004 with funding from the national budget. It targets the rehabilitation of apartment blocks in areas of urban deprivation/poverty and/or industrial/economic restructuring; the cost of rehabilitation is fully covered by the programme. The programme's budget is annually approved via a government ordinance but by 2010 only three apartment buildings were rehabilitated in Petritsa, Petrosani, and Rovinari, three ex-mining towns (MDRAP, 2009c).

8. City of Bucharest consists of six local municipalities: Sector 1, Sector 2, Sector 3, Sector 4, Sector 5 and Sector 6. Each local municipality democratically elects its mayor every four years, with Bucharest's next mayoral election to be held in 2016. City of Bucharest also has its own City Municipality with an overall and democratically elected General Mayor. Both local municipal as well as City of Bucharest mayorships are seen as positions of influence and power in Romania due to their political visibility and significant executive powers.

9. Under this programme costs are covered 50/50 by the government (with structural funds support) and apartment owners who are entitled for loans with low interest rates.

10. Kozloduy was the only nuclear power plant in Bulgaria, closed down in 2006 following pressures from the EU. The European Commission and other western European donors offered the Bulgarian government an assistance programme to cope with the early closure of the plant and the development of a competitive energy sector.

11. This new programme has only been announced by the Bulgarian government in February 2015. The programme budget amounts to BGN 1 billion and covers 265 municipalities in Bulgaria. Financing is provided by the Bulgarian Development Bank. The programme will last for a period of two years, with the option to be extended given that it has financial resources. Financing will come in the form of a State grant for all buildings which meet the requirements. Eligible are residential buildings, constructed by industrial means, with more than 36 apartments.

Case Study 3: Tallinn, Estonia

In contrast to the previous two countries, Estonia has a relatively robust energy efficiency policy, little affected by the 2008 economic recession and with many good measures (Energy Efficiency Watch, 2013b). Estonia is a small country, mainly reliant on own energy resources (i.e. shale oil), with a major focus on a more energy-efficient building stock, as a result of previous measures on the energy performance of buildings as well as a National Housing Development Plan for 2008–2013, both adopted in 2008.

Estonia's current progress in multi-family building renovation has been the combined result of many good initiatives. Economic incentives are especially strong, with several incentive schemes in place: subsidies for energy efficiency renovation of apartment buildings, incentives for audits; tax incentives to foster energy efficiency renovation; and energy efficiency labels for buildings have been mandatory since 2009. However, a number of shortfalls exist such as a lack of general information and awareness raising initiatives, and education and training for stakeholders. Estonia also does not have a national energy body (Energy Efficiency Watch, 2013b). The following two programmes are available at the national level to multi-family residential building owners:

- National KredEx Loan Programme (since 2009);¹² and
- Renovation Grant Programme (since 2010).¹³

70 % of Estonian dwellings are located in low-energy-performance apartment blocks constructed between the 1960s and 1980s. In Tallinn, a vast majority of the population (94 %) lives in multi-family residential buildings; and approximately 85 % own their dwelling. The city of Tallinn's efforts towards energy efficiency of apartment building renovation started early. Since 2005, Tallinn has been involved in four EU projects which targeted different aspects of energy efficiency in residential buildings: INTERREG IIIA – e4Portal Project (2005–2007); INTERREG IIIB – BEEN Project (2005–2007); IEE – REBECCE Project (2007–2009); and IEE – SECURE Project (2007–2008).

Tallinn signed the Covenant of Mayors agreement in 2008 and committed to 20 % reductions in CO₂ emissions by 2020. Tallinn's Strategic Energy Action Plan (SEAP, 2008) has been produced in cooperation with the other three Baltic Capitals (Riga, Stockholm and Helsinki) via the COMBAT Project.¹⁴ The SEAP is one of the city's strategic plans and includes both short-term actions i.e. bi-annual reviews and re-prioritization on the basis of energy savings, CO₂ reduction and costs, as well as long-term actions in "Tallinn City Strategic development Plan until 2030" and "Tallinn City development Plan until

2027". However, few stakeholders came forward at first to input and make comments on Tallinn's SEAP proposal. This led to significant stakeholder opposition when the proposal was submitted for approval, and so, substantial revisions of the plan and further delays. In addition, data availability was an issue for Tallinn when producing the SEAP.

Case Study 4: Riga, Latvia

Latvia has a balanced mixed of overall energy efficiency policy measures, however, it lacks a long-term strategy (Energy Efficiency Watch, 2013c). Energy efficiency in the building sector benefits a focus on the residential sector and especially on multi-family residential buildings. More widely, this is supported via four regional energy agencies and a national monitoring authority; investments into increasing heat energy efficiency and thermal stability in apartment buildings; and EPCs since 2009. However, a number of limitations hold back progress in this area: lack of knowledge, energy advice, audits and construction supervision are not available on a large scale; and there is little information, dissemination and training of various stakeholders involved.

Almost 70 % of Latvia's households – 85 % in the capital, Riga – live in multi-family residential buildings. In Riga, 94 % of inhabitants live in these buildings as home-owners. An estimated 6,000 multi-family residential buildings in Riga were in urgent need of renovation, with only 0.2 % accomplished by 2010. Current programmes targeting the renovation of the multi-family residential buildings at the national level are:

- National Operational Programme for 'Infrastructure and Services', under the 'Energy Efficiency of Housing' measures (since 2007);¹⁵ and
- Energy Efficiency Measures in Multi-Residential Buildings under Zemgale Regional Energy Agency (ZREA) (since 2009).¹⁶

Riga's efforts towards city energy efficiency planning in apartment building renovation started with the Riga Energy Agency (REA) established in 2007. This was followed by the City of Riga signing the Covenant of Mayors agreement in 2008 and committing to reduce CO₂ emissions by 55 % by 2020. Riga's Strategic Energy Action Plan (SEAP) was submitted in 2008, following collaboration with the COMBAT Project and the other main Baltic capitals: Stockholm, Tallinn and Helsinki. It refers to a mix of short-term measures within a long-term strategy regarding the renovation of multi-apartment buildings including complex renovation and use of solar collectors for preparation of hot water.

12. This programme is based on a revolving fund, inspired by the KfW (German public bank) housing energy refurbishment programme and managed by the government. Apartment owners are supposed to pay their monthly instalments from the savings made on their energy bills. Energy savings must achieve at least 20 % for the buildings up to 2,000 m² or 30 % for bigger buildings.

13. Grants are paid depending on the level of energy savings achieved – these are a combination of grants for energy audit and project design documents (up to 50 %) and renovation (up to 35 %, depending on the complexity of works). They are separate from the KredEx and come from the ERDF and the sale of CO₂ emission allowances by Estonia to Luxembourg, in the European trade market.

14. Covenant of Mayors in the Central Baltic Capitals (COMBAT), http://www.eu-mayors.eu/news_ga.html?id_news=295.

15. Energy efficiency in apartment buildings initiatives can be funded via this programme, which is supported by ERDF. This programme has two target audiences: apartment owners of multi-apartment residential buildings and tenants of municipal social residential buildings. At least 20 % of energy saving is stated as the threshold criteria for project's beneficiary. The programme is supported by EBRD.

16. This is programme driven by the Zemgale Regional Energy Agency (ZREA) with co-financing provided by the government via the National Operational Programme for Infrastructure and Services, which is supported by the ERDF. The co-financing rate offered by the programme is 50 %, with a maximum of €50 per m² of heated floor area. The remaining 50% is contributed by the owners themselves and is commonly covered by bank loans. The loans typically have a payback period of 8 to 12 years.

Riga has a high political support for its “sustainable energy planning” and this has played an important role in stimulating the interest and participation of relevant stakeholders. Riga has used several innovative methods to capture stakeholders’ interest in energy efficiency including its “Let’s Live Warmer” campaign and stimulated the creation of new networks and associations that committed themselves to become partners of City Council and REA. However, data availability was an issue for Riga when “planning” for energy efficiency in buildings with limited statistics available.

Lessons

Three main lessons can be drawn from the discussion above, which are relevant to the wider framing of energy efficiency in multi-family residential buildings in CEE countries. These refer to data issues, the variety of existing policy action and measures, and the importance of know-how transfer and knowledge sharing. For example, barriers such as the lack of data at the building and urban area level can severely hinder the development of efficient planning and delivery of energy efficiency policy in regard to multi-family residential buildings, but also more generally, in relation to the wider built environment. At the same time, there are significant opportunities for mutual learning and the further development of the energy-efficiency agenda by drawing on the variety of experiences and practice in CEE countries. The rest of this paper will look at these three lessons in turn.

DATA CHALLENGES

Although there is an ongoing progress in improving building statistics and data reliability, especially in Tallinn and Riga, there is still an acute lack of robust data at the building and city level in Bucharest and Sofia. For example, we could not find an exact record or piece a map of apartment buildings in need of retrofit across Bucharest and Sofia, nor information about the total number of completed buildings to date. This means that city-level energy policy-making and planning often has to be based on general or best-proxy estimates instead of being supported by reliable data and evidence-based assumptions. It should also be noted that data at the city level looks different when compared to data at the national level; that is to say that whilst data at the national level can be relatively good and easily accessed, the same cannot be said about the local and city level. Moreover, existing available data was difficult to compare across our four cities and countries; hence, comparisons can be seriously biased at the best. This points to the need for an integrated CEE database on renovation of multi-family residential buildings. Without robust and comparable data it is impossible to compare energy efficiency outcomes and outputs across different cities and countries, hence knowledge transfer is limited.

A BREADTH OF EXPERIENCES, BUT NO SILVER BULLET

There is no simple answer on how energy efficiency policy measures in multi-family residential buildings is implemented across CEE countries; patterns of development and history, however, matter, as well as baseline urban infrastructure, residents’ social norms and attitudes towards the energy efficiency of their homes. Financial mechanisms to deliver current pro-

grammes and energy-efficiency in buildings vary significantly across our four countries and cities i.e. from full public funding or state grants (in Romania and Bulgaria), to partial subsidies (in Estonia and Latvia), and bank loans (in Bulgaria and Estonia). We have also seen, more recently, a move away from strong public subsidies and reliance on Structural Funds to more market-oriented financial mechanisms such as bank loans and revolving funds. Cities in CEE have a tougher task than most western European cities because of their long-term underinvestment in the urban environment, hence relatively aged and inefficient urban infrastructure; weaker economic output and the transition to a market economy; but also geopolitical tensions and reliance on Russian energy. Also, CEE countries and cities differ from most western European countries and cities with respect to their citizens’ attitudes and aspirations; for example, the adoption of a consumer culture in CEE has led to greater demand for private vehicles as a preferred alternative to relatively good and extensive networks of public transportation. However, no matter the differences between cities and countries, there is a need at the European level for robust comparisons between cities and knowledge transfer, taking local conditions and contexts into consideration. And there is a breadth of experiences that could help these cities as well as other CEE cities to learn from each other.

KNOW-HOW TRANSFER

International know-how transfer takes better place when supported by established networks such as EU initiatives and projects. For example, via the COMBAT project, within the Covenant of Mayors’ initiative, the Cities of Tallinn and Riga have significantly learnt from the Cities of Stockholm and Helsinki about energy-efficiency related data collection, strategic planning, implementation of measures and evaluation. At the same time Stockholm and Helsinki have learnt from Riga and Tallinn how to reach out to stakeholders and how to more efficiently communicate energy action plans. Another example is the City of Sofia that greatly benefited from ‘shadowing’ the LEAP Project¹⁷ via peer-to-peer learning; this offered the City of Sofia better technical understanding of sustainable energy solutions; how that can embed into policies, and how to develop strong networks of local energy actors for local energy leadership through which a Sustainable Energy Action Plan (SEAP) can be implemented. Following this experience, the City of Sofia has successfully submitted its SEAP in 2014. These successful learning and transfer examples highlight the need for working across geographical divides, and sharing of knowledge; and the important role that the EU and European projects and platforms play in achieving this.

It is perhaps worth mentioning in conclusion that the four aforementioned cities have mostly struggled with four issues in relation to the energy efficiency of multi-family residential buildings. First, they all needed a better understanding of how

17. Main partners on the LEAP Project (2011–2013) included the Town and Country Planning Association, Southampton City Council and Cornwall Council in the UK; the Cities of Hannover and Hagen in Germany; the Municipalities of Kaunas District. The project aimed to improve local energy leadership primarily through an extensive programme of activity centred around the exchange of experience and capacity-building between ‘learning’ and ‘experienced’ LEAP partners. See here for further details: <http://leap-eu.org/>.

to realize the potential of the energy-efficiency challenge, for this particular housing stock, in a more cost-effective manner; they need a better understanding and/or the use of a robust business case for renovation and alternatives to existing financial models that rely heavily on national and/or European finance.

Second, they needed further ‘buy-in’ and involvement from their residents and stakeholders; and better information and raising awareness campaigns – the City of Riga can offer a good example of how that can be done. Third, as partnering with new urban actors and alternatives to public finance are being sought, these cities need to re-evaluate their institutional frameworks for the delivery of energy efficiency in multi-family residential buildings. Central government and local municipalities are important players, but not the only ones; other players include resident associations, civil society organizations, international bodies, building contractors, developers, designers, higher education institutions etc.

Finally, these cities (and indeed, countries) have failed so far portray the energy efficiency agenda as an area of wider societal concern and link multi-family residential building renovation to other pressing urban, social, economic and environmental issues in CEE. The energy-efficiency in buildings agenda is mainly seen as a ‘carbon agenda’ directly related to lowering local and national CO₂ emissions targets, as well as an ‘economic agenda’ linked to job creation in the construction sector and reduced overall national energy bills. Little is said about meeting other important non-carbon or societal goals in these cities and countries such as health benefits, fuel poverty and energy security in these cities and countries.

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