



Energy efficient buildings and districts in Birmingham

Feedback report from the CASCADE
Peer Review

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CASCADE is a EU-funded project coordinated by EUROCITIES which aims to design and deliver large-scale networking and mutual learning actions on local energy leadership among members of the EUROCITIES network. The CASCADE consortium is composed of: EUROCITIES, Wuppertal Institut, Koucky & Partners and the following cities: Amaroussion, Amsterdam, Birmingham, Burgas, Edinburgh, Eindhoven, Gateshead, Genoa, Gijon, Malmo, Mannheim, Milan, Nantes, Stockholm, Sunderland, Tampere, Terrassa, Venice and Warsaw.

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Executive Summary

In February 2012 Birmingham hosted a peer visit under the Cascade project. The cities of Eindhoven, Malmö, Mannheim, Milan, Tampere and Warsaw visited the city to carry out interviews, see implemented projects and assess plans and ambitions that Birmingham has in the energy efficiency area. This report is a reflection on the findings of the visiting cities. It contains remarks and recommendations on how Birmingham could continue to improve its work to reach its ambitious goals, namely a 60% CO₂ reduction by 2026, as mentioned in the Sustainable Energy Action Plan, the Climate Change Action Plan and the Birmingham Declaration.

Birmingham translates these goals, to a great extent with help and/or under initiatives of national programmes, into local implementation programmes, such as the Birmingham Energy Savers (BES), the Big City Plan or the Birmingham Strategic Partnership.

The political commitments of Birmingham are very high indeed. Even though there is evidence that these commitments are followed, the peers felt that the city could use more of its legislative power to strengthen and reinforce the targets set. Experiences from the numerous and successful pilot projects that have been carried out should be systematically evaluated in order to mainstream the results on a wider field.

Birmingham has also a thorough long-term strategy, i.e. the Sustainable Energy Action Plan, which highlights potentials for energy efficiency measures and renewable energy production. However, in order to implement the long-term strategy, a short-term action plan will give clear and hands-on guidance. The action plan should detail the distribution of responsibilities amongst different municipal units as well as other stakeholders, prioritising i.e. fields of action for a certain time period. This should also be followed by regular evaluation to see how the city is progressing. Additionally, internal communication of the targets, goals and actions to be implemented will aid understanding of municipal employees in all units.

Regarding the organisational and managerial issues the peers found that Birmingham is well on track. There are no suggestions for improvement other than the more systematic evaluation of projects mentioned above. Coupled to that is communicating the targets and progresses achieved, especially to municipal employees.

There are quite a number of stakeholders in the city that are committed to the environmental goals. Some of them have created networks, others co-operate in other direct ways with each other or the City. These co-operations seem to function well. If Birmingham could bring together the different networks and get them to cooperate on e.g. energy efficiency issues, there is quite a potential for up-scaling the implementation of measures. Sustainability aspects should become a natural base of all cooperation and not an add-on benefit.

There are a number of units in the city administration that are very aware of the necessary steps that need to be taken in order to meet Birmingham's targets. On the other hand the peers also considered that there is a need for more training and awareness raising. Furthermore, the peers have not seen evidence of a systematic approach to the training of local market actors. One possibility is to provide this training through third-party actors, e.g. community based

organisations. Birmingham, in its role as frontrunner, has the potential of becoming the UK's expert labour force on energy efficiency and renewable energy generation.

Finally, Birmingham is doing very well with attracting funding from different sources. In addition, the city has the capability and resources to channel and administer the funding towards its sustainability targets. Also, the city is very aware of the costs associated to all imported energy. An increase in local production of renewable energy would open up possibilities to focus less on implementing projects that have short payback time. If the targets of the Sustainable Energy Action Plan are to be reached it is necessary to also go for projects that are, financially, more difficult.

1. Introduction

Birmingham signed the Covenant of Mayors in 2009 and submitted the Sustainable Energy Action Plan (SEAP) in 2011. That document states the ambitious targets of the city when it comes to CO₂ emissions; the city has committed to reduce the emissions by 60 % per capita by 2026, as compared to the reference year 1990. Birmingham owns about 40% of private buildings in the city; this gives a sense of the amount of investment needed and on the influence that the Council has on energy use and carbon emissions in the city. In addition to the SEAP, Birmingham Climate Change Action Plan deals with both emissions targets and climate change adaptation. There are also several supplementary planning documents addressing the climate change and sustainability issues: Sustainable Urban Neighbourhoods, Low Carbon Energy Generation and Places for the Future being three examples.

Birmingham has been the host for a peer learning event concerning the theme “Energy efficient buildings and districts” within the project CASCADE, funded by Intelligent Energy Europe and lead by EUROCITIES. Five European cities were each represented in the peer group by two experts, one officer and one local stakeholder.

The main focus of the peer visit was on the Birmingham Energy Savers (BES) programme, created by the City Council under the national Green Deal initiative. Birmingham is the first city to offer a Green Deal programme in the United Kingdom. The aim of Birmingham Energy Savers is to create more energy efficient homes and behaviour, and at the same time help people save money. On top of this, the BES scheme will also create jobs. For the participants, there are no upfront costs, the pay-back to the city is coupled to the savings on energy bills.

In the first two stages of BES, photovoltaics were installed on the roofs of homes and businesses. The PVs are owned by the City Council, and will be paid back as the city gets the feed-in tariff from the energy supplier. The benefit for the house-owner is the reduced electricity bill.

In the third stage of BES, more measures will be available to save energy, like efficient boilers and loft- and wall insulation. The participants in the programme are offered a free energy audit, which results in a list of suggested measures to decrease energy usage and save money. There is no requirement to implement any of the suggested measures.

All the BES measures are implemented under the “Golden Rule”, stating that the costs for the measures cannot be higher than the savings on the energy bills that they result in. Thus, there is always a net monetary saving.

2. Peer Learning Methodology and Visit

The peer learning methodology is based on the assumption that organisations existing under similar conditions (so called peers) are well suited to give advice and suggestions to each other. In the Cascade project, the methodology is used by cities to assess and review each other's strategies and performances in the area of energy and climate policies. The methodology starts with the creation of benchmarks, defining ambition levels against which the performance of the city will be measured. The host city makes a self assessment related to these benchmarks. Before the peer review visit, the peers make a written assessment on that, which is completed during the visit, with information from interviews, workshops and site visits. This report is based on all the information collected and reviewed by the peer review team and contains the conclusions of the team.

Peer Learning Visit in Birmingham

Birmingham provided a self assessment report on January 11th, addressing specified benchmarks concerning the theme "Energy efficient buildings and districts". Feedback from the thematic leader Malmö and GOJA Consulting was sent back to Birmingham on January 13th. A compiled desk review on the self assessment with comments and questions from the peer cities, Malmö and GOJA Consulting was completed on February 3rd. The peer learning visit in Birmingham took place between February 22nd and 24th. There was a preparatory meeting on the 21st, attended by the thematic leaders and the staff in the city administration organising the visit.

The main focus during the visit was to confirm hypotheses and get additional information on the performance of Birmingham. Therefore site visits and peer-to-peer interviews were organised. The peer team conducted 18 face-to-face interviews with politicians, relevant municipality staff and external stakeholders from the energy and housing sectors. During these interviews evidence on Birmingham's performances concerning energy efficient buildings and districts was presented. One workshop was held, focusing on information exchange between the peers. During the site visit, local initiatives on sustainability in the city were presented. On the final day, a brief feedback with the first conclusions of the review team was given to the city by GOJA consulting.

The members of the Peer Review Team were:

Eindhoven	Alfredo Verboom (City of Eindhoven) Dennis Kerkhof (Foundation Housing Company Domein)
Mannheim	Agnes Hähnel-Schönfelder (City of Mannheim) Hans Hertle (IFEU - Institute for Energy and Environmental Research GmbH)
Milan	Marta Papetti (AMAT - Municipal Agency for Mobility, Environment and Territory)
Tampere	Antti Nikkanen (City of Tampere) Jaako Vihola (Tampere University of Technology)
Warsaw	Marcin Wróblewski (City of Warsaw) Henryk Urbanski (Polish Association of Development Companies)

The peer learning team was supported and facilitated by

- Kerstin Rubenson and Roland Zinkernagel (City of Malmö)
- Jan Dictus (GOJA Consulting)
- Denisa Naidin (EUROCITIES)

Conclusions of the assessment and presented recommendations

The assessment and recommendations made in this report are based on the analysed evidence from the self-assessment report and the interviews held during the peer learning visit, complemented by further investigations. With guidance from the thematic leaders, the peer team reconciled and interpreted the evidence to see whether Birmingham has met the benchmark or not.

The benchmark

The benchmark for the thematic field of “Energy efficiency in buildings and districts”, developed in CASCADE as the main reference document for the peer learning process, addressed the following issues and indicators:

- A Local leadership and level of ambitions
- B Local strategies and policies
- C Organisational and managerial issues
- D Stakeholder and citizen involvement
- E Information, knowledge and awareness
- F Financing, investments and risks

3. The assessment

The information, conclusions and suggestions in this feedback report are based on the information given to the peers by Birmingham in the self assessment report, during the peer learning visit interviews and from further investigations made by the peers. The thematic leaders (Malmö) and the peers have cooperated in drafting this report. This section follows the structure of the CASCADE benchmark and key factors.

A - Local energy leadership and ambitions



This benchmark looks at the ambitions of the city regarding climate and energy visions, targets and measures. How well are these ambitions initiated and connected to the political decision making level? Are there any areas of operation that are not fully explored? What support mechanisms exist in order to reach these ambitions?

We were impressed by the amount of projects and work that has already been started in Birmingham. We applaud that Birmingham has launched many innovative projects (pilots and demonstrations), in a creative and flexible way. You are leading by example.

Review and evidences

The team has seen a lot of evidence in the form of reports, plans and declarations, as well as during the interviews that Birmingham has very high ambitions in the field of energy savings as well as renewable energy production, especially in connection with city development. The political commitment, defined in the Sustainable Energy Action Plan and the Climate Change Action Plan, of reaching a 60% CO₂ reduction by 2026 is impressive. It is clear that the SEAP and sustainable

development in general are not only seen as sectoral work to initiate a transformation of the energy infrastructure in the city but a starting point for a change in the economy to foster green growth and create jobs.

The ambitions of Birmingham relating to energy efficiency in buildings and districts are also high. The evidence is found in the Sustainable Energy Action Plan (SEAP), the Climate Change Action Plan and the Birmingham Declaration 2015, for example. This means that the city has the potential to become the leading energy efficient city in the UK, and play an important role also on a European level.

However, the peer team doubts, based on the evidence that was provided, whether these ambitious goals (60% target) will be met if the associated measures that have been developed so far are not up-scaled or tightened to higher standards.

It seems that the goals of the SEAP are well-known to those working in the field, and there are many people in the city administration that are really committed to and working hard to reach these goals, both city officers at all administrative levels and politicians. However, some decision-makers do not seem entirely convinced of the necessity of energy efficiency, and actually believe it may discourage investors. This reluctance might impede, or at least delay, the transition to a low-carbon society. Also, informing and involving external stakeholders (including the public) is regarded as crucial in reaching these goals.

A City Council has the possibility to develop local legislation that exceeds regional, national and EU energy standards. In Birmingham, there are already some good examples where the City uses these possibilities: buildings on municipality-owned ground are constructed using good or excellent energy standards (like 10 Woodcock Street building and the new library building), or when the procedures in the planning process are being used to reach these high ambitions. Many achievements are implemented through bilateral agreements and negotiations, which is another way of implementing tailor-made sustainability solutions. But we have not found evidence that Birmingham is fully using the legal spectrum at its disposal. The municipality's ambitious environmental goals will be harder to reach without an extensive use of legislation. For example, public procurement rules already in place could be used more stringently to focus on energy efficiency.

Birmingham City Council develops and supports a wide range of innovative projects. The Cofely District Energy project stands out as one of the best examples. In this project, many stakeholders are involved, and the City Council played a key role as initiator. Also the Summerfield project and the 'Pay as you Save' project have the potential to make Birmingham a role model in the area of energy efficiency. But this potential sometimes seems to fail, due to little monitoring and evaluation of project results, and consequently there is little chance to implement any 'lessons learnt' from the evaluations. For example, the peer team found

The Cofely District Energy Scheme is playing a pivotal role in Birmingham City Council's climate change strategy, which aims to reduce CO₂ emissions by 60% by 2026.

The Birmingham District Energy Scheme is owned and operated by COFELY District Energy working in partnership with Birmingham City Council – under the name of Birmingham District Energy Company Ltd (BDEC). The scheme features tri-generation, producing heat, electricity and chilled water. The scheme makes extensive use of highly efficient large-scale combined heat and power (CHP) technologies, and uses conventional boilers for 'top up', standby and increased resilience.

out that the 'Pay as you Save' project was evaluated internally, but no data was available on energy savings and other relevant environmental issues. A better approach towards evaluation would prevent Birmingham Council from losing the knowledge gained or lowering the value and impact of such good projects. This would also lead to Birmingham being more of the role model it should be, especially with regard to other UK cities.

The peer team has also found indications that city officials could be more responsive, i.e. respond more quickly and openly to initiatives from external stakeholders, such as grass-root initiatives. It seems like the City sometimes is a bit reluctant when it comes to economic co-operations, and uses the rules on procurement as an impediment or barrier. Because of this - it was mentioned in interviews - external stakeholders invest elsewhere and hence some development opportunities for the city are lost.

The City of Birmingham is cooperating on a broad field with stakeholders, both within the city administration as well as with private actors. The amount of projects that have been carried out, are being implemented and are planned is impressive. The peers also certainly got the impression that the Council is leading by example, showcasing good practice, demanding and implementing high quality projects. There are very good examples on creative and innovative projects with tailor made solutions. The peers believe that the experiences of these projects could be used to a higher degree for dissemination as well as up-scaling, i.e. mainstreaming sustainability solutions throughout the city. Evaluating project proposals and ideas in the design phase by considering the marketing potential could help in the strategic decision making.

Birmingham is developing projects taking into account the specific conditions in each case, which means that the standpoints of the involved actors have been taken account of and thus ensures their constructive engagement in the development. On the other hand, this has lead to a broad range of different projects on different scales and with differing ambitions, which made it rather difficult for the peers to put the projects into relation to each other, i.e. which project is being carried out for what purpose, trying to reach which goal or leading to which vision. Clustering projects in geographic or thematic groups could make this easier. A clustering of projects could also improve the communication aspect as mentioned in the previous paragraph.

The peer team suggests the following areas of improvement:

- The City should do a feasibility study of the SEAP targets, and also measure these targets against the measures taken.
- The importance of energy efficiency should be even better acknowledged by politicians and

Birmingham City Council Pay As You Save Pilot

By offering homeowners low-cost finance options, PAYS seeks to encourage whole-house retrofitting of energy efficient and renewable energy measures, leading to significant energy and carbon savings.

Pay As You Save schemes are a government initiative to provide a loan so that households can install renewable energy microgeneration technology with no upfront cost.

The loan repayments are spread over a 20-25 year period, saved on the energy bills.

A total of 311 households signed up for the Pay As You Save pilot, with measures like insulation, PV cells and new heat boilers.

- city officials. The potential cost reductions should be pointed out even more strongly.
- The City Council should establish a sound framework for evaluating their own projects and processes, in order to keep the knowledge within the organisation, inform policy and continue improving the projects.
 - The City Council should create a more predictable environment for attracting external stakeholders willing to invest in energy efficiency. You could do this by seeking broad political agreement and also make a plan detailing what kind of initiatives the Council is interested to take part in.
 - Higher energy standards could be achieved through the stricter use of legislation (for example, in building codes).
 - The City could explore alternative ways of using procurement rules as a support factor rather than a barrier towards external investments.
 - A great part of partnerships with external stakeholders are based on negotiations and voluntariness, which is probably not enough to reach the high targets. As a complement, some legislation is needed, combined with penalties if legislation targets are not met.

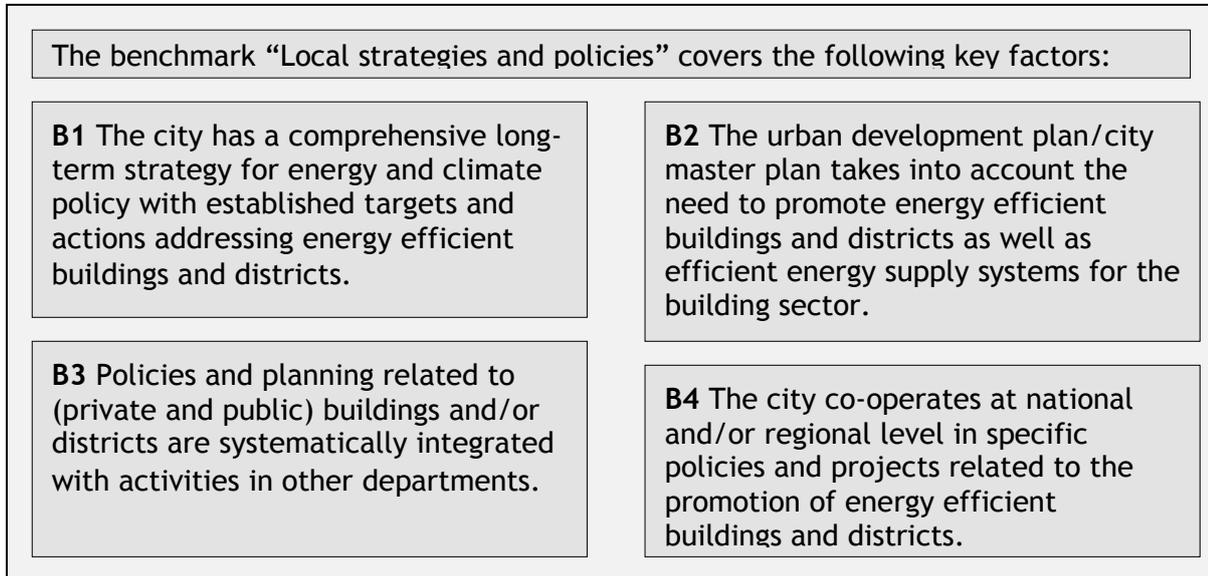
Warsaw - low-carbon projects

While working on low-carbon area projects (but also having in mind the SEAP's goals in general), Warsaw commissioned a study on how to insert energy efficiency requirements in the city's spatial planning documents, which are binding not only for the city itself but also for external stakeholders. If UK law allows for these requirements, they could be introduced in city spatial planning, thus constituting a firmer basis for climate and energy policies than merely voluntary partnerships. On the other hand, if national law needs to be amended to render making the energy requirements possible, perhaps Birmingham – via their local representatives to Parliament – could try to initiate parliamentary work on the needed amendments. Such a move would also boost Birmingham's position as a leader in climate and energy policies among UK cities.

Malmö – co-operation of projects

In the City of Malmö, different projects, with different funding sources, are carried out in the city district of Rosengård, improving different problem areas such as public transport, green area management, energy efficiency improvements of residential buildings or providing better suited facilities for local commercial actors, under the common name "Sustainable Rosengård".

B - Local strategies and policies



This benchmark highlights the need for strategies at the local level that facilitate and foster energy efficiency and the generation of renewable energies in city development. Strategies and plans need to be founded on a broad base of internal and external stakeholders. Long-term planning to reach goals and targets and a road map for intermediate targets are analysed in this benchmark.

Review and evidences

Birmingham has a well developed climate action plan as well as a thorough sustainable energy action plan; both define and set a long-term vision for the city. Both plans have a structured approach for reviewing targets and goals to check against achievements and allow for updating or shifting focus if necessary. The SEAP breaks down targets into different sectors and even types of measures and actions that can cut emissions. It is a holistic and comprehensive summary. What the peers felt was that the plans could be strengthened by a more detailed roadmap, outlining which actions need to be taken when and how they will reduce emissions in regular time intervals. There are a number of actions concerning energy efficiency in buildings (reducing emissions from buildings owned by the City, companies and citizens) with estimated energy savings and emission reductions. What is missing are measures for HOW the targets in the actions will be met. A clear roadmap with measurable targets for each year would be a forceful tool to track improvements.

The Core Strategy for urban planning, which is being developed and finalised at the moment, has good potential to lead Birmingham towards sustainable development and a low carbon economy; in fact sustainability seems to be a dominant feature in the plan. What however is important to consider is that in day to day decision making, the sustainability aims and targets are considered alongside other factors, such as economic ones. The peers felt that these economic aspects such as

the “Golden Rule of return on investments” were brought up several times during interviews and presentations. We recommend being aware of the fact that economic factors risk dominating and outweighing sustainability in the decisions taken.

The strategic plans (SEAP, Core Strategy, Climate Change Action Plan) set high ambitions. The goals should be based on a broad consensus, both politically and amongst staff, in order to minimise the risk that, after an election, a changing political agenda jeopardises the targets. Moreover the changing role of the mayor (directly elected) might have an impact on the prioritisation of different aspects.

The Supplementary Planning Document (SPD) ‘Places for the Future’ plays an important role in detailing the way the targets from the strategic plans need to be implemented. The peers had the impression that ‘Places for the Future’ will lead to a better integration of sustainability goals. For the time being, we did however not see sufficient evidence that this will really go all the way to putting the goals into practice. Since the SPD had not been finalised at the time of the peer visit it is impossible to give any definite conclusion and recommendation other than that the ‘Places for the Future’ has a lot of potential and could play a key role.

Considering the present-day situation, the integration of sustainability aspects with other departments could be improved. The peers’ impression was that in some departments the focus on short term goals is too big. The ‘Places for the Future’ document could help make long-term sustainability the central focus of inter-departmental cooperation. This would also counteract the situation where departments focus on the impact of ‘their’ operation, by keeping them aware of the overall sustainability goals that form the vision for the sustainable development of Birmingham.

Since Birmingham, in nearly all cases, remains the landowner when developing areas, using long-term leases as a tool to maintain influence and to be able to set targets, it has the possibility to implement high sustainability ambitions, taking into consideration and weighting diverging aspects. However, the peers got the impression in several interviews that some important or crucial stakeholders did not value the importance of sustainability as high. The Climate Change & Sustainability Team does not have the possibility and resources to pursue these issues in every case. One example is the Icknield Port Loop, a development area to the west of the city centre with the potential to provide over 1000 new homes and mixed use activities, less than one mile from Birmingham City Centre. Energy efficiency or sustainability is not of main interest in the

The Places for the Future Supplementary Planning Document

has been drafted to provide detailed guidance for future development and investment in Birmingham, with particular emphasis on safeguarding our resources for future generations.

The SPD's specific objectives are to

- set out how national and strategic policy will be interpreted in detail in Birmingham’s development
- identify the elements of sustainable development which all future developments must consider
- provide detailed guidance on these elements
- ensure the City meets its agreed carbon reduction targets
- ensure the City adapts to future climate change
- ensure the City’s overall natural environment, biodiversity, ecology and historical heritage are nurtured and maintained

It is written to support the Sustainable Development policies of the draft Core Strategy and the key outcomes of the Birmingham Sustainable Community Strategy 2026. Read more: <http://www.birmingham.gov.uk/placesforthefuture>

development framework described in “Edgbaston Reservoir and Icknield Port Loop”. Similar remarks have been mentioned in other cases as well.

The city is well aware of the importance of and benefits from cooperating on the regional and national level. There are a number of projects and a lot of cooperation going on, or being planned, which support this conclusion. Some examples are the involvement in SHAP (Sustainable Housing Action Partnership), in initiatives of Birmingham Science city (with e.g. University of Birmingham), in CESP (Community Energy Saving Programme, with British Gas and E.ON) and of course the BES (Birmingham Energy Savers).

There is a strong driving force in the city towards climate-related and energy efficiency goals. The documents and strategies are in place, giving Birmingham the basic tools to be and become one of the most energy efficient cities in Europe. Birmingham is willing to teach and learn from others, as shown by the high intensity of cooperation.

The peer team suggests the following areas of improvement:

- Develop a detailed action plan outlining which actions need to be taken when, including an evaluation at regular time intervals.
- Create a campaign to communicate to staff in relevant departments the overall goals on sustainability, and how their activities can contribute to achieving the Council’s targets.
- Use the experiences from pilot projects for extended communication and dissemination in order to upscale and mainstream sustainable development. To make this possible, the experiences must be gathered and evaluated, and possibly slightly re-shaped for mainstreaming.
- Try to cluster projects or put them into clear reference to each other as well as the strategic plans and policies to make it easier for stakeholders to see ‘their’ achievements in reaching the bigger picture.

Eindhoven - starting an energy company

The housing company Domein and the city of Eindhoven are working on a development, demolishing 400 and rebuilding 425 houses (New in Oud Woensel, www.wonenmetspice.nl). One problem we are confronted with is showing that the advantages of sustainability investments can benefit the investing company. If the roles of landowner, developer, builder, owner and end-user are taken by different companies, a lifecycle analysis is of low interest. But if revenues from lowered lifecycle costs are redistributed, companies might consider the benefits, resulting in more sustainable buildings.

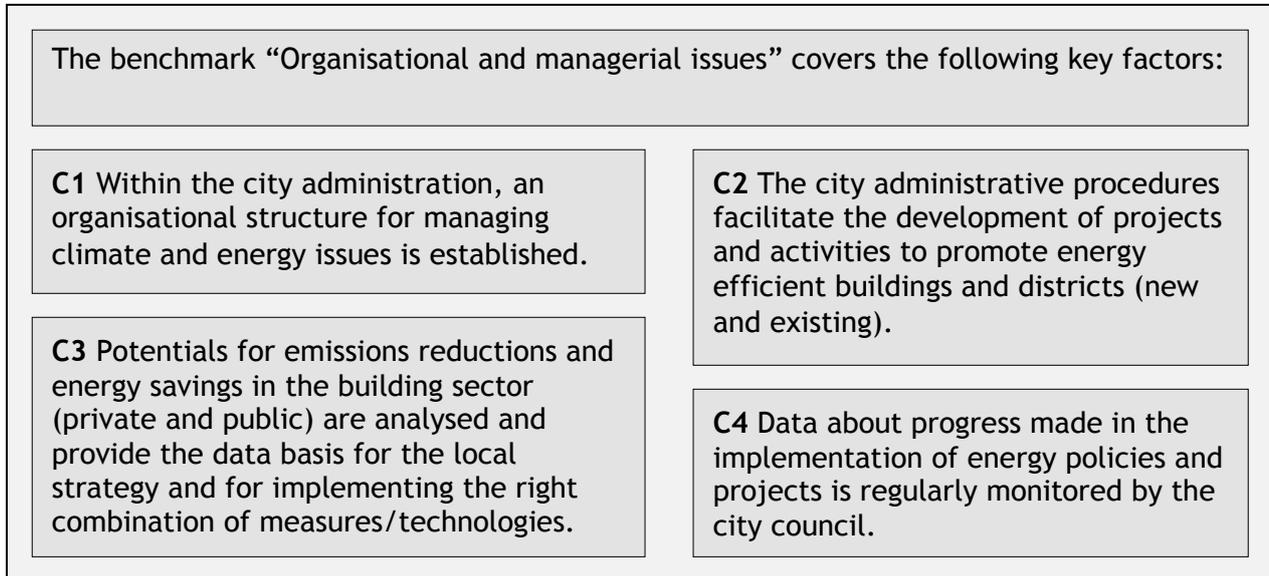
By starting our own energy company we have prevented the most important revenues from flowing to external parties. In short this works as follows:

- Developer makes an extra investment to reduce energy demand
- The energy company pays for the extra investment (the golden rule applies)
- The write off on the investment (total energy cost not increased as compared to without the additional investment) is included on the energy bill to the inhabitant.
- After the write off period the energy bill is lower

Warsaw - Climate Protection Team

The Warsaw Climate Protection Team comprises both the Mayor, heads of crucial departments (also those not directly related to climate and energy, but with competences influencing the implementation of climate and energy policies) and representatives of cooperating NGOs.

C - Organisational and managerial issues



This set of benchmarks aims to highlight the need for a good organisational structure in order to identify and follow up energy efficiency potentials and to be able to respond to shifting challenges and conditions.

Birmingham has a well established and well-known team within the city administration working on managing climate and energy issues. There are many plans, concepts and working groups working on policy development and project management, approaching the matter from many viewpoints.

Review and evidence

The Climate Change & Sustainability Team is a well established unit that has many connections and working relationships with other departments and units within the city council. Furthermore, on a political level, there are close and direct connections between the council members and the administrative staff, which makes cooperation across departments and on different levels possible and effective. In addition, the formation of different delivery groups focuses on specific objectives and is very efficient in finding site-specific solutions; nevertheless there is the danger of incongruity and losing the bigger picture.

According to the organigram provided to the peers, as well as according to the Council plan 2012, the Climate Change & Sustainability Team belongs to the Development Strategy Division, which falls under the Development directorate. It is well informed, highly motivated and widely accepted externally. The policies taken by the City Council cannot be changed by an individual councillor, making the structure more robust.

The national “Decent homes standard”, introduced by the government in the year 2000, is a good

BREEAM is the world's foremost environmental assessment method and rating system for buildings, with 200,000 buildings with certified BREEAM assessment ratings and over a million registered for assessment since it was first launched in 1990.

BREEAM sets the standard for best practice in sustainable building design, construction and operation and has become one of the most comprehensive and widely recognised measures of a building's environmental performance.

A BREEAM assessment uses recognised measures of performance, which are set against established benchmarks, to evaluate a building's specification, design, construction and use. The measures used represent a broad range of categories and criteria from energy to ecology. They include aspects related to energy and water use, the internal environment (health and well-being), pollution, transport, materials, waste, ecology and management processes.

example of policy promoting energy efficient buildings and districts. The City follows this standard when refurbishing its own housing stock. In addition, the City Council is motivating private developers to build to higher standards in new construction. The city already often, but not always, meets high standards when building (BREEAM excellent) and refurbishing (BREEAM good to very good) buildings. An even clearer and stronger emphasis on implementing higher standards when building or refurbishing council housing could strengthen progress even more.

When development of areas or city districts starts, the plans analyse emission reduction potentials and energy savings. To the peers, it was not always clear if the full potential is being implemented when it comes to the actual development or how the data on energy savings is being used when strategies are formed and measures are being planned. A stronger understanding of the ambitions stated in the strategic plans across the different departments would mean that the Climate Change & Sustainability Team would not need to slow down the planning and implementation process of other departments by needing to assess the energy performance of other teams' projects. Alternatively a person or team that has the overall responsibility for implementing the best possible energy solutions could help to implement and streamline the energy focus across all developments.

Birmingham collects and monitors data on the consumption of energy and on CO₂ emissions. However, monitoring of City

Council buildings could be improved by collecting more detailed information and at more regular time intervals. A newsletter, showing the emission reductions achieved so far, is a good way of indicating progress, even though the figures could be a bit more detailed to get a clear picture on the emission cuts; this could and should also be set in correlation to the 60% reduction goal. As already mentioned in previous chapters, a clear action plan with short-term targets and distribution of responsibility for reaching these targets might help in making work on energy savings even more effective. Experiences and knowledge gained through the second phase of the BES could provide valuable input in setting these targets, not least when it comes to the council's own buildings.

The peer team suggests the following areas of improvement:

- The work done while developing the 'Places for the Future' document could provide input even to setting internal, hands-on and short-term targets connected to reaching the goals outlined in the SEAP, including identified potentials for energy saving and emission reductions.

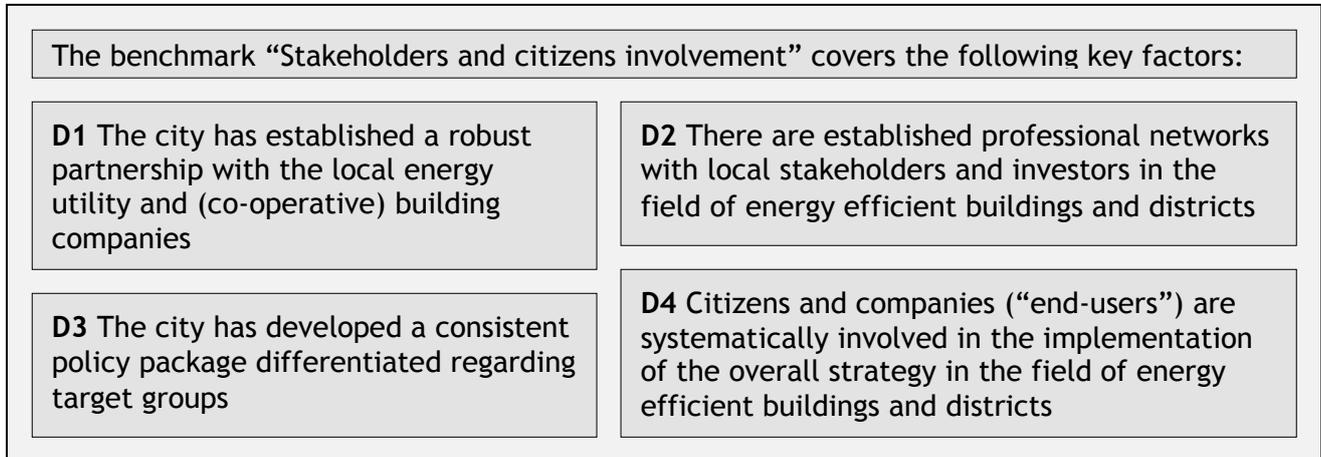
- Better communication of goals and targets internally in the City Council administration.
- By assigning a person or team responsible for having an overview of all the strategic documents and their implementation, including seeing the implementation of measures for energy efficiency will give more stringency and emphasis on these targets.
- A more detailed monitoring and evaluation at more regular intervals will indicate areas of potential that has not been exploited yet.

Warsaw - SEAP Secretariat

The Department for Infrastructure, which coordinates climate and energy policies, appoints employees which form the SEAP secretariat. The secretariat coordinates the SEAP implementation inside and outside the department, including responsibilities for monitoring and the evaluation system. In all departments, there is one employee responsible for collecting information and that person is the contact between the department and the secretariat.

The secretariat, on the basis of the collected information, monitors the SEAP's implementation, takes remedial actions in case of unsatisfactory progress and fills in the reports required by the Covenant of Mayors. It also oversees the information and dissemination campaign coordinated by the Social Communication Centre.

D - Stakeholders and citizens involvement



This benchmark deals with the involvement of citizens and stakeholders in the energy efficiency issue. What arenas for involvement are created? Which stakeholders are involved, and how? To what extent are different end-users involved?

Review and Evidence

Regarding energy utility companies, the cooperation with Cofely Energy District is seen as a good example. There are also the CESP programmes with E.ON and British Gas. But the potential is there for more cooperation with energy utility companies. It was mentioned in the interviews that the city could be more pro-active in seeking cooperation, and that they miss initiatives from energy utility companies by being too risk-averse. Energy companies are key players on the path towards a low-carbon society; hence, involving them in the goals of the city is crucial.

Transition Kings Heath

This initiative is developing local projects in Kings Heath to build a more sustainable neighbourhood. It is building on a network of ‘transition towns’ which is active globally with the aim to create a more sustainable society and reduce CO₂ emissions by encouraging local actions.

In Kings Heath this translates to the establishment of a community orchard, energy efficiency advice, involvement of local businesses working for reducing carbon emissions as well as plans to establish an eco centre.

The peer team has found evidence that the city is cooperating well with some building companies. The partnership initiatives include the City Housing Partnership (with housing associations and private companies) and the Birmingham Environmental Partnership. These initiatives are not placed under the same cabinet; as a result, the coordination between them might be difficult. Hence, the peer team sees both a risk that some initiatives are overlapping, and that some areas for cooperation are not covered.

A number of functioning networks with stakeholders and investors have been

presented to the peer team, e.g. “Sustainable Housing Action Partnership”, “Landlord forum” and “Buy for good”. A wide range of external stakeholders seem to be aware of and committed to the city’s environmental goals, and show interest in assisting the city in pursuing them. We have also seen very inspiring examples of strong networking between individuals, taking initiatives to create a sustainable and low-carbon society, such as “Transition Kings Heath”. However, these seem to form more or less isolated islands of good sustainability work at different levels. Working more strongly and systematically with stakeholders showing interest for and commitment to the environment issue would help Birmingham in the work towards the environmental goals.

According to what the peer team has seen, private-public partnerships function well. Although green issues are included in the procurement rules, the team has not seen any evidence of a strategy to implement sustainability in those partnerships. Without such a strategy, the sustainability aspect is at risk of not being accounted for, since it is normally not connected to business and financial matters. Sustainability is a common issue, and a common agenda facilitates common work.

We have found no evidence regarding the development of a consistent policy package being differentiated regarding to target groups, but experiences from BES and the “Pathfinder programme” mentioned in the Self Assessment could form the basis of a good practice on which to build such a consistent policy package.

There is a lot of involvement of citizens and companies into specific projects concerning energy efficiency in buildings and districts, for example “Pay as you save” and Birmingham Energy Savers. But there does not seem to be a systematic involvement of those groups in the implementation of the city’s overall strategy on energy efficiency.

Consultation events have been organised within Birmingham Energy Savers, in the beginning of February 2012. The participants gave input on various aspects of the BES and on how it could best be developed. A number of relevant stakeholders were represented during these events, such as energy companies and housing associations, but the citizens seem to have been poorly represented. Moreover, the peers have not seen any evidence of regular established networking between the city and its citizens. Information campaigns, as well as other forms of regular information dissemination towards the public, would strengthen trust, participation and collaboration, which the peers see as being necessary for the city to reach its goals and for the projects to be accepted.

The peer learning team suggests the following areas for improvement:

- Try to find a basis for cooperation with more energy suppliers, to not miss opportunities to create a more sustainable energy mix in Birmingham.
- The economic risks have to be taken into account, but do not let them steer and hinder projects that benefit the city in the long term.
- Coordinate existing networks having similar groups of stakeholders.
- Establish and encourage sustainability as a natural basis for partnerships with the private sector by strengthening and using long-term policy documents as a negotiation and

discussion basis.

- Seek stronger cooperation with individuals and groups of citizens when creating a sustainable city by engaging existing grass root initiatives at the development stage or encouraging the formation of local stakeholder groups.
- Involve stakeholders into the implementation of the overall strategy on energy efficiency; that will increase the acceptance for the work of the city council, ultimately also having an impact on those politicians and officers being more reluctant.
- Develop strategies to work on influencing the behaviour of citizens, since the city cannot reach the ambitious CO₂ goals without citizens' involvement.

**Milan - building communication through EU funds**

In September 2011 the city of Milan published a call for proposals directed to institutions, non-profit organisations and associations in order to collect ideas to elaborate project proposals to be presented to the European Commission in response to some of the 7th FP calls (within the smart cities initiatives). Among the 48 projects ideas received, some were selected and integrated.

One of the projects presented to the Commission, named EU - GUGLE, concerning "Energy Efficient Buildings", was considered eligible for financing and the details for the awarding the grant are currently being negotiated with the Commission.

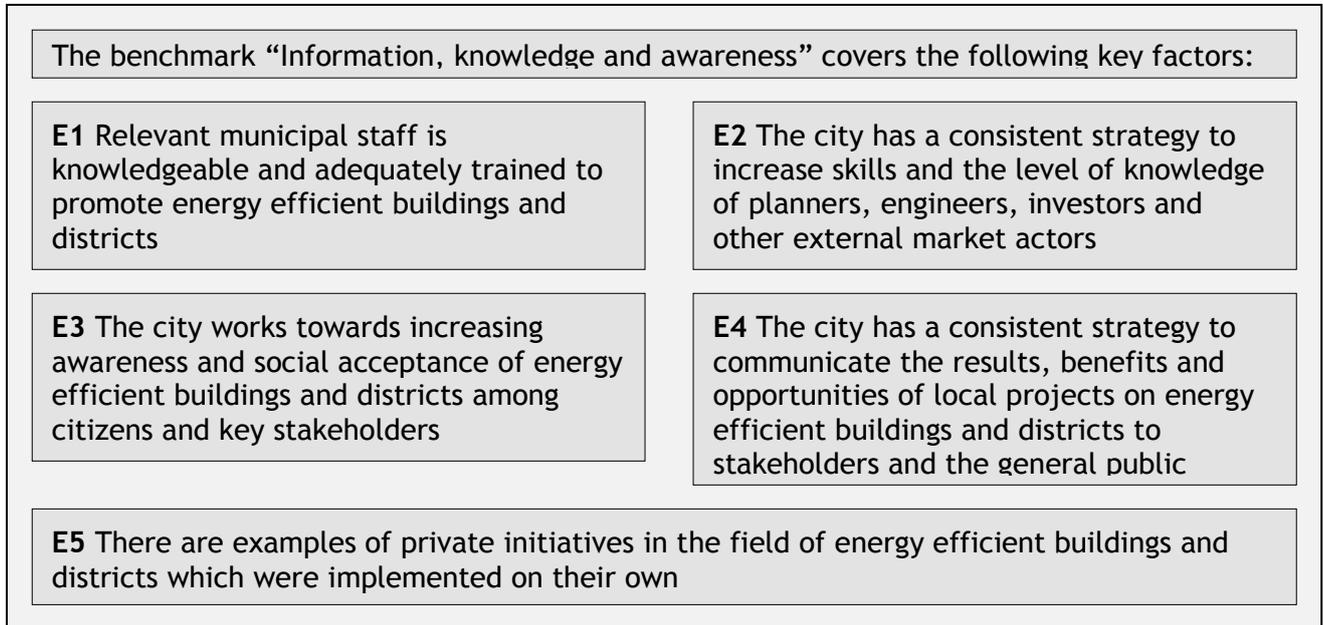
Eindhoven - involvement of citizens

From the start of a joint development project, housing company Domein and the City of Eindhoven have actively involved future inhabitants (both for rental and for bought properties) in the plan making process, since ultimately the plans are meant to benefit these people.

By having a constant dialogue between the consortium and the future inhabitants, the latter were able to significantly influence the plans. E.g. the future inhabitants chose the urban planner, decided on the set up of the project, chose the architects, gave input for the plans, etc. Working like this has enabled us to look further than just the technical and financial aspects of the project and see it more through the eyes of future inhabitants. The questions and doubts are often much more practical and simple than professionals would expect, but at the same time much more difficult to answer.

The future inhabitants now feel that this is 'their' project, resulting in commitment, volunteer work, a smooth process, ambassadors, people wanting to rent/buy the new houses, etc.. Furthermore, this approach has given us a lot of valuable marketing information directly from our target group and a product which should be easy to market.

E - Information, knowledge and awareness



This benchmark deals with knowledge on energy efficiency, and communication of projects and results. How does the city act to increase this knowledge, both internally and externally? Are the communication efforts sufficient? Does the information and knowledge get implemented externally?

Review and evidences

There have been some training activities regarding energy efficiency in buildings and districts, and the staff working in the sustainability area is well trained. But the peer team is aware of the risk that staff working outside that area might lack both adequate skills and knowledge about sustainability as well as the tools to work with the issue and take it into account in the decision-making and development process. Even though not every single employee in the administration needs a high level of awareness on sustainability, it should be spread more widely. Sustainability could be a common ground integrating work done in almost all departments.

We have learned of some training initiatives for external market actors, e.g. for installers of photovoltaics (PVs) and the Energy Performance Certification. Training is also provided under the BES programme. But this is probably not going to be enough, and there might be need for further training to increase both the number and the skills of workers in the eco-buildings domain, for example installers and maintainers of PVs and heating systems. Since these systems are technically advanced, the skills need to be maintained at a fairly high level. Otherwise there is a risk that poorly done installation and maintenance reduce the effectiveness of these systems, decreasing the positive environmental impact of the investments.

We have seen good examples on communication and spreading of knowledge. We have also seen the enthusiasm of some citizens taking initiatives in the sustainability area. Those early adopters can play a role as opinion leaders in the transition towards a low-carbon society.

Due to the first phases of Birmingham Energy Savers, the awareness and acceptance of photovoltaics should be high among the citizens, since it is such a visible measure. Birmingham communicates their programmes and projects, like the Decent Homes and Sustainable ECO school programme, to citizens and stakeholders. But the peer team has not found enough evidence to say that the communication and promotion is as good and extensive as it could and should be. If well communicated, it should be relatively easy to get high acceptance rates among citizens for measures in energy efficient buildings and districts, since individuals are also gaining from the investments.

The peer team has not seen a written communication strategy, officially decided on, for the results from energy efficiency projects. There seems to exist such a strategy informally though, maintained by the employees. We are somewhat worried that the strategy might evolve in different directions in different groupings, which could lead to a less consistent message being sent by the City. That could also cause problems when co-operating within the City, if different departments are working with different strategies.

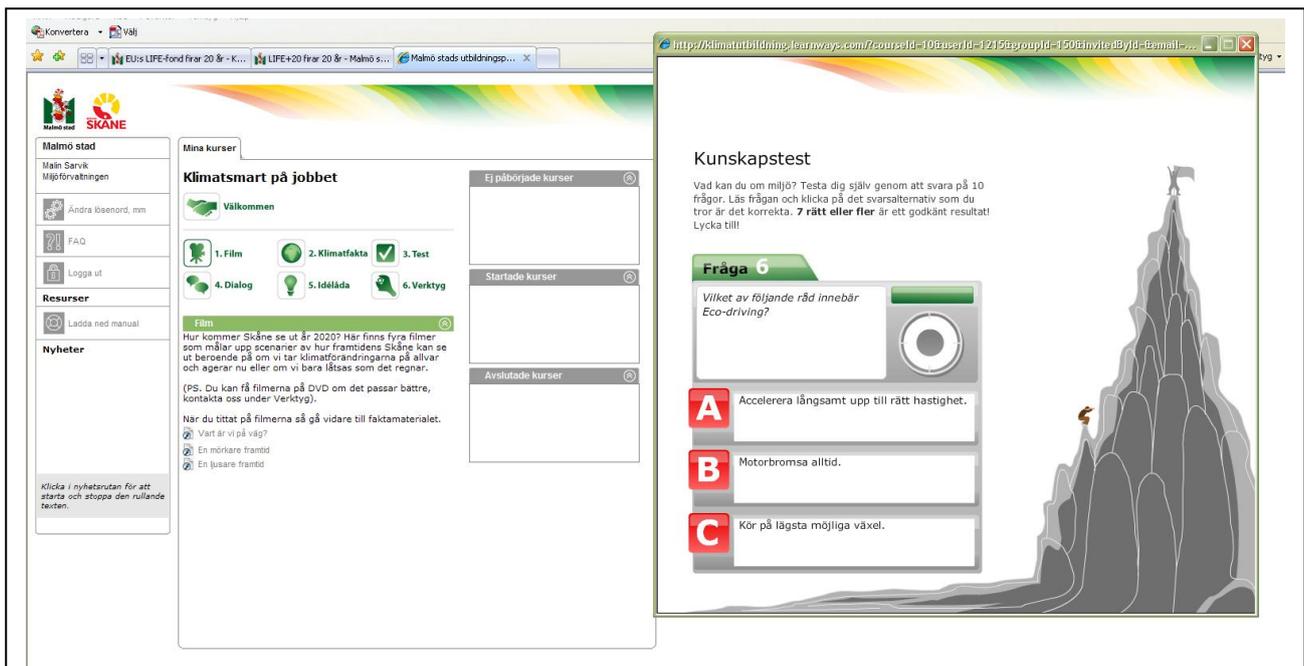
There is a website communicating the Birmingham Energy Savers project to external stakeholders and the citizens (www.birminghamenergysavers.org.uk). The site is informative and appealing, but information on project progress is lacking. The responsible officers seem to be aware of that. Apparently much of the communication efforts are being handed over to the partners. In that case, the City is at risk of losing its influence over the information given, and thus the public view on the project.

The peer group has found some examples of private actors taking initiatives on energy efficiency, carried out without the involvement of the city. One is the Family Housing Association (and the project Eco Neighbourhood) that has tried many different technical solutions in order to find the most adequate measures for energy saving and CO₂ reduction. There are also examples of private-owned houses, built or renovated to decrease energy usage substantially, such as the Zero Carbon House (level 6 of the UK Code for Sustainable Homes). However, the peer team has not found evidence on whether or not this is inspired by the good examples provided by the City.

The peer learning team suggests the following areas for improvement:

- Staff outside the sustainability area should receive training on Birmingham's sustainability goals and targets. Develop a programme for raising awareness on sustainability and energy efficiency measures among city employees and at the same time communicate what the city's vision and objectives are (see also comments under Benchmark B).
- There should be more systematic training for installers and maintainers of energy-related installations, even though they do not necessarily need to be arranged by the city.
- Take advantage of the early adopters when communicating projects and programmes, since information spread by peers is often valued higher than information from a government.

- The plan for communicating the third phase of BES, both within the city, regionally and nationally, should take advantage of the sheer size of the project and of the fact that you are national fore-runners.
- Formulate a written communication strategy that provides a basis for how different target groups will be informed and when. Information campaigns as well as other forms of regular information dissemination on planned and ongoing projects increases involvement and acceptance of the general public (see also comments under Benchmark D).
- Use more channels for communication, since information is taken in differently by different people, and maintain the channels chosen. Examples of innovative channels could be (depending on the target group) ‘advertisements’ in cinemas before the film starts, activity-based information stands at city-wide events, leaflets distributed in a certain geographical area, festivals for a city district, etc.
- Try to keep, or take back, the power over communication for joint projects. At least, let it be a shared responsibility.
- Involve citizens’ actions more into the SEAP, to make the plan more widely accepted, since the involvement and support of the public is crucial to reach the city’s goals (see also comments under Benchmark A).

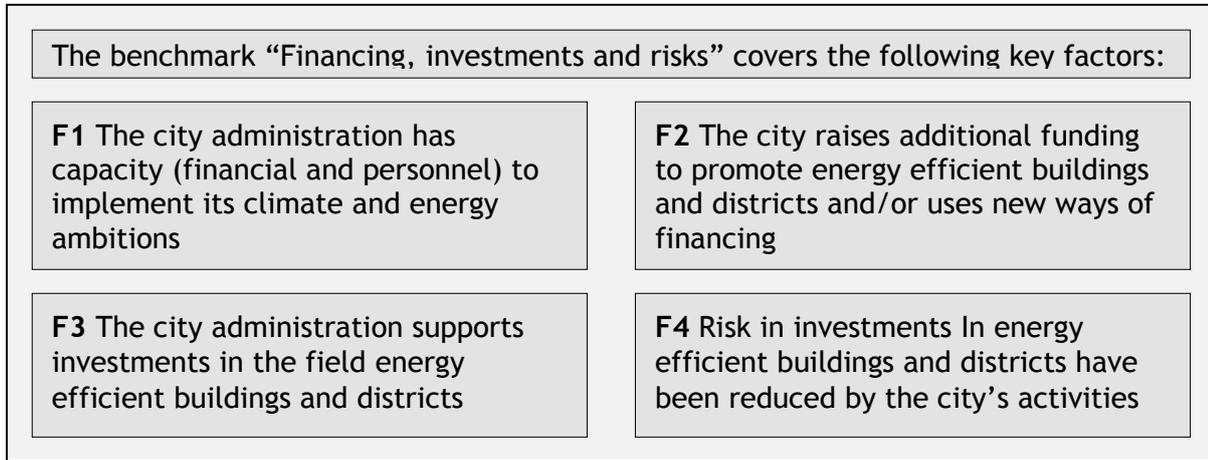


Malmö - Climate Education

The City of Malmö has, in cooperation with the regional government, started a climate education programme for its employees. The purpose is to initiate dialogues in the different departments and units on climate and what each employee can do to reduce their climate impact. It is a web-based platform containing introductory films, facts, figures, a test (shown in the picture), help to initiate dialogues, and other tools.

As a start so called dialogue leaders were educated so that they may start talks in smaller groups on how the ‘climate issue’ can be broken down into smaller questions that can be handled and discussed better and to generate and support own ideas and proposals for action.

F - Financing, investments and risks



This benchmark deals with the economic aspects of energy efficient buildings and districts. Are the ambitions economically viable? Are support and funding sufficient? Have actions been taken to reduce risk in investments?

Review and evidences

The team finds the energy and climate related goals of the city to be very ambitious, and the city has budget reserved for large-scale projects, like the Birmingham Energy Savers. Even though individual projects have sound financing strategies, the peers have not seen a sound financial foundation (including costs, expected revenues, risks, etc) for the whole SEAP and a detailed plan on how to reach the municipality’s ambitious goals. Without an overall strategy to reach these goals, there is a high risk that they will not be met.

The peer team has noted an extensive use of the “Golden Rule”, i.e. that the costs for the measures cannot be higher than the savings on the energy bills that they result in. That preference will make it hard to reach the SEAP goals. The peers believe that a longer-term economic perspective needs to be more widely accepted and applied; alternatively, funds to compensate for cases which are not economically viable need to be increased.

The city is well aware of the financial aspects of costs for imported energy, but the team is not convinced that the consequences of this knowledge are sufficiently taken into account. Initiatives to reduce the fuel dependency could and should also include an increase of biogas production from organic household waste. This could then either be used for cogeneration or as transportation fuel.

Birmingham is impressingly successful in getting external funding for energy and climate projects. The city council is good at attracting national funding, and there are also examples of the city receiving funding from the EU (e.g. Aim High project). In addition to these traditional ways of funding, there are also more innovative ways to get other actors to co-finance projects and programs. One example is the Birmingham Energy Savers program, where part of the investments

come from the energy companies involved.

There are a number of examples showing that the City Council supports external stakeholders like the Decent Homes programme, CESP programmes, and support for social housing.

The peer team has found many pieces of evidence that the city has taken actions to reduce the economic risk of investing in the energy efficiency of buildings and districts.

The “Big City plan” defines how certain areas in the city centre can be developed in a sustainable way, and the plan is spread outside the city centre. When an area is opened for development or redevelopment, the risks are individually assessed from the beginning, and being constantly re-evaluated. There are negotiations with private developers on what sustainability criteria can be implemented in an economically sound way. The council also uses Compulsory purchase orders, to be able to implement all necessary sustainable requirements. These procedures contribute to lowering the risks in the development process.

In the BES programme, the city uses its good value on the financial market, and the value of their market brand, to lower the risk for partners and make them interested in taking part in the programme. This is a good example of risk management, where the city is also benefitting.

The peer team has been informed on some financial instruments that reduce risks in investments for external stakeholders: Local Enterprise Partnership, Local asset-based vehicle and Tax incentives. Private companies that form Business Improvement Districts can levy property taxes, used for reinvestments in the area.

However, it was not clear to the team if the risks of the investments, e.g. when the technical improvements do not have the expected results, for the Birmingham Green Deal model is undertaken by the tenants or by the municipality. Since the tenants are - in general - economically vulnerable, a strategy to lower their risk is desirable.

Milan - Financing energy efficiency

In Milan a reduction of infrastructure charges is provided for new and refurbished buildings with an energy performance (primary energy for building heating) better than the standard fixed by current regional legislation. The reduction is proportional to the energy performance, with a maximum of a 30% reduction of the due charge. Additional discounts are provided for PV installations, solar thermal panels and reversible geothermal and groundwater heat pumps.

With the council not selling land, but leasing it to developers for a long time (e.g. 125 years), you keep control over development. But you also take the biggest risk in the long run. Since redevelopment is a long process, the attitude is that the large city administration can take that big risk. There is a small possibility that this risk-taking will have a negative impact on the city's finances in the future.

Birmingham is aware of the potential for job creation that increasing demand for implementation of sustainable solutions can have. BES creates, for example, a demand for workers that have the skills to set up PV and solar thermal installations. Although we have seen evidence of this, the peers felt that this potential for a green shift in the local economy is not sufficiently embedded in the training policy of the City Council. It is obviously not always easy due to public procurement

rules, but encouraging many local companies, and especially SMEs, to get engaged in the energy efficiency implementation that is going to be carried out will assist in creating green growth.

The peer learning team suggests the following areas for improvement:

- A coherent financial foundation of all individual projects and for the plan as a whole would be helpful to secure the implementation of the SEAP.
- The Golden Rule should be used less strictly. If the ambitious goals regarding CO₂ emissions are to be reached it will be necessary to go beyond the low-hanging fruits and also implement measures that have longer pay-back time or require more substantial investments.
- Keeping (or developing) energy production, energy distribution or energy efficiency skills within your own city, would improve the financial and economical situation of Birmingham in a structured way. Small scale, decentralised, cogeneration units should continued to be supported, possibly in combination with EU funding. Birmingham could continue to be proactive in seeking funds to support this development.
- The Biogas potential is high if Birmingham uses organic household waste and sewage sludge. The biogas could then be used either for cogeneration or for transportation.
- Information on how a green economy can create new jobs rather than risking them is needed. Information or campaigns on the economic benefits of greening the construction and redevelopment sector in the long term aimed at municipal employees can increase the acceptance level of lower initial profitability (in connection to comments under Benchmark E).
- The financial risks for citizens benefitting from the Green Deal might need to be lowered.

4. Conclusions

A lot of what the peer team has seen in Birmingham has been impressive. At the same time, there is also room for improvement. The goals set are ambitious and there is strong political commitment. The challenge is to integrate the goals in the day-to-day work and in the upcoming projects. Implementing energy efficiency in buildings and districts is complex and covers many areas. There are also a lot of other interests competing with energy efficiency when it comes to budget, public awareness and political commitment.

Maybe the most impressive aspect of Birmingham's policy work is the ambitious political targets in the environment area, as formulated in the Sustainable Energy Action Plan. These targets are accompanied by a high motivation to reach the defined goals, both by politicians, officers and external stakeholders. Certainly, this is not the case for each and every individual, but the predominant attitude seems to be positive.

On the other hand, Birmingham doesn't seem to fully take into account the economic benefits of energy savings. The City Council is aware of the fact that Birmingham is an energy importer and a lot of money is spent on buying this energy. Reducing this energy dependence should open up considerable funds that could be used for further implementation measures. The awareness is there but the implementation is missing.

If used properly, the strategic environmental documents, such as the SEAP and the Climate Action Plan, are powerful tools to use on the path towards a low-carbon society. What is missing is a short-term action plan (such as a 5-year implementation plan) outlining which actions need to be taken, when and how they will reduce emissions. Combined with the lack of an over-all financing strategy on how to reach the goals in the SEAP, there is the risk that goals and ambitions stay just that. Further adding to this risk is the implementation of the Golden Rule, which means that the city is mainly harvesting low-hanging fruits and not going at larger scale, for long-term investments that might have bigger, non-monetary values.

Something else that pleases the peer group is the many ways in which Birmingham manages to involve external stakeholders and citizens in projects and programmes, and also finds ways to reduce the risks for them. But in order to avoid a somewhat confusing array of projects, initiatives, programmes, etc it might be worth structuring all these activities so that it is easier to recognise where and how each initiative contributes to reaching the overall energy or sustainability goals of the city. Successful involvement is a good way to promote and communicate measures and results. It also fosters both a positive attitude towards the City Council, integration between societal functions and more external initiatives on energy efficiency. Birmingham also supports external projects, and is as well good at finding external finance.

There is room for more training in the area of sustainable development for personnel not working in the field. Moreover, external market actors, like installers and maintainers of photovoltaics, could be trained more. This is not necessarily a task for the City Council, but it is in their interest, since higher skills means better performance of the installed measures, e.g. in BES.

Appendix I: List of Interviewees

Dave Allport, Programme Manager, Birmingham Energy Savers, BCC

Phil Beardmore, Director, Localise West Midlands & Eco-Entrepreneur

Keith Budden, Strategic Partnership Manager, E.ON Sustainable Energy

Martin Eade, Team Leader, Strategic Planning, BCC

David Fletcher, Head of Corporate Landlord, Birmingham Property Services, BCC

Simon Garrad, Head of Project Delivery, Planning & Regeneration Development, BCC

Bill Goodfellow, Delivery Manager, Birmingham Energy Savers, BCC

Simon Hall, Internal Consultant, BCC

Jackie Homan, Birmingham Science City Manager, BCC

Alison Jarrett, Assistant Director Financial Services, BCC

Paul McGrath, Project Surveyor, BCC

Tim Sewell, Chief Executive, Family Housing

Rokneddin Shariat, Operations Manager Economic Development & Partnerships Birmingham Chamber of Commerce

Ian Simpson, Acting Group Leader Sustainability & Energy Management, Urban Design, BCC

Kevan Spink, Principal Urban Designer, City Design & Conservation Team, BCC

Sandy Taylor, Head of Climate Change & Sustainability, BCC

Paul Tilsley, Councillor, Deputy Leader, BCC

Simon Woodward, Chief Executive, Cofely District Energy

Appendix II: Summary of initiatives presented during the peer exchange seminar

Aquifer Thermal Energy Storage (ATES), Eindhoven, Netherlands

The city of Eindhoven, has set the ambitious target of reducing fuel use with 2% every year and reaching a sustainable energy balance in 2035 - 2045. To reach these targets, they are involved in multiple biomass conversion projects with an emphasis on distributed energy generation.

One of these projects is the Aquifer Thermal Energy Storage project, as it allows for considerable reductions in the energy consumption caused by the efficiency of the heat pumps and the use of low-temperature heating. This results in great reductions in CO2 emissions (40 - 60%) and provides extra comfort to the inhabitants of Eindhoven, offering them free cooling.

An initial test of this system's potential was made in collaboration with Philips, on one of the company's old industrial sites, where the soil and aquifer had been seriously polluted. As the results were encouraging, the city municipality plans to connect 34 locations with ATES-system.

Organization: Environmental Department, City of Eindhoven
Contact person: Alfredo Verboom
E-mail: a.verboom@eindhoven.nl

Efforts for refurbishment of old private houses, Mannheim, Germany

In order to reach national, regional and local targets regarding energy efficiency in buildings, the city of Mannheim promotes the refurbishment of private houses on a large scale. They do so first by trying to break down citizens' mental barriers to energetic refurbishment of their houses. On the other hand, they also focus on the ecological and financial gains, by providing citizens with comparisons of the heating costs of refurbished and non-refurbished houses on the long term.

As other environmental projects, the promotion of energetic refurbishment of private houses is implemented by Mannheim's Climate Protection Agency (CPA). They provide private household owners with expert advice on energy-efficient refurbishments, as well as other specialized services. One example is the 'Mannheim heat energy pass', given to citizens after initial diagnostics from the CPA and the completion of a questionnaire. It contains a cost free heat energy footprint and, more importantly, a calculation of the potential savings a household can make after refurbishing their house. At the moment, more than 1000 of these passes have been issued.

Organization: Climate Protection Agency, Mannheim
Contact person: Agnes Hähnel-Schönfelder
E-mail: agnes.haehnel-schoenfelder@mannheim.de

Sustainable neighbourhoods in Malmo, Sweden

Pursuing its goal to become a world leader in sustainable city development by 2020, the city of Malmo has decided to improve the eco-efficiency of a whole neighbourhood through a combination of citizen initiatives, local and national programmes and EU projects. The re-designed sustainable Rosengard aims to greatly reduce its energy and water consumption, while producing substantial amounts of green energy.

This initiative not only aims to refurbish building stock to meet higher energy efficiency standards, but also attempts to change the views of the inhabitants regarding eco-friendly attitudes and habits. Citizens, local residents' associations, schools and NGOs have been systematically involved in the development of Sustainable Rosengard, through activities ranging from climate smart food courts to the tenant driven refurbishment of high-rise apartment buildings.

Organization: Environmental Department, City of Malmo
Contact person: Kerstin Rubenson
E-mail: Kerstin.rubenson@malmö.se

Energy efficient and environmentally integrated new housing in Tampere, Finland

As Finland aims to achieve its EU 2020 environmental commitments in 2017, cities all across the country are looking at innovative ways of reducing energy consumption. One of the domains with a high potential in this area is buildings, a fact recognised by the Finnish government, who wants its cities to have the best built environment in the world by 2050. The city of Tampere incorporates these overarching policies in its plans to expand the municipality's housing stock to a previously sparsely inhabited area.

Launched in 2000, the Vuores plan aims to provide residences for 13,000 people, while preserving the natural environment through the protection of naturally valuable areas and the inception of a public transport system that encourages the use of sustainable means of transport. The sustainable elements of the site also include an exclusively nearly-zero energy building stock (supplied with energy from PVs, wind power and heat storage facilities), an eco-friendly storm water treatment process and a pneumatic waste collection system. Moreover, the newly built neighbourhood will also contain a demonstration zero energy wooden village and will host an energy neutral housing fair in 2012

Organization: Tampere City Hall
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