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| **STEP UP** | | |
| Tool for enhancing SEAP: (enhanced) Sustainable Energy Action Plan  ([source](http://www.stepupsmartcities.eu/ToolsandInspiration/EnergyPlanning/SEAPEnhancement/SEAPimplementationandmonitoring/tabid/5369/Default.aspx);  further info in D 2.8) | allow a comprehensive comparison between actions in order to prioritise them, based on key criteria such as costs, payback period, finance and economics, stakeholders, impact on energy targets, risks and alignment with the wider policy objectives of each city.  Key areas for analysis are:   * Policy interventions; * Stakeholder assessment; * Financial assessment (costs and payback); * Financial assessment (funding); * Energy assessment; * Risk assessment; * Integrated/cross sector opportunities   The monitoring and review part required the cities to identify the key stakeholders involved in the monitoring and review process, and to plan the timescales for analysis of the implementation of these actions. This has helped cities to highlight any gaps in their plans, which they will continue to fill as they further refine the specifics of each SEAP action and move from planning to implementation of these actions. This will help the STEP UP cities to ensure the successful implementation of their SEAPs, and the actions therein, over the coming years – making significant contributions to city, national and European wide targets for climate and energy.  Key recommendations:  **Prioritise SEAP actions as early as possible**: a prioritisation exercise of this level of detail can help to decide on the implementation timeframes of specific actions, if conducted early enough in the SEAP implementation process. Therefore, it is worth carrying it out once all SEAP actions have been agreed, allowing sufficient time and resources to conduct a thorough analysis.  **Allow time to gather data and use estimates where data is unavailable**: whilst data gathering is time consuming, it is valuable for understanding the costs and impacts of actions and can help with the prioritisation process. If data is not available, make estimates based on similar projects or known averages, and follow up whether the estimated data matches reality during the implementation phase.  **Consider the key criteria for the local context**: the template covers seven key criteria for cities to consider, and gives the option for others to be added. It would be worth considering other key criteria unique to a city’s local context and including them in the analysis, so that the scores and priority levels achieved by specific actions reflect all key criteria for a city.  **Learn from, and strengthen, low scoring actions:** actions that achieve low scores against certain criteria highlights areas to focus on as the actions are developed further, especially where the actions have achieved low scores against criteria which are seen to be key for the city.  **Consider implementation and monitoring plans further**: it would be valuable to use the findings of the prioritisation exercise to develop more detailed implementation, monitoring and review plans to ensure that actions are successfully implemented and their potential environmental, economic and social benefits are fully realised. | |
| Energy Mapping with GIS support  ([source](http://www.stepupsmartcities.eu/ToolsandInspiration/EnergyPlanning/EnergyMapping/tabid/3235/Default.aspx)) | Energy Mapping can take many forms. The four STEP UP partner cities have all taken different innovative approaches to using Geographic Information Systems (GIS) to inform their energy planning at a strategic level. The four STEP UP partner cities' approaches are summarised below. | |
| **Energy Strategy Mapping – Gothenburg**  By structuring energy issues of your energy strategy **thematically and spatially**, a **matrix approach** can help to improve your analysis and facilitates discussions about problems, possible solutions and their effects.  The STEP UP team in Gothenburg is trying out a model for Energy Strategy Mapping: a matrix approach which has previously been used for social impact assessments will now be tested for energy planning on different city scales.  [**Read more here**](http://www.stepupsmartcities.eu/EnergyPlanning/EnergyMapping/GothenburgEnergyStrategyMapping/tabid/4309/Default.aspx) | |
| **Heat Demand Mapping for Multiple Objectives- Glasgow**  What is quite often understood by Energy Mapping is mapping of electricity and gas consumption. Determining energy demand geographically allows for optimisation with a city’s energy supply and new urban developments and more.  Glasgow’s STEP UP partner Scottish Power Energy Networks has mapped the energy consumption of Glasgow’s buildings using a Geographic Information System (GIS). The GIS layers make it not only possible to spatially analyse and visualise current and projected electricity and gas demand, but allows for many more applications. By combining these new map layers with other layers such as spatial representation of areas of deprivation using data from economic and social indices,  GIS can be a powerful tool used to combat fuel poverty. [**Read more here**](http://www.stepupsmartcities.eu/EnergyPlanning/EnergyMapping/GlasgowPlanningwithMultipleObjectives/tabid/4286/Default.aspx) | |
| **Heat Consumption Mapping for Multi-Apartment Buildings – Riga**  Rigorous energy consumption mapping of your city’s buildings combined with an assessment of the state of the buildings allows for an estimation of the potential energy savings.  The majority of Riga’s citizens live in multi-apartment buildings which are served by a district heating network for space heating and domestic hot water. In the framework of the [Urb](http://www.urbenergy.eu/10.0.html).Energy project the energy consumption of these buildings in the district of Jugla was thoroughly assessed  [**Read more here**](http://www.stepupsmartcities.eu/EnergyPlanning/EnergyMapping/RigaMultiApartmentBuildings/tabid/4285/Default.aspx) | |
| **Energy Consumption Reduction Measures - Awareness Raising - Ghent**  Energy efficiency in the residential sector is high on the agenda in many Flemish cities. A particular feature of Flemish cities is the typical single family dwelling. A feature which constitutes a challenge for energy efficiency measures as it requires the buy-in of every single family in order to realise the common objectives set by cities.  Ghent aims at doubling the retrofitting rate and has chosen a particular district to test approaches where top-down objectives meet bottom-up actions. With the cooperation of STEP UP partners EANDIS and VITO, the city has mapped the energy consumption and effects of sustainable energy solutions of the residential sector in the district Dampoort-Sint-Amandsberg. The findings were visualised and presented to residents of the district in an interactive workshop.  [**Read more here**](http://www.stepupsmartcities.eu/EnergyPlanning/EnergyMapping/GhentAwarenessRaisingTool/tabid/4283/Default.aspx) | |
| **Heat Mapping**  Heat mapping can be an extremely useful tool in understanding energy usage in a city. Heating and cooling makes up nearly half of all the energy that cities use. Heat mapping is a method of assessing energy demand in a city, with layers of analysis allowing for informed decision making when planning energy use and infrastructure investment.  [Find out more here](http://www.stepupsmartcities.eu/ToolsandInspiration/EnergyPlanning/EnergyMapping/HeatMapping/tabid/4284/Default.aspx) | |
| **Waste Heat Mapping – Belgium**  “The most sustainable energy is the energy not used.” While this is true for all the energy mapping applications above, thermographic imaging clearly shows where heat is wasted. Mounted on an aircraft, a thermographic camera can highlight badly insulated roofs and attics.  In Belgium many cities have used this powerful tool to raise awareness and get citizens to take action.  [Read more here](http://www.stepupsmartcities.eu/EnergyPlanning/EnergyMapping/GhentWasteHeatMappingThermographicImaging/tabid/4282/Default.aspx)  To find out more about the cities’ approaches to energy flow analysis and the key findings, download the report summary [here](http://www.stepupsmartcities.eu/Portals/51/Documents/Tools%20and%20Inspiration/6-STEP%20UP%20Energy%20Flow%20Analysis%20-%20Executive%20Summary.pdf) or get in touch on [info@stepupsmartcities.eu](mailto:info@stepupsmartcities.eu) | |
| **Further resources**  During the project, the STEP UP cities have also been running training sessions for its learning network, sharing knowledge, expertise and lessons learned with other cities. These sessions have been developed specific to the needs of local networks on key topics of interest. Training sessions relevant to energy mapping include:  **Heat from wastewater – Training session for Belgian cities (Ghent)**  This comprehensive workshop covered the theme of energy or heat from wastewater, incorporating presentations on a range of relevant topics including energy from wastewater case studies and mapping, energy demand mapping and dynamic energy atlases for cities and regions. To find out more and download presentations from the day, [click here](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/HeatfromwastewaterTrainingsessionforBelgia/tabid/4995/Default.aspx)  **Energy planning with a city development focus - STEP UP seminar at SPECIAL (Gothenburg)**  This interactive seminar and workshop from the Gothenburg STEP UP team took a focus on how energy planning can be effectively integrated with wider city planning, exploring the use of the Energy Matrix in practice (see above). To find out more about the training session and view materials from the day, [click here](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/STEPUPSeminaratSPECIALGothenburg/tabid/4507/Default.aspx)  To explore other training resources developed through STEP UP, visit our [Training](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/tabid/3227/Default.aspx) page | |
| Stakeholder engagement and communication | Achieving sustainable city planning and development requires the support, commitment and involvement of a variety of public and private stakeholders.  Stakeholder participation offers cities several key benefits:   * Decisions taken with stakeholder input are based on a broader knowledge base * Stakeholder engagement from an early stage can improve the quality, acceptance and effectiveness of projects and proposals * Discussions with key stakeholders may open up further opportunities for collaboration and joint projects * Stakeholder buy-in helps secure long-term support for strategies and actions in the city * Participatory decision making is more robust and transparent   The first steps are to identify relevant stakeholders who:   * Have interests and activities relating to the issue in question * Can provide information, expertise and resources required for effective policy making * Are key players in ensuring successful implementation   There are numerous stakeholders within cities whose plans, aspirations, views and data sets can contribute to informed decision making with respect to sustainable energy planning. In the context of a SEAP, potential stakeholders may include local government administration, energy agencies, financial partners, institutional stakeholders, regional transport partnerships/agencies, built environment sector, private businesses, NGOs, workers' unions, educational establishments and consultants or organisations with specific expertise.    **How to Engage in Stakeholder Participation**  Undertaking a detailed analysis of key stakeholders is beneficial to understand stakeholder needs, priorities and interests, and to plan for effective engagement. For more information about different approaches to stakeholder analysis, view the STEP UP guide for cities [here](http://www.stepupsmartcities.eu/ToolsandInspiration/STEPUPEnhancedSEAPGuide/tabid/5235/Default.aspx)  Ongoing stakeholder engagement and collaboration is essential to effective planning. Different communication tools and approaches may be relevant to different stakeholder groups, such as:   * **Information and Education** - Brochures, newsletters and advertisements. * **Information and Feedback** - Websites, surveys and questionnaires and public meetings. * **Involvement and Consultation**- Workshops, focus groups and open house sessions. * **Extended Involvement** - Community advisory committees, and citizens' juries.   **Communication Strategy**  Effective communication is essential to keep stakeholders well informed, motivated and keen to participate. In order to ensure that there is maximum impact of communication it is worth considering:-   * Who is the key audience? * What is the specific message to be conveyed and the desired outcome? * Are the means of communication appropriate? * How can the effectiveness of communication be evaluated?   Consideration of these points will support the development of a clear communication strategy, maximising impact and ensuring the appropriate stakeholders are engaged.  **STEP UP approaches to stakeholder analysis and engagement**  The STEP UP partners have conducted extensive stakeholder analyses in their respective cities. The results have been used to ensure key stakeholders have been engaged during the development of city SEAPs, and this engagement will continue during the implementation of city projects and initiatives to achieve the EU2020 carbon reduction targets.  To find out more about the approaches to stakeholder analysis and engagement taken by STEP UP cities, and key recommendations for other cities, download the summary report [here](http://www.stepupsmartcities.eu/Portals/51/Tools%20and%20Resources/1-%20STEP%20UP%20Stakeholder%20Analysis%20and%20Engagement%20-%20Executive%20Summary.pdf).  You can also read more about Ghent's stakeholder based approach in a presentation given by Indra Van Sande (Ghent City) at the STEP UP workshop in Brussels in April 2014. The presentation provides a background to Ghent's journey towards strengthened stakeholder engagement, testing new approaches and insights into developing Ghent's Climate Plan. Lessons learned in involving stakeholders in the process will be particularly useful to cities seeking to engage stakeholders more in their enhanced SEAPs.  [[http://www.stepupsmartcities.eu/Portals/51/Images/Logos/file_extension_pdf.png](http://www.stepupsmartcities.eu/Portals/51/Documents/Presentations/Ghent/Ghent%20INDRA%20workshop%2024%20april2014%20new%20pdf.pdf)Ghent - STEP UP - Brussels April 2014](http://www.stepupsmartcities.eu/Portals/51/Documents/Presentations/Ghent/Ghent%20INDRA%20workshop%2024%20april2014%20new%20pdf.pdf)  The Glasgow STEP UP team have also developed a step-by-step guide to undertaking stakeholder analysis, prioritisation and engagement planning, based on the approach taken by the city and delivered as a training workshop to Scottish cities and organisations. The guide has been designed to help cities conduct their own stakeholder analysis, providing tips and practical advice. To find out more and download a copy, along with other useful resources [click here](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/GlasgowLearningNetworkTrainingWorkshop/tabid/5236/Default.aspx) | |
| Gap and issue analysis (preparation for enhanced SEAP) | Part of the process of developing these enhanced SEAPs has been to review current policies, programmes and energy related actions from each city’s original SEAP, allowing the identification of strengths, gaps, issues and opportunities. Partner cities have also explored the relevance of other city strategies and plans within which the SEAPs sit, as well as the wider context of regional, national and EU policies.    This analysis has been conducted to ensure that the enhanced SEAPs are built on a better understanding of the city itself, aligning with other strategic documents and ensuring that future city plans contribute to wider EU climate, energy and smart cities goals  Recommendations for other cities  The gap and issue analyses conducted in STEP UP cities have led to a number of key recommendations for other cities who are looking to review their existing SEAPs or develop an enhanced SEAP for their city.  Data availability. It is important for cities to ensure sufficient data is available from the start, with measurable actions and resources allocated for the regular monitoring of progress.  Stakeholders. Stakeholders should be engaged throughout the development and implementation of the SEAP, to maximise impact and ownership.  Political commitment. Securing political commitment and will for the actions and targets set for a city is integral to a successful SEAP.  Integration. To be effective, the SEAP should be fully integrated with existing plans, strategies and visions in the city, and aligned with the aims of wider EU smart city policies.  Robust and Effective Planning. Cities should ensure SEAP actions are fully planned and financed to ensure implementation and the realisation of carbon reductions targets. To be robust, the SEAP should also be flexible in the face of changing circumstances.  To find out more about the approaches taken by STEP UP cities to conducting a gap and issue analysis, download the report summary here | |
| Identifying City Challenge | The STEP UP partner cities have identified key climate and energy challenges for their cities which they plan to focus on and address during the development of innovative projects and their enhanced Sustainable Energy Action Plans (SEAPs). Cities have also identified key exploitable similarities which present potential opportunities for collaboration. This work presents two key benefits for cities:   1. Analysing common challenges and project opportunities allows cities to learn from each other and work together 2. The process of identifying city challenges and opportunities supports cities to better understand their own barriers to sustainable city planning and to consider potential solutions, feeding into both future project developments and possible actions for inclusion in a city’s SEAP   The cities have taken different approaches to identifying common challenges and project opportunities. Most cities have worked with a wide range of stakeholders, and used a range of methods and tools to suit their local context, including:  Methods and Tools  **Key Findings**  **Key Findings**  **Recommendations for other cities**  The work undertaken by STEP UP cities has helped to identify key recommendations for other cities looking to develop innovative projects.   1. **Develop projects based on an analysis of major challenges:**Analysing major challenges in the city has proven to be a helpful starting place for identifying innovative project opportunities. This approach can help cities to take a step back and reflect on their preconceived notions regarding what should and should not be done in the city. 2. **Use a Problem Tree Analysis:** For projects that are just about to start, the Problem Tree Analysis tool has proved to be a structured way of analysing challenges, their causes and consequences, as well as possible solutions. However, in cities where work has already been done in analysing major challenges, it might not be possible to use the tool in its entirety. 3. **Connect the analysis of challenges to SEAPs or other strategic documents:** Identifying challenges in the city’s SEAP or in other strategic documents can be a way of providing a connection between the identified solution and major policy goals in the city.   To read more, download a summary of STEP UP’s work on city challenges and opportunities [here](http://www.stepupsmartcities.eu/Portals/51/Documents/Tools%20and%20Inspiration/5-STEP%20UP%20Common%20Challenges%20and%20Exploitable%20Similarities%20-%20Executive%20Summary.pdf).  The Glasgow STEP UP team have also developed a step-by-step guide for cities interested in undertaking a Problem/Solution Tree Analysis in their own local context, as part of a training workshop held for Scottish cities and organisations in April 2015. To view or download the guide, including recommendations for cities, [click here](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/GlasgowLearningNetworkTrainingWorkshop/tabid/5236/Default.aspx) | |
| Development of visions and targets | A sustainable city vision provides a common thread for city leaders, organisations and citizens to work towards. The STEP UP cities have developed their city visions through collaboration and dialogue with stakeholders.  **Recommendations for other cities**  Through developing their own city visions and targets, STEP UP cities have identified a number of key recommendations for other cities looking to build compelling visions for their own sustainable city futures.   * **Cities should build realistic visions and targets that can feasibly be met within the planned timeframes,** with an enhanced SEAP to set out a clear plan of action for how these will be delivered and how data will be acquired and analysed so that progress against them can be measured. The achievability of the vision and targets should be tested and they should serve for long term purposes where it is feasible and realistic to do so. * **Cities should consider establishing targets for renewable energy and energy efficiency** where these do not already exist, in line with the European Energy 2020 targets and the longer term European 2030 framework for climate and energy policies. * **Cities should develop visions and targets for energy in line with wider city strategic planning documents,** using an integrated approach to secure support and commitment from a broad range of stakeholders and maximise the potential of reaching the agreed target. * **Visions and targets should also be developed in line with relevant national and European strategies and targets, including those not specifically related to energy.** The Europe 2020 strategy is a good example of where measures designed to meet energy-related targets could also help meet wider targets using an integrated approach, in particular in relation to employment, R&D, education and fighting poverty and social exclusion. * **Cities should consider, as part of discussions with stakeholders and their associations at the local or regional level, their role in reaching national and European level targets and strategies.** This could help local authorities, and national governments, participate further in the debate on the proposal for a European 2030 framework for climate and energy policies. * **Involving and engaging a wide range of stakeholders should be built in to the whole process of defining and refining visions and targets, and developing and implementing enhanced SEAPs,** to consider their interests and resources and ensure their buy in and support. * **Cities should continue to work to strengthen engagement with groups of stakeholders across the energy, transport and ICT sectors,**both for the enhanced SEAPs and to support the cities’ progress towards smart cities status. * **When setting visions and targets, cities should develop a plan for reviewing, strengthening and revising them at a later date, taking a long term view** and recognising that current visions and targets may not remain appropriate with changes to other factors such as the political, economic, socio-cultural or technological environment. This process should involve all relevant stakeholders in order to build shared and well-supported revised visions and targets.   To find out more about how the STEP UP cities developed their visions and targets, you can download the full STEP UP report, or a short summary, below.  Versions of STEP UP Visions and Targets reports are available to download on the links below.   * [Visions and Targets - STEP UP Report (Full version)](http://www.stepupsmartcities.eu/Portals/51/Tools%20and%20Resources/D2%204%20final%2018%2008%2014.pdf) * [Visions and Targets - STEP UP Report (Executive Summary)](http://www.stepupsmartcities.eu/Portals/51/Tools%20and%20Resources/Executive%20Summary%20update%20Oct%2014D2%204.pdf) | |
| **Stakeholder Engagement on Visions and Targets**  Cities have worked with relevant stakeholders to develop and agree their visions and targets, though different approaches have been taken based on past experiences and traditions, as well as the cities’ new stakeholder engagement plans.  Cities’ visions and targets need to have support from a variety of stakeholders, including politicians, key sectors and citizens. However, the setting of visions and targets is in part a political process rather than a technical or analytical one.  In all four cities, political leaders and other decision makers are prioritising climate and energy issues, and have supported the development of SEAPs in alignment with other city plans and strategies.  However, in the hierarchy of strategic planning documents some cities have given SEAPs a higher priority than others. This highlights the importance of ensuring the enhanced SEAPs are developed in line with other city documents, and are fully accepted and supported by political and other stakeholders. | |
| Inventory and assessment of energy actions | STEP UP cities have conducted an analysis of current and planned energy actions in their cities. The aim of this analysis has been to identify the most viable stand-alone actions and cross-sector opportunities for the cities to include in their enhanced SEAPs.  Cities have undertaken an inventory of actions and assessed these in terms of their feasibility and impact. To achieve this, multiple dimensions of each action have been analysed, including:   * Technical assessment * Contribution to EU2020 climate and energy goals * Economics and Finance * Stakeholders assessment and willingness for collaboration * Risk assessment   To carry out an inventory of actions and assess them by these different dimensions, cities have gathered information and data from across different municipality departments as well as external stakeholders. To find out more about the tools and approaches used by different cities, you can download a summary of the cities’ work at the bottom this this page.  **Cross-sector opportunities**  Analysing stand-alone actions can allow for cross-sector opportunities to be identified, which bring together individual, sector-specific actions into an integrated initiative with the potential to deliver greater benefits to the city and its inhabitants.  Cross-sector can be considered in different ways. Some STEP UP cities have focussed on cross-sector opportunities in terms of bringing together actions that cross more than one of the smart cities sectors – transport, energy and ICT – whilst other cities have focussed on those that cross multiple Covenant of Mayors sectors – buildings, transport, public lighting, industry, local electricity production and local heat/cold production.  To read more about the cross-sector opportunities identified in each city, or to find more about the approaches taken by STEP UP cities, you can download a report summary [here](http://www.stepupsmartcities.eu/Portals/51/Documents/Tools%20and%20Inspiration/10-STEP%20UP%20Inventory%20and%20Assessment%20of%20Energy%20Actions%20-%20Executive%20Summary.pdf). | |
| Scenario analysis (impact of potential future scenarios) | The STEP UP partner cities have followed a number of stages to developing their enhanced Sustainable Energy Action Plans (SEAPs). Following stakeholder analysis, gap and issue analysis of their existing SEAP and city policies, energy flow analysis, the setting of visions and targets, and an inventory and assessment of energy actions in the city, the cities have considered the potential impacts of different future scenarios for their city.  The purpose of scenario analysis has been for the cities to test their sustainable energy strategies in order to produce more robust enhanced SEAPs. To achieve this, cities have looked at alternative scenarios, and assessed the impact of these on CO2 emissions reduction targets and the implementation of planned energy actions in the city. The objective of this exercise is to assist cities in developing strategies and actions that are flexible and capable of withstanding unexpected or unpredictable futures.  STEP UP cities have taken different approaches to designing alternative scenarios, selecting appropriate time horizons and analysing their impacts, appropriate to their local context. Common drivers that have been considered in multiple cities are:   * Significant changes in the city’s population * The impact of changes in the fossil fuel price * Significant slowdown/stagnation of the city’s economic growth * Increased fuel poverty resulting from socio-economic changes * The importance of national, EU and international climate policies as a means of ensuring positive continuous pressure to execute CO2 emissions reduction measures * Behaviour change.    As part of the process, the cities have collaborated with various relevant stakeholders to select the external factors to consider and assess their impacts. [PEST analysis](http://en.wikipedia.org/wiki/PEST_analysis) was used to explore the Political, Economic, Socio-cultural and Technological aspects of the cities’ environments, helping to take a holistic view of the impacts of different factors across various sectors.  To read more about city approaches and findings, you can download a summary report on the scenario analysis undertaken through STEP UP [here](http://www.stepupsmartcities.eu/Portals/51/Documents/Tools%20and%20Inspiration/11-STEP%20UP%20Scenario%20Analysis%20-%20Executive%20Summary.pdf). | |
| Business models | Projects that will generate significant CO2 emission reductions, improvement of city environments and transport systems all require significant financial investment. However, a key challenge for cities lies in structuring projects in the right way to successfully attract investors and reduce risk, in order to increase their scale and impact.  Structuring projects and creating business models appropriate to the local context is a critical foundation for a successful initiative. STEP UP cities have found that an integrated approach provides opportunities to explore new types of funding. For example, when various stakeholders and sectors are combined in an initiative, there can be opportunities for resources to be generated from several different sources at once.  When considering finance and funding for your own city projects, consider:   * What are the different funding sources which may be available to your project? * Which stakeholders can you engage with to discuss potential partnerships?   Many of the innovative, integrated low carbon initiatives within the STEP UP cities have organised their business models around public-private partnerships so that the public sector can reduce the costs of capital investment and borrowing required and the private sector can assume an element of financial, technical and operational risk and control in the project.  You can read more about these city projects and the business models which have been designed to attract investment [here](http://www.stepupsmartcities.eu/CityProjects/tabid/3286/Default.aspx)  **Workshop on Financing SEAP Actions and Innovative Projects (Nov 2014)**  STEP UP held a workshop for its Learning Network of cities in Riga in November 2014. The afternoon sessions were dedicated to financing aspects of enhanced SEAPs and innovative projects, sharing expertise from the European Commission, STEP UP cities and other European projects. Numerous local examples of financial models were discussed, covering district heating, Energy Service Companies (ESCos), subsidies for residential energy-efficiency systems and building Energy Management Systems.   Presentations from the day are available to read online or download [here](http://www.stepupsmartcities.eu/ToolsandInspiration/EnergyPlanning/FinanceInvestment/RigaConferenceNovember2014Finance/tabid/5035/Default.aspx)  **Low Carbon Business Models Webinar (Oct 2014)**  In October 2014, the Glasgow STEP UP team hosted an interactive webinar for its Scottish Learning Network on business models and financing for low carbon projects. The session featured guest speakers from the Green Investment Bank and Scottish Futures Trust, discussing a variety of investment opportunities and case studies from Scotland and the UK.  Presentations from the webinar are available to read online or download [here](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/LowCarbonBusinessModelsWebinar23October2014/tabid/4867/Default.aspx) | |
| District heating | <http://www.stepupsmartcities.eu/ToolsandInspiration/EnergyPlanning/DistrictHeating/tabid/5278/Default.aspx> | |
| ESCO (Energy Services Company) | **Energy Services Company (ESCO)**  A greater requirement for energy efficiency in recent years has seen corresponding rapid growth in the number of  ESCOs. In order for EU 2020 targets to be successfully reached, higher energy savings and greater investment in renewables are required. Consequently, ESCOs offering tailored energy services like supply of energy systems, maintenance, bespoke system design, auditing and analysis are growing in number and importance.  ESCOs are of particular interest to policymakers because an ESCO with a performance contract can be incentivised to increase energy efficiency on a micro scale and thus make a significant contribution to reducing carbon emissions on the aggregate scale. ESCOs differ from traditional energy companies in that they can guarantee energy savings or the same level of provision at lower cost. Through effectively designed contracts, ESCO's earnings can be tied to performance, ensuring energy efficiency is in the interest of providers and consumers.  **City Examples & Resources:**  An excellent example of an ESCO effectively serving the needs of citizens in a city is the Gothenburg  energy company - [Göteborg Energi](http://www.goteborgenergi.se/English). Göteborg Energi aims to provide sustainable energy services to its citizens with services throughout western Sweden, from district heating to fibre optic cabling. Their 1000km + district heating network provides affordable and effective heating to over 90% of Gothenburg's apartment blocks.  Another example of a successful ESCo is [Aberdeen Heat and Power](http://www.aberdeenheatandpower.co.uk/). Established in 2002, Aberdeen Heat and power provided district heating to 1,600 flats and 9 public buildings in the city of Aberdeen, a partner in the Scottish Cities Alliance and a STEP UP companion city.  Key representatives from each ESCo have been sharing their expertise with STEP UP. In August 2014, the Glasgow STEP UP team organised a training webinar for the Scottish learning network to learn about ESCo Opportunities, featuring:   * Ian Booth – Aberdeen Heat and Power * Lars Holmquist - Göteborg Energi   You can download speaker presentations or watch the webinar recording in full [here](http://www.stepupsmartcities.eu/ToolsandInspiration/LearningNetwork/TrainingCourses/ESCoOpportunitiesWebinar21stAugust2014/tabid/4569/Default.aspx)  Glasgow is also in the process of developing an ESCo, one of the key actions in their enhanced Sustainable Energy Action Plan (SEAP) which is being established to support the roll out of district heating across the city. For information, see Glasgow’s presentation on [local financing and the role of ESCos](http://www.stepupsmartcities.eu/Portals/51/Financing%20SEAP%20Actions-%20Glasgow%20City%20Council.pptx) | |
| Mobility solutions | The transport sector is responsible for approximately 30% of all energy use within the EU. Cars, trucks and light vehicles account for 80% of energy used within the transport sector. Transport is therefore very important when considering energy use and planning.  Sustainable transport planning requires long term vision to plan financial sources for investment in infrastructure and capital e.g. vehicles, creation of incentive schemes to promote high quality public transport and other means of active travel. Transport planning must address security, public safety, public access to good and services, noise and air pollution, CO2 emissions and be integrated into the wider policy framework.  Effective transport systems are crucial to thriving, energy efficient cities. Cities depend on their transport systems for transporting their citizens, goods and supplies around so that cities can function and good standards of living for citizens can be provided.  **City examples:**  Increased provision of segregated cycle lanes and free electric car charging points are good examples of incentivising active and emission free travel within cities. Some cities have even removed the option of using cars in city centres. | |
| **Car-free City Centre - Ghent**  STEP UP partner city Ghent is an example of this, completely changing the appearance and environment of the city centre, making it car-free and simultaneously increasing the attractiveness of the city as a tourist and shopping destination. Removal of pollutants like Nitrogen Oxides and particulates from the city centre also creates a much healthier environment for citizens, delivering multiple benefits for the city and citizens.  Read more about this project [here](http://www.stepupsmartcities.eu/Default.aspx?tabid=3732&aid=2115&rid=3383) | |
| **Smart Cards – Riga**  Riga’s smart cards project focuses on developing an innovative and easy payment solution in the form of a common electronic card system. Smart cards can be used as payment for public transport, park and ride access, city car parking, social services registration and to access discounts for certain social groups. By integrating new technologies, the system aims to provide an effective, efficient and inclusive service for citizens.  Read more about this project [here](http://www.stepupsmartcities.eu/Default.aspx?tabid=3732&aid=2126&rid=3385) | |
| **Congestion Charge and New Travel Habits - Gothenburg**  Gothenburg has effectively introduced congestion charging to its city centre. Requiring strong political support, this approach has helped transform the city centre environment by reducing private car traffic in the city centre by between 15% and 20%. The congestion charge acts as an effective instrument in generating the necessary finances for investment in sustainable transport networks.  Read more about this project [here](http://www.stepupsmartcities.eu/Default.aspx?tabid=3732&aid=2120&rid=3286) | |
| **Future Cities Demonstrator - Glasgow**  Glasgow as a TSB [Future Cities Demonstrator](http://futurecity.glasgow.gov.uk/)is showing how technology can make the city more geared to 'active travel'. Regular cyclist commuters will be encouraged to use smartphone apps to collect data that will allow for informed decision making on cycling infrastructure improvements. The project will also work with health providers, students, schools, walking groups and cycling clubs to clearly evaluate the current provision levels and establish next steps in encouraging active travel.  Read more about this project [here](http://www.stepupsmartcities.eu/Default.aspx?tabid=3732&aid=2113&rid=3286) | |
| **TRANSFORM** | | |
| Transformation Agendas | More info: <http://urbantransform.eu/download/download-transformation-agenda/> | |
| Generic Transformation Agenda (decision support model for creating the TA) | **Generic Transformation Agenda (Quantitative Decision Support Tool)**: The Generic Transformation Agenda supports cities and decision makers striving towards integrated energy planning. It summarizes the experiences and invites other cities to use this Generic Transformation Agenda to develop their specific City Transformation Agenda.   * [Generic Transformation Agenda – Summary](http://urbantransform.eu/wp-content/uploads/sites/2/2015/07/2015_06_TRANSFORM_Summary_Del_2.1_Qualitative_DSM.pdf) * [Generic Transformation Agenda](http://urbantransform.eu/wp-content/uploads/sites/2/2015/07/2015_06_TRANSFORM_Qualitative_DSM.pdf) | |
| Decision Support Environment  ([source](http://urbantransform.eu/decisionsupportenvironment/)) | Within TRANSFORM program a web based tool providing the relevant stakeholders in cities with information facilitating informed decision making was developed and called Decision Support Environment. In its essence, the DSE supports the planning and implementation processes in cities on the way to reaching the cities’ or district’s carbon reduction and energy saving targets. The information, as provided by the tool, will support stakeholders in their decision making and communication processes related to the setting and implementation of most effective measures, their locations and timeframes, required for their implementation. The DSE tool is being further developed by Accenture and Macomi, as you can find on the [DSE website](http://urbantransform.eu/decisionsupportenvironment/).  **What is the DSE?** The DSE utilizes city data and analytics to calculate the impact of multiple low carbon measures on CO2 emissions (such as district heating and retrofitting), energy consumption, renewable energy systems and costs. Through data, measures, targets and locations, the city is able to simulate multiple scenarios, completely customized to their areas of interest and targets. The aim of the DSE is to support private and public stakeholders, involved in urban planning, to go through a transparent and structured decision making process.  **Value of the DSE** The DSE serves as a common platform where ideas and proposals can be exchanged and analyzed in a transparent way. The security of the uploaded city data can be customized. It can range from the data being fully open, allowing access for everyone, to being completely secured. The Decision Support Environment aims to contribute to the EU 2020 targets, and hence there are the key KPIs to analyze impact of possible sustainability measures for a city in the DSE. The Decision Support Environment will help achieve your city’s sustainability goals!  **What do you need to get started?** Access to city data is a necessity to use the DSE. More information about the data required can be found in the [Transform Open Data Booklet](http://urbantransform.eu/wp-content/uploads/sites/2/2013/02/Transform-open-data-booklet.pdf). The prototype of the DSE was delivered at the end of February 2015.  This is the official EU-deliverable and can be found via this [link](http://urbantransform.eu/decisionsupportenvironment/dse). Please use “demo” as your username and password. The city of Amsterdam, Accenture and Macomi are currently improving the prototype and adding new functionalities,  this version will be hosted by the Amsterdam Institute for Advanced Metropolitan Solutions and can be found [here](http://urbantransform.eu/dst). Please use “dev” as your username and password and the [Transform DSE one page tutorial](http://urbantransform.eu/wp-content/uploads/sites/2/2013/03/150630-Transform-DSE-one-page-tutorial.pdf). | |
| Implementation plans (and roadmaps) | **Roadmap to Make Implementation Plans:** Implementation Plans are about action. How and with whom to implement projects, that contribute directly to the main TRANSFORM KPI’s (CO2 reduction, energy demand reduction, increase of renewable energy production or energy efficiency). How to develop a city’s quarters towards ‘smart urban areas’? How to find investors and projects contributing to the area transformation, and how to link local development approaches to the wider city strategies? TRANSFORM helps 6 cities to discuss different approaches and to figure out best practices and practicable solutions – and come to tangible projects and implementation. The outcomes could be subsequently used as learnings in other cities.   * [Roadmap to Make Implementation Plans](http://urbantransform.eu/wp-content/uploads/sites/2/2015/07/D4.1-Roadmap-to-Make-and-Implementation-Plan.pdf) | |
| Process organisation ([source](http://www.transformyourcity.eu/)) |  | |
| **GrowSmarter** | | |
|  | Solution-oriented (no planning tools; maybe review it later?) | |
| Energy management tool | **Residential estate management** ([source](http://www.grow-smarter.eu/fileadmin/editor-upload/12Solutions/Factsheets/Cologne/Solution_4_Residential_estate_management.pdf))  The solution consists of a virtual power plant (Siedlungsmanagement) which connects local photovoltaic production, heat pumps and batteries. A charging station (solution 11) for electric vehicles (cars and pedelecs) will also be integrated into the settlement.  *Business model*  RheinEnergie is working on a business model to sell the Siedlungsmanagement system as a service. The software will only be available within Germany. | |
| **Remourban** | | |
|  | Solution-oriented (no planning tools; maybe review it later?) | |
| **Sinfonia** | | |
| Integrated design process |  | |
| SWOT analysis |  | |
| Decision support tool for district refurbishment | Info not available online. Follow-up? | |
| **CITY-ZEN** | | |
|  | Still in early stage, check later for more info? | |
| Serious game/  stakeholder engagement | **GO2Zero**  Go2Zero is a serious (role playing) game for decision makers – such as local governments, construction companies, network operators, (local) energy suppliers and citizens- who are active in the transition towards fossil free cities. The game helps them experience the consequences of individual decisions and different strategies.  Go2Zero is a serious role playing game for decision makers developed by City-zen partners Delft University of Technology and DNV GL. It enables stakeholders in the energy transition towards clean energy in cities – such as local governments, construction companies, network operators, (local) energy suppliers and citizens – to experience the consequences of individual decisions and different strategies to ‘go to zero’ carbon emissions. By experiencing this in a game setting, you will be able to take better decisions in real life.  **What will you experience ?**  In a typical Go2Zero game session you start by determining your strategy: what are your personal preferences and what approach will you take to achieve your objectives. During game play you will execute your strategy and try to achieve your objectives interacting with other players. The session concludes with a debriefing and reflection on your results. Go2Zero considers the following actors, objectives and measures:   * Actors: governments, utilities, residents, contractors, housing corporations. * Game objectives: reduce carbon emissions, reduce energy consumption, increase renewable energy. * Measures: energy saving, energy production, and energy distribution technologies.   Different phases in the energy transition pose different challenges to stakeholders. To facilitate different needs, Go2Zero includes two game versions. The table top game facilitates more interactive sessions where stakeholders jointly tackle challenges in the energy transition. The Go2Zero game software (in bèta stage) features more realistic models and thorough calculations to provide participants with a feasibility check of the measures they take during the game.  **Location** **:** The game can be played in any European city.  **Project team :** [DNV GL](http://www.cityzen-smartcity.eu/consortium/kema/), [TU Delft](http://www.cityzen-smartcity.eu/consortium/delft-university-of-technology/), [AIM](http://www.cityzen-smartcity.eu/consortium/amsterdam-economic-board/), [AEB](http://www.cityzen-smartcity.eu/consortium/amsterdam-economic-board-2/),[Waternet](http://www.cityzen-smartcity.eu/consortium/waternet/), [Alliander](http://www.cityzen-smartcity.eu/consortium/alliander/)  **Progress / Due date :** the game is being finalized and currently tested  **Replication :** the game is interesting for all cities and dictricts that want to take action towards energy transition.  [**Website**](http://go2zero.eu/)  **Contacts :** [Ellen Van Bueren](mailto:E.M.vanBueren@tudelft.nl) ([on LinkedIn](https://www.linkedin.com/in/ellenvanbueren)), [Marcel Volkerts](mailto:marcel.volkerts@dnvgl.com)([on LinkedIn](https://www.linkedin.com/in/antonstekelenburg)) | |
| Serious game/ public engagement | **The Age of Energy**  The Age of Energy, an award winning game, was designed by City-zen partner [Clicks+Links](http://www.cityzen-smartcity.eu/home/about-city-zen/consortium/clicks-and-links/) to make it fun to start saving energy at home. The goal of the game is to engage young people in cities to save energy by raising awareness and changing behaviour through the familiar medium of gaming.  The [game](http://theageofenergy.com/) is now available for public beta testing in Android. (in iOS soon too)  Gaming tends to have a bit of a negative reputation, but consider the opportunity of leveraging the following traits for a positive objective, such as saving energy. Games are addictive, fun and engaging which means that they can be great tools for education.  After all, “The best way to learn about anything is by doing”. – Richard Branson.  Currently, the first playable demo is released as you can watch below.Then, a series of iterations will lead to a game that will leverage real-time energy data from next generation smart metering systems as input so that real world behaviour is reflected in the virtual environment.   The next big version is expected in March 2017 and will include, amongst other things, the ability to connect to third party smart meter systems, in addition to a dynamically managed mission system, allowing the game to adapt itself to the preferences of the player and the needs of the environment.  Keep watching this page to stay up to date or email [Gerben](mailto:%20gerben@amsterdamsmartcity.nl) for questions.  Take a look on this website: [theageofenergy](http://theageofenergy.com/)  Follow the Age of Energy on [Twitter](https://twitter.com/theageofenergy) | |
| **ZenN** | Discuss with Carmel | |
| **POLYCITY** | | |
| Energy management systems | (technical focus)  Real time monitoring and optimization of energy supply (from local sources or grid) and demand. 3 different solutions.  ([further info](http://six6.region-stuttgart.de/sixcms/media.php/773/communal-energy-management-systems.pdf)) | |
| Attracting commercial investors (business plan) | [Further info](http://six6.region-stuttgart.de/sixcms/media.php/773/Concept-for-integrating-commercial-investors.pdf)  The present report summarises the conceptual work of Wirtschaftsfoerderung Region Stuttgart GmbH (WRS) which aims at attracting commercial investors to the urban development area of Scharnhauser Park in the community of Ostfildern. The concept is focused on commercial investors which appreciate the provision of ecological thermal cooling energy.  Description of work package RI 3.3 Impact on urban and regional development (Extract of detailed implementation plan month 1-18; Annex I to POLYCITY contract, p. 177) “Apart from the direct impact of the projects on the people the implications of the overall urban and regional development will be investigated. This includes effects on infrastructure (public transport and road development), strengthening of regional industries, regional added value; employment rate, income, attractiveness of region for investments or (qualified) workers, etc. (…) In the first 18 months the town of Ostfildern and WRS will especially develop strategies to attract commercial investors, which appreciate the provision of ecological thermal cooling energy. These investors are needed to implement the decentral thermal cooling technologies to be implemented within the project.”  The report is organised in three main chapters.  In the first chapter the general framework for setting up a marketing strategy is described. This includes the POLYCITY-specific framework as well as the general location-specific framework.  The second part contains an analysis of the investment potentials at Scharnhauser Park. In the context of a case study, the relative importance of POLYCITY-related and general location-related potentials for attracting commercial investors is compared.  In the third chapter a general marketing strategy is developed and specific marketing measures are proposed.  In a final conclusion the main results of the report are summarised. | |
| **CITyFiED** | | |
|  | Technical solution oriented | |
| Renovation business plan best practices | <http://bpie.eu/wp-content/uploads/2016/04/BPIE_executive_briefing-Renovation_in_practice2015.pdf>  CASE STUDY 1- THE NETHERLANDS ZERO ENERGY HOMES AT ZERO UPFRONT COST – STROOMVERSNELLING  CASE STUDY 2 - ESTONIA REVOLVING LOAN LEVERAGING EU FUNDS – KREDEX  CASE STUDY 3 - GERMANY NATIONAL PROGRAMME INCENTIVISING DEEPER RENOVATION – KFW  CASE STUDY 4 - FRANCE TACKLING FUEL POVERTY THROUGH ENERGY RENOVATION - HABITER MIEUX  CASE STUDY 5 - UK STREAMLINING PUBLIC BUILDING RENOVATION THROUGH EPC26 - THE CARBON AND ENERGY FUND | |
| **Covenant of Mayors** | | |
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|  |  | |
| Financial solutions and incentives ([see more](http://www.eumayors.eu/IMG/pdf/EN_thematic_leaflet_3_web-2.pdf)) |  | |
|  | |
|  | |
|  | |
|  | **Stockholm** has a long tradition of close cooperation with the private sector for the development of its infrastructures and services to residents. Through the involvement of the energy company Fortum, the city plans to deliver climate neutral district heating by 2030. Other noteworthy examples include: private entrepreneurs using biogas trucks for collection of household waste, and the recently-initiated co-operation between the city and private real estate owner organisations to reduce energy use in private buildings. | |
| Awareness raising |  | |
| Process | (compare to planning process in No) | |
| **EIP SCC Marketplace** | | |
|  | https://eu-smartcities.eu/ac-documents?f[0]=field\_ac\_group%3A2638 | |
|  | https://eu-smartcities.eu/ac-documents?search\_api\_views\_fulltext=&f[0]=field\_ac\_group%3A2616 | |
|  | <https://eu-smartcities.eu/content/urban-platforms> | |
|  | https://eu-smartcities.eu/content/new-mobility-services | |
|  | https://eu-smartcities.eu/content/electromobility | |
|  | https://eu-smartcities.eu/content/business-models-finance-and-procurement-0 | |
|  | https://eu-smartcities.eu/content/scaling-replication-smart-city-plans-0 | |
| **CITYKeys (KPI Focus, no planning tools found. Recommendations generic)** | | |
| **CIVITAS** | | |
| Integrated mobility planning ([source](http://www.civitas.eu/learning-centre)) (relevance?) | Examples: [http://www.civitas.eu/search-all?f[0]=field\_measure\_categories%253Aparents\_all%3A329](http://www.civitas.eu/search-all?f%5b0%5d=field_measure_categories%253Aparents_all%3A329) | |
| The concept of sustainable urban mobility planning goes beyond traditional transport planning, emphasising the involvement of citizens and stakeholders, policy coordination between sectors and authority levels, and between neighbouring authorities. This interactive webinar offers an overview of the SUMP concept, with further group discussion focused on case examples and transferability to a variety of local context conditions. | |
| CH4LLENGE  Involving stakeholders and the public is a precondition for sustainable urban mobility and supports the development of a more effective, efficient and accepted Sustainable Urban Mobility Plan (SUMP). This course gives an overview about the relevance of participation in SUMP preparation and provides insights into managing participatory transport planning, identifying stakeholders and working with interested parties, the public and the media. It explores how to select appropriate involvement formats and looks at the practical work of conducting a participation process. | |
| CH4LLENGE  Institutional cooperation comprises collaboration and joint working within and across organisations in order to develop and implement a Sustainable Urban Mobility Plan (SUMP). Institutional relationships are various and thus cooperation must be understood as occurring within networks of organisations. Such cooperation may require the sharing of objectives, knowledge, resources, powers or consent between several actors. | |
| TransportLearning  Contents: (1) Mobility and accessibility (2) The limits of urban planning (3) Reducing average trip distance (4) Changing modal split towards sustainable modes (5) Six best practice examples | |
| CH4LLENGE  Development of effective measures to tackle identified transport and mobility objectives is vital for successful sustainable urban mobility planning. Yet there are a range of challenges to well-informed development of packages of measures. Cities can limit themselves to pre-conceived solutions, may focus on supply-side rather than demand-side polices, and can be unaware of the potential of novel solutions. | |
| Mobility management  ([source](http://www.civitas.eu/learning-centre)) | TIDE: Public transport organisation  It’s not easy to find out what customers - and equally important, potential customers - want from their public transport provider. Market research can help you better understand transport preferences and behaviour, the demand for public transport and its perceived quality. This course will look at market research in PT and the range of (internal and external) data sources available to you. | |
| **GuiDanCe** | | |
| Urban platforms | Urban Platforms form a core building block by which cities better manage the current explosion in volumes of city data and more easily share this data between city services in order to improve outcomes for society. Few cities in Europe have implemented such solutions.  Graham Colclough (Urban DNA – EIP SCC Integrated Infrastructure Action Cluster Chair), has first set the context of this webinar and talked about the work being undertaken in the frame  of the Integrated Infrastructure Action Cluster of the European Innovation Partnership for Smart Cities & Communities (EIP SCC) initiative.  More information:   * <https://eu-smartcities.eu/content/urban-platforms> * [Letter of Intent](https://eu-smartcities.eu/sites/all/files/Urban%20Platform%20LoI_AC.pdf) * [Memorandum of Understanding](https://eu-smartcities.eu/sites/all/files/Memorandum%20of%20Understanding%20on%20Urban%20Platforms_0.pdf)   Larissa Suzuki (Greater London Authority) provided an insightful overview the [‘Requirements Specification for Urban Platforms’ document](https://eu-smartcities.eu/urbanplatforms/EIP_Requirements_Specification_Urban_Platforms.pdf) and city-needs-led approach ([see her presentation](http://www.greendigitalcharter.eu/wp-content/uploads/2016/05/Urban-Platforms-joint-webinar_EIP-SCC-UP-requirements_L.Suzuki_03May2016.pdf)).  The Sharing Cities project’s “Urban Sharing Platform” was then presented by Graham Colclough ([see his presentation](http://www.greendigitalcharter.eu/wp-content/uploads/2016/05/Urban-Platforms-joint-webinar_SharingCities-USP_G.Colclough_03May2016.pdf)).  Finally, Paulo Calçada (Associação Porto Digital) and Larissa Suzuki shared Porto’s and London’s experiences with urban platforms.  Play [here](https://eurocities.webex.com/eurocities/ldr.php?RCID=044e5f1fd882a0fe602f71bca6eb23b2) the recording of the webinar. | |
| Green Digital Strategies (relevance?) | Anna Melchor Perez, smart city program officer at InnDEA Valencia, presented the innovative smart city platform of the city which uses fi-ware technology (see the presentation [Digital Agenda Valencia](http://www.greendigitalcharter.eu/wp-content/uploads/2016/02/Digital-Agenda-Valencia.pdf)).  Bart Rosseau, responsible for the data and information management at the city of Gent, introduced some of the challenges and the actors necessary in order to include the digital aspect in the overall strategy for the city (see the presentation [Digital Agenda Gent](http://www.greendigitalcharter.eu/wp-content/uploads/2016/02/Digital-Agenda-Gent.pdf)) .  Finally, Birgit Ginzler, head of communications at TINA Vienna, presented the ambitious and inclusive process that brought to the development of the [digital agenda wien](https://www.digitaleagenda.wien/) and its projects (see the presentation [Digital Agenda Vienna](http://www.greendigitalcharter.eu/wp-content/uploads/2016/02/Digitale-Agenda-Vienna.pdf)).  Play [here](https://eurocities.webex.com/eurocities/ldr.php?RCID=ee88f2b0ed35f0c1faa6254cb1efd3dc) the recording of the webinar.  The focus of next planned webinars will be on urban platforms (16 March) and standards (30 March). [More info](https://www.eventbrite.com/e/green-digital-charter-webinars-tickets-21112865148) and registration.  Signatory cities can send suggestions for possible themes and speakers of our future webinars. | |
| Green Digital Charter case study of Lisbon – integrated solution (source: 2015) | SHARING CITIES Sharing Cities is a collaborative initiative of major European cities, industry and research partners, who commit to exploring new, innovative and better ways to make the continent’s cities ‘smarter’. Lisbon´s demonstrator area (ten square kilometres, with 100,000 inhabitants) is a strategic location, stretching from the riverfront to the centre of the city and including the main tourism and historic districts. The demonstration area is also a low emission zone. The challenges stem from its particular orography, the historic nature of its buildings and an ageing population. The downtown area of Lisbon, together with the Royal Borough of Greenwich in London and Porta Romana/Vettabbia in Milan, will address the objectives of the Sharing Cities project by implementing a set of ‘digital first’ and interconnected measures: • retrofitting of buildings • integrated energy management system • e-mobility • smart lampposts with traffic sensors, wifi and EV charging points The energy performance of buildings will be optimised with smart metering and by mapping consumption and production. Road traffic control systems and adaptive street lighting will be installed, air quality will be monitored, and ICT-based electric vehicle charging stations will also be deployed. The project’s objectives are in line with Lisbon’s Governance Plan and the Lisbon 2020 Strategic Plan, whose cornerstone is the city’s Integrated Operations Centre (COI), which will be responsible for providing the required management information and intelligence. | |
| Green Digital Charter case study of Prague – Morgenstadt initiative ([source](http://www.greendigitalcharter.eu/wp-content/uploads/2016/03/FINAL-GDC-CaseStudies.pdf)) | MORGENSTADT CITY LAB Prague and Germany’s Fraunhofer Institute are partners in the Morgenstadt – City of the Future joint research project. Shaping the future of cities and implementing innovations tie in with the Smart Cities and Green Digital Charter objectives. Prague is involved in Module 3 of the project (Strategic Project Development – City Labs). It has drawn up a city profile and a strategic roadmap on the basis of data analyses and discussions with over 60 stakeholders (city, research community, private sector and NGOs). The proposed projects are: Innovation Think Tank, Innovation District, Smartification of the City Centre, Energetic Refurbishment of Public Buildings, Multimodal Transportation App, Integrated ICT-based Management System for the City Administration and a Data Analytics Centre. Prague started to implement the project in November 2015. The multimodal transportation app tackles congestion and traffic in the city and encourages citizens to use alternative modes and reduce motor vehicle use. The app simplifies public transportation use and promotes behaviour change for sustainable mobility. A series of measures will also be implemented within the framework of Triangulum, a related Horizon 2020 project (one of the three EU-funded Smart Cities and Communities ‘lighthouse’ projects). Smart solutions implemented in flagship cities - Eindhoven in the Netherlands, Manchester in the UK and Stavanger in Norway - will be replicated in follower cities Leipzig in Germany, Prague in the Czech Republic and Sabadell in Spain. The project is coordinated by Fraunhofer IAO in Stuttgart and supported by the Steinbeis-Europa-Zentrum. | |
| Green Digital Charter case study of Stockholm - GrowSmarter | GROWSMARTER Stockholm is a leading partner in the GrowSmarter project, which aims to: • improve the quality of life of European citizens by offering better mobility and housing solutions, upgrading urban infrastructure, lowering energy bills and creating up to 1,500 new jobs (demonstration level) • reduce the environmental impact by decreasing energy needs by 60% and greenhouse gas (GHG) emissions even more through the use of renewable energy sources • promote sustainable economic development by demonstrating and preparing a wider rollout of smart solutions In three ‘lighthouse’ cities, GrowSmarter will demonstrate 12 smart, integrated solutions that could eventually be rolled out to wider markets. These solutions will be easy to examine and evaluate by the five ‘follower’ cities and by other European and international experts. All these smart solutions follow the specifications laid down in the strategic development plan for ‘lighthouse’ projects and enable the follower cities to replicate them. The solutions seek to solve common urban challenges, which include: • retrofitting and renewal of existing buildings: GrowSmarter demonstrates the cost-efficient renewal of 100,000 square metres of nearly zero or low-energy districts, reducing energy demand by 70-90% • installation of integrated infrastructures for ICT, street lighting, smart grids, district heating and smarter waste handling • offering sustainable urban mobility services (passengers and goods) integrated in smart grids and running on biofuels made from household waste, thereby reducing emissions by 60% The simultaneous involvement of the cities, major industrial partners and leading research organisations guarantees that the solutions will be validated by independent research bodies and transformed into smart business solutions by industry for wider rollout in Europe. | |
| Green Digital Charter case study of Valencia - FIWARE | FIWARE PLATFORM Valencia City Council, in cooperation with Telefónica, was the first in Spain to centralise all of its municipal information through a smart city technological solution in 2014. The software uses 350 sensors that manage the city’s municipal services. Traffic, street lighting, gardens, local police, pollution, cleaning and waste collection and weather services are constantly monitored through a network. Using this platform, the capital of the Valencia region can manage all its public resources, thereby improving the efficiency of transport, energy and environmental services. Constant access to real-time information enables city managers to cancel automatic irrigation on rainy days, change traffic signals to let ambulance through, turn on street lights on a cloudy day to improve visibility or notify drivers of available parking spaces. Telefónica’s Internet of Things (IoT) platform adheres to the specification of the European FIWARE standard. The platform is offered as a service from Telefónica Cloud. The open innovation ecosystem created around FI-Lab (FIWARE’s online experimentation lab) simplifies the use of open data generated through the platform, allowing collaboration with entrepreneurs in Valencia and boosting ICT services in the city. The FIWARE platform also enables public services to measure and track CO2 emissions. The real-time data provided by the sensors make it easier for the city authorities to reduce emissions from public services, such as street lighting. These data are easily accessible through the open data website. | |
| Smart energy management, building level | SMARTSPACES – SAVING ENERGY IN PUBLIC BUILDINGS The SMARTSPACES project aims to enable public authorities across Europe to significantly improve energy management in public buildings. The implementation of operational services includes 11 pilot sites with more than 550 buildings in eight countries (the United Kingdom, France, Germany, Italy, Spain, the Netherlands, Turkey and Serbia) used by almost 20,000 professionals and staff and by more than 6,000,000 visitors each year. The SMARTSPACES energy optimisation service is a comprehensive approach to exploiting the potential of ICTs, including smart metering for energy saving in public buildings. Aiming to significantly reduce the public sector’s energy consumption in order to meet the overall emission reduction targets, the project will build on existing services to develop a comprehensive SMARTSPACES service providing feedback on energy consumption. The range of public buildings where the SMARTSPACES service will be implemented and operated is wide and includes city administration buildings, office buildings, museums, university buildings as well as schools, nurseries and sports and event centres. The SMARTSPACES pilot sites are located in large European cities like Milan, Birmingham, Bristol, Istanbul and Belgrade, but also in mid-size cities like Leicester, Hagen, Lleida, Murcia, Venlo and Moulins. | |
| 3E HOUSES 3E Houses (Energy Efficient e-Houses) was an EU-funded project in 2012-2013 linking Bristol with cities in Spain, Germany and Bulgaria in their quest to help social housing residents reduce their energy consumption by up to 20% in the course of one year. The project was run by Knowle West Media Centre, with Bristol City Council, Toshiba Research Europe Ltd (TREL) and local IT services company IP Performance participating as partners. Smart meters were installed in 100 social houses across the city, and the residents could monitor their electricity and gas consumption in real time on touch-screen tablets, for which Knowle West Media Centre developed a compelling and intuitive user interface to boost participation and impact. • People: The effectiveness of any ICT solution is determined by its ability to engage people, to create awareness for the specific issue at hand and for the general goals of the project. • Technology: The success of a project depends largely on the type and quality of the technology used. The aim of 3E Houses was to encourage long-term behaviour change, and thus the technology employed here had to be simultaneously efficient in monitoring energy consumption and fun to use for the residents. • People and technology: The 3E Houses project aimed to reduce energy consumption through raising awareness and providing clear information to consumers. This involves creating synergy between technology and people. Making a success of projects like 3E Houses is not simply down to selecting and deploying the right technology. Any project aiming to bring about behaviour change needs to build a relationship with the participants and develop a deep understanding of the context and the motivations in order to be able to increase the levels of engagement and participation. Users need to feel that their participation is valued and that their input can have a real impact. | |
| VERYSCHOOL - ENERGY MANAGEMENT IN SCHOOL BUILDINGS The VERYSchool project aims to integrate smart LED lighting, smart metering, building energy management systems (BEMS), energy simulation and energy action management software tools into a platform called the Energy Action Navigator (EAN) and demonstrate the results at four pilot locations in Europe. The available budget is €2,860,000. A pilot test conducted at a school in Genoa resulted in savings of up to 33% in electricity costs and up to 20% in heating costs. The EU’s VERYSchool CIP-ICT-PSP project, coordinated by the Energy and Sustainable Development Agency of Modena, aims to encourage energy efficiency at schools. It brings together 12 partners from eight EU countries. VERYSchool is a result-oriented project focused on pilot demonstration and validation actions, with the EAN at its core. EAN is a software tool that integrates mature (already existing) hardware and software technologies, monitoring and control systems (air conditioning and lighting), as well as energy simulation and action management tools that meet the ISO 50001 international energy management standard. Its main objective is to help all stakeholders define an energy management programme and implement an effective energy management system for schools at both local (buildings) and territorial levels. The tool is conceived to be easy to use and install and return on initial investment is expected in maximum three to five years. In Genoa, the project will also seek to monitor electricity and thermal energy consumption and assess the condition of the affected buildings (insulation, windows, etc.) to enable the planning and coordination of future interventions and investments. The project will aim to establish an energy efficiency office charged with planning future investments and interventions based on the results of the technical and financial monitoring. The energy management system has already been installed at four pilot schools in Lesa, Genoa, Plovdiv and Lisbon. | |
| OPEN ENERGY DATA A joint project between Rennes Metropole and Télécom Bretagne (a leading French grande école), the objective of Open Energy Data is to study the feasibility of a home tracking module for personal electricity consumption using open data format. The project aims to enable citizens to reduce their energy consumption. A new network technology (LoRA FABian) to be used for collecting data and an open source platform to manage and visualise big data are currently being developed by Télécom Bretagne. | |
| Smart monitoring, access to data for reporting purposes | iURBAN - CHEAPER, CLEANER ENERGY SERVICES One of most important objectives of the iURBAN project is to use ICT to reduce energy consumption and CO2 emissions in a quantifiable manner. Within the framework of this project, 16 buildings owned by the city of Rijeka and ten facilities of local utility company Energo are equipped with smart meters. These feed real-time information on energy consumption into the innovative URBAn eNergy software platform, which integrates Rijeka’s ICT energy management systems. The core of the iURBAN tool is a smart urban Decision Support System (smartDSS). The operating system behind this customised energy management and control platform is designed for the Internet of Things (IoT) concept and is tailored to the needs and requirements of smart cities. The city’s administrators may access the system to gather information for reporting purposes, to aid the decision-making process or to monitor trends. iURBAN is expected to become a powerful tool to support the development of urban policies and strategies. The iURBAN platform’s new features (ability to handle variable tariffs, demand response or user engagement), coupled with new business models, are expected to reduce Rijeka’s primary energy consumption by 10-20% and greenhouse gas (GHG) emissions by 5-10%. | |
| Smart monitoring for decision support | FUTURE CITY GLASGOW – ENERGY EFFICIENCY DEMONSTRATOR The Future City Glasgow energy efficiency demonstrator project utilised integrated technology to promote and enhance energy efficiency in buildings and housing. It included a tenement housing retrofit project (delivered in partnership with the University of Strathclyde), which sought to: • pilot a remote monitoring programme, testing the effectiveness of insulation methods for tenement flats and other construction types • create a database enabling decision-making about how and where to apply insulation measures using real-time data The project’s outputs include: • installation of bespoke sensors to facilitate the understanding of the various impacts of retrofit insulation (including energy savings) • development of a database of building types and insulation systems demonstrated to improve living conditions and reduce energy consumption • development of a methodology to deploy remote sensor technology across homes in Glasgow and drafting of supporting legal documentation required to collect and analyse the data • clearer understanding of ways to improve energy efficiency • sharing of the monitoring and assessment methodology with Glasgow City Council’s Housing Department, along with bespoke software designed to interpret data culled from the sensors. As a result, all future insulation projects funded by the council will be required to install sensors • sharing of data collected with local housing associations to enhance their understanding of their building stock | |
| Awareness raising | FIESTA – SAVE ON HEATING AND COOLING While the household sector has achieved the largest energy efficiency improvement in recent years, it is still responsible for 29% of the overall consumed energy in Europe. Heating and cooling account for around 66% of the total energy use in a typical home, making it the largest energy expense for most families. Families with children are at the core of the FIESTA project funded by the Intelligent Energy Europe programme. The project aims to reduce energy use and related emissions by fostering improvements in daily habits, targeting in particular the use of home heating and cooling systems. FIESTA brings together 19 partner institutions from five Southern European countries (Spain, Italy, Croatia, Bulgaria and Cyprus), all committed to supporting families in their quest to reduce their home energy consumption. An Energy Help Desk has been established in each partner city assisting families in achieving tangible energy savings. A major part of the FIESTA project is devoted to an information campaign on energy efficiency and on ways to measure and monitor domestic energy use via online tools for visual content | |
| Smart energy transport solution | Burgas updates its Sustainable Energy Action Plan every two years. In the framework of this project, the city will install its first solar tree that would be used to charge electric bicycles, wheelchairs and other electric devices. | |
|  | VERYSCHOOL - ENERGY MANAGEMENT IN SCHOOL BUILDINGS The VERYSchool project aims to integrate smart LED lighting, smart metering, building energy management systems (BEMS), energy simulation and energy action management software tools into a platform called the Energy Action Navigator (EAN) and demonstrate the results at four pilot locations in Europe. The available budget is €2,860,000. A pilot test conducted at a school in Genoa resulted in savings of up to 33% in electricity costs and up to 20% in heating costs. The EU’s VERYSchool CIP-ICT-PSP project, coordinated by the Energy and Sustainable Development Agency of Modena, aims to encourage energy efficiency at schools. It brings together 12 partners from eight EU countries. VERYSchool is a result-oriented project focused on pilot demonstration and validation actions, with the EAN at its core. EAN is a software tool that integrates mature (already existing) hardware and software technologies, monitoring and control systems (air conditioning and lighting), as well as energy simulation and action management tools that meet the ISO 50001 international energy management standard. Its main objective is to help all stakeholders define an energy management programme and implement an effective energy management system for schools at both local (buildings) and territorial levels. The tool is conceived to be easy to use and install and return on initial investment is expected in maximum three to five years. In Genoa, the project will also seek to monitor electricity and thermal energy consumption and assess the condition of the affected buildings (insulation, windows, etc.) to enable the planning and coordination of future interventions and investments. The project will aim to establish an energy efficiency office charged with planning future investments and interventions based on the results of the technical and financial monitoring. The energy management system has already been installed at four pilot schools in Lesa, Genoa, Plovdiv and Lisbon. | |
| Smart integrated energy service | ODYSSEUS – HOLISTIC ENERGY MANAGEMENT SERVICES The objective of the Odysseus project is to develop a dynamic open system to enable holistic energy management services. The expected achievements are: • integration scenarios • open integration platform • holistic energy management system • validation The concept of holistic energy management entails the monitoring of energy system operation according to dynamic energy profile information for all relevant energy nodes and the conditions and behaviour of all these nodes. Based on real-time information and the integral monitoring of planning, problems can be identified and recommendations made for resolution and optimisation. The latter applies to real-time events and strategic decisions, such as adding or changing nodes, changing connections, etc. The open integration platform will capture all energy node information in a dynamic energy profile card that uses the taxonomy of energy node types and associated properties. All data will be stored in an open standards/open source spatial database accessible via standard interfaces. The system will be flexible, interoperable and adaptable. The project includes two city pilots in Manchester and Rome. The Manchester pilot is focused on the Town Hall Complex and on modelling a proposed heating network for the city. | |
| Electricity in public transport | ELECTRICITY – ELECTRIFIED PUBLIC TRANSPORT The ElectriCity project, comprising 14 partners, has established a demonstration area for electrified public transport in Gothenburg. Between June 2015 and 2018, the city’s new bus line 55 is served by three all electric vehicles and seven plug-in hybrids produced by Volvo. Charging stations have been installed at both termini (Johanneberg and Lindholmen) by the city-owned energy company Göteborg Energi. At Lindholmen, a unique indoor terminal offers travellers a chance to have a coffee or pick up parcels in an atmosphere similar to a library. Some of the bus stops and all the buses offer free wifi access and travellers can also charge their mobile phones on the go. Line 55 is not a public procurement project. It is a partnership between Volvo, the public transport company Västtrafik and the operator Keolis. The bus stops have been installed by Västtrafik and real estate developers Chalmersfastigheter and Akademiska Hus in cooperation with Gothenburg’s Municipal Traffic Department. The buses run on renewable electricity, mainly from hydro and wind power, and also hydrotreated vegetable oil (HVO), a renewable diesel fuel. Utilising zone management, the hybrids run at low speed and on electricity in sensitive areas. Digital data are available in an open innovation platform for all those wishing to contribute or participate. The platform provides information on buses, bus stops, charging stations and other sections of line 55 as well as on public transport in the Västra Götaland region. Real-time information, such as the GPS location of a bus or the temperature inside the vehicle, is made available via a special app. ElectriCity is a cooperation framework financed from separate budgets and run by a steering committee and a partner group. It is open to new partners interested in contributing to innovative electro mobility development. | |
| The overall objective of this project is to promote a new urban mobility model, and thereby to improve the quality life of citizens. It seeks to reduce fossil fuel consumption and pollution, and increase the energy efficiency of passenger transportation in the city. In cooperation with private companies, Murcia City Council promotes the daily use of electric scooters in the city. One of the project’s goals is to change the behaviour of the citizens and tourists towards sustainable and user-friendly means of mobility. An app for mobile devices developed specifically for this project provides real-time information on the availability of electric motorcycles in Murcia. | |
| ELE.C.TRA. – ELECTRIC CITY TRANSPORT This project focuses on developing an innovative and easy payment solution in the form of a common electronic card system. A multifunctional card can be used to pay for public transportation and parking services, to register for different social services (e.g. catering), or to access different kinds of discounts for certain social groups. The objectives of the project are threefold: • rationalise the organisation of public transportation • reduce the city’s energy consumption • provide greater convenience for residents Launched in 2007, the project aims to create an efficient and inclusive electronic payment system for public transportation in Riga. The implementation of the new system did not bring about a price increase, and discounts on fares specified in Riga City Council regulations also remain in place. Only the means of payment has changed. The e-ticket allows passengers to save time when buying tickets, solves the problem of the availability of paper tickets in retail outlets and requires no cash. An e-ticket remains valid for 12 months, except when the price of the ticket type changes or the ticket type is cancelled. | |
| Public participation | +SUSTAINABLE BARCELONA MAP An interactive, virtual map, as well as a social network, +Sustainable Barcelona Map introduces the city’s initiatives and places of interest with environmental and social value. The map is a participatory tool aiming at gathering initiatives, resources and experiences that may be useful to the public. Among others, the map can be used for locating sustainable shops, services and businesses, environmental facilities or wildlife refuges in the city. Whether public or private, all these features add a green economy value and improve the urban environment by building a fairer and more inclusive social structure and enriching the wider community and the local neighbourhood alike. The content of the new map is built through collaborative workshops involving the citizens, who can consult a calendar for upcoming workshops in their neighbourhood and can propose points of interest, upload photographs or write stories. They can also organise new workshops, assist with project coordination or take part as experts. Schools can use the map as a teaching resource, thereby promoting student participation. The map is the city’s contribution to the international Open Green Map initiative, in which over 850 cities from 65 countries participat | |
|  | OPEN AHJO CASE MANAGEMENT SYSTEM In 2011, Helsinki introduced a case management system to facilitate decision-making in the city. Ahjo covers the whole process from initiation to implementation and contains all the proposals and decisions, including statements of reasons, made by the city’s organs and officers. Its purpose was to improve the processes and procedures, eliminate redundant work and increase productivity (e.g. by centralising the registry). Two years later, the city inaugurated Ahjo’s open programming interface, Open Ahjo, which makes the decisions accessible as open data in machine-readable format. Open Ahjo makes the city council, city board and committee agendas, minutes, appendices and office holder decisions searchable. The City Executive Office’s partners included Ahjo deliverer Tieto, Helsinki Region Infoshare (HRI), Forum Virium Helsinki and developer Juha Yrjölä. Open Ahjo offers a unique opportunity to utilise the data associated with the city’s decisionmaking processes in different kinds of applications and make them interoperable with other data sets, such as the city’ economic data. Data associated with decision-making had previously been published on the city’s website in PDF and HTML formats, but specific decisions and processes were rather difficult to find and follow. The new interface enables the creation of user-friendly applications, such as adding feedback or comments. | |
| GDC toolkit ([source](http://www.greendigitalcharter.eu/wp-content/uploads/2012/03/NiCE_D2.7_ActionTools_1.0.pdf)) | Scenario planning/gaming | Examples of how scenario planning and gaming can be used in planning green digital activities. |
| Green digital literacy strategy | Examples of green digital literacy strategies |
| Major solutions providers list | List of major solutions providers which will be placed on Green Digital Charter website |
| Good practice stories on how to go mainstream | Compilation of good practice examples of how to go mainstream |
| Visioning activities | Workshops offering visioning opportunities |
| Scenario games | Scenario games that cities can use in engagement with stakeholders |
| Transformation strategy | Examples of transformation strategies |
| Stakeholder engagement strategy | Examples of stakeholder engagement strategies in the field of green digital |
| Sector strategies | Examples of sector strategies in the field of green digital. |
| Scenario planning | Examples/advice on developing scenario planning |
| Partnership agreements between divisions, cities, localauthorities, regions | A description of how to establish partnership agreements between divisions, cities, local authorities and regions. |
| Mainstreaming strategy for Living Labs | Description of and application form for Living Labs network |
| Integration strategy | Examples of integration strategies from signatory cities |
| Industry engagement strategy | Examples of industry engagement strategy |
| Inclusive transformation strategy | Examples of transformation strategies |
| Inclusive stakeholder engagement strategy | Examples of strategies from signatory cities |
| High level forums e.g. a green digital executive body | A description of how to set up a high level forum. |
| Green digital strategy | Examples of strategies from signatory cities |
| eGovernment strategy | A list of e-government strategies in certain European countries |
| Digital inclusion strategy | Examples of ICT inclusion plans  Compilation of good practice examples of digital inclusion strategies |
| Communication strategy | Good practice examples of communications strategies |
| Business cases | Examples of business cases from signatory cities |
| Rationale for Green Digital Charter including benefits for the economy and jobs | A textual description of Green Digital issues and why they matter to European cities which cities can use in their own internal and external communications |
| Green digital related text for vision documents | A description of the importance of 'green digital' which cities can use in internal and external communications |
| GDC toolkit for structures | Green digital policy scenarios | Compilation of good practice examples of green digital policy scenarios |
| City greening ICT planning | Examples of city greening ICT planning from signatory |
| City greening digital services planning | Examples of city greening digital services planning from signatory cities |
| City admin baselines and common standards and methods for emissions metrics | Advice on how to calculate city admin baselines and where to find common standards and methods for emissions metrics |
| Baselines and common standards and methods for emissions metrics (EU wide) | Advice on how to calculate EU wide baselines and where to find common standards and methods for emissions metrics |
| Green Digital Charter Regulatory and funding framework examples | List of regulatory and framework funding examples which will be placed on Green Digital Charter website |
| Green Digital Charter action programme | A timeline highlighting implementation milestones which cities can use to track progress on implementing |
| Funding opportunities online portal | Funding opportunities online portal |
| Measures for economic well being | Measures for economic wellbeing which will be placed on Green Digital Charter website |
| NiCE info pack / website / framework / toolkit | NiCE info pack / website /framework / toolkit |
| Green Digital Charter framework, action and reporting toolkit | Documents which will explain to cities the importance of the Green Digital Charter and how to implement it. |
|  |  | |
| GDC toolkit for digital practices |  | |
| GDC toolkit for digital knowledge |  | |
| Typoligy of digital action tools | 2.5 Types of action tools  The tools proposed in the Action tool catalogue will be a mixture of bespoke tools designed specifically to deliver the Charter and existing tools (free/open-source or proprietary). Some tools will develop and change (e.g. from a Word document / spreadsheet to an online website), others will not change. Some tools will be sourced from cities with the intention of being reused in other contexts, other tools will be good practice stories to act as inspiration. The following three types are used to define the tools in the action tool catalogue: • Stories - these are outline descriptions of what could happen or is happening in some cities (e.g. good practice stories for inspiration); • Documents - these are detailed documents (including websites) focused on delivery of green digital activity (e.g. actual example documents from cities that could be reused, GDC website); • Service - these are templates, online tools or services that actually deliver a green digital related product or service. | |
| Categorisation of tools (see above tools categorised [here](http://www.greendigitalcharter.eu/wp-content/uploads/2012/03/NiCE_D2.7_ActionTools_1.0.pdf)) |  | |
| **European Energy Award –** not relevant | | |
| **BUILD UP –** Review until 2010 (backwards) | | |
| Financing residential building renovation | http://www.buildup.eu/en/practices/publications/financing-energy-renovation-residential-buildings-infinite-solutions-0 | |
| Analysis of Europe’s readiness for smart energy buildings | <http://bpie.eu/publication/is-europe-ready-for-the-smart-buildings-revolution/> | |
| Importance of public buildings | http://www.buildup.eu/en/news/overview-exemplary-role-public-buildings-under-energy-efficiency-directive-eed | |
| Financial risk assessment of energy renovations | https://deep.eefig.eu/factsheet/quick/ | |
| Building shape as determinant for energy consumption (on urban scale)  ([source](https://arxiv.org/pdf/1512.00946v1.pdf)) | Urban Skylines: building heights and shapes as measures of city size Markus Schl¨apfer1 , Joey Lee2 and Lu´ıs M. A. Bettencourt1 1Santa Fe Institute, Santa Fe, NM 87501, USA 2University of British Columbia, Department of Geography, Vancouver, V6T 1Z2, Canada Abstract The shape of buildings plays a critical role in the energy efficiency, lifestyles, land use and infrastructure systems of cities. Thus, as most of the world’s cities continue to grow and develop, understanding the interplay between the characteristics of urban environments and the built form of cities is essential to achieve local and global sustainability goals. Here, we compile and analyze the most extensive data set of building shapes to date, covering more than 4.8 million individual buildings across several major cities in North America. We show that average building height increases systematically with city size and follows theoretical predictions derived from urban scaling theory. We also study the allometric relationship between surface area and volume of buildings in terms of characteristic shape parameters. This allows us to demonstrate that the reported trend towards higher (and more voluminous) buildings effectively decreases the average surface-tovolume ratio, suggesting potentially significant energy savings with growing city size. At the same time, however, the surface-to-volume ratio increases in the downtown cores of large cities, due to shape effects and specifically to the proliferation of tall, needlelike buildings. Thus, the issue of changes in building shapes with city size and associated energy management problem is highly heterogeneous. It requires a systematic approach that includes the factors that drive the form of built environments, entangling physical, infrastructural and socioeconomic aspects of cities. | |
| Mapping energy performance of building stock | <https://ec.europa.eu/energy/en/eubuildings>  The EU Building Stock Observatory monitors the energy performance of buildings across Europe. It assesses improvements in the energy efficiency of buildings and the impact of this on the actual energy consumption of the buildings sector overall.  The Observatory tracks many different aspects including:   * energy efficiency levels in buildings in individual EU countries and the EU as a whole * different certification schemes and how they are implemented * financing available for renovating buildings * energy poverty levels across the EU.   The Observatory contains a [database](http://ec.europa.eu/energy/en/eu-buildings-database), a [datamapper](https://ec.europa.eu/energy/en/eu-buildings-datamapper) and [factsheets](https://ec.europa.eu/energy/en/eu-buildings-factsheets). | |
| Lisbon solar potential map (2012) ([source](http://www.buildup.eu/en/learn/tools/lisbon-solar-potential-map)) | Lisbon Solar Potential Map, available online via Google Maps application, covers all the buildings in Lisbon. It allows the identification of the preferable areas to invest in solar technologies and represents an efficient awareness tool, both for local authorities, investors and companies and citizens.  NOTE - This tool works on all browsers, however for reasons of compatibility with the functionality of the Solar Potential Map with Google Maps, it is recommend to use the browsers Google Chrome and Firefox instead of Internet Explorer. | |
| Budget It Yourself (energy budgeting) (2012) ([source](http://www.buildup.eu/en/learn/tools/budget-your-energy-use-biy-budget-it-yourself)) | When you can budget, you can save. Simply upload your data to this site, then enter the PIN into the BIY Android application. Your device takes care of the rest. Budget It Yourself helps you keep track of your own energy usage by making sense of the Green Button data.   Tool website URL(s):  <http://greenbutton.case.edu/>  <http://appsforenergy.challenge.gov/submissions/8002-biy-budget-it-yourself>  <http://www.buildup.eu/news/27213> | |
| Energy use visualisation (public awareness) (2012) ([source](http://www.buildup.eu/en/learn/tools/make-energy-use-visible-trees-leafully)) | Leafully Leafully is about helping people understand energy usage and uses green button data, a sample is provided. A huge problem is that the units of energy are hard to comprehend. Leafully brings these terms down to something simple - a tree. Leafully also recognizes that energy usage is more than just electricity usage and thus tries to give the user a toal tree footprint - the amount of trees needed to offset the pollution created by one's energy consumption. Leafully is organized into a few main areas: diving deep into the hourly data with historic trends, understand the effect of the abstract units of energy, and taking action with tree values in mind along with friends.  Tool website URL(s):  [http://www.leafully.com](http://www.leafully.com/)  <http://appsforenergy.challenge.gov/submissions/7987-leafully> | |
| DEXCell energy manager (2011) ([source](http://www.buildup.eu/en/learn/tools/dexcell-energy-manager)) | DEXCell Energy Manager is an online software that helps manage and reduce energy consumption through continuous monitoring, analysis, alarming, reporting and awareness, compatible with all types of meters (electricity, heat, gas and water), probes (temp, hum,…) and / or BMS / SCADA exist.  Tool website URL(s):  [http://www.dexcell.com](http://www.dexcell.com/) | |
| Public awareness and education (2011) ([source](http://www.buildup.eu/en/learn/tools/energuy-game)) | ENERGUY is a game developed by the "Agence de l'efficacité énergétique Québec" in which you have to take a guy called "ENERGUY" by the hand to help him save energy at home.  Tool website URL(s):  <http://www.aee.gouv.qc.ca/en/energuy/game/>  <http://www.aee.gouv.qc.ca/energuy/jeu/> | |
| Energy unit converter (public support tool) (2010) ([source](http://www.buildup.eu/en/learn/tools/handy-calculator-converts-one-energy-unit-another)) | From gallons to British thermal units (Btu), kilowatthours to megajoules, short tons to metric tons — this handy calculator converts from one energy unit to another.  Tool website URL(s):  [http://tonto.eia.doe.gov/kids/energy.cfm?page=about\_energy\_conversion\_calculator...](http://tonto.eia.doe.gov/kids/energy.cfm?page=about_energy_conversion_calculator-basics) | |
| Energy potential visualisation (2017) ([source](http://www.buildup.eu/en/learn/tools/electricity-map-live-co2-emissions-european-electricity-consumption)) | An open source project which visualises the emissions of electricity generation across Europe along with the potential for renewable energy.    [The Electricity Map project](http://electricitymap.tmrow.co/) has integrated live data feeds into an interactive map of Europe to show how electricity is distributed across the continent, what energy sources are used and how much carbon is being produced to generate it. Using up-to-date weather data, the tool also shows what the current potential for solar and wind power is in individual countries.    Renewables And Nuclear  The live map indicates how much carbon is produced to generate a kilowatt hour of power.  The map shows how France is among the least carbon intensive electricity producers because of its focus on nuclear energy, while Norway is keeping emissions down through hydroelectric power generation.  By playing around with the tool you can discover how wind and solar power have already become a significant part of the energy mix in most European countries.    Coal And Shale  The visualisation also reveals that Poland and Estonia are among the continent’s most carbon intensive electricity users.  By selecting Poland on the map you can see that the country currently heavily relies on coal for power generation. Estonia mostly uses oil shale to produce electricity.    Renewable Potential  The project uses online wind and cloud coverage data to calculate the potential for renewable power generation.  You can turn on spectacular visualisations of wind speed and direction across Europe as well a layer indicating the current cloud cover.    First launched in September of 2016, the Electricity Map is still a work in progress with an open call inviting volunteers to help with ideas, feature requests and bug reports via the project’s GitHub or Slackaccount.  The developers are also looking for more data feeds and help with optimising the tool’s code.    Tool website URL(s):  <http://electricitymap.tmrow.co/>  <https://github.com/corradio/electricitymap/blob/master/README.md> | |
| Modelling the European energy system (2016) ([source](http://www.buildup.eu/en/learn/tools/metis-modelling-european-energy-system-0)) | METIS is a mathematical model which can provide highly detailed analysis of the whole European energy system for electricity, gas and heat. It can simulate the operation of both energy systems and markets for electricity gas and heat on an hourly basis for a whole year, while also factoring in uncertainties like weather variations. For example, it can analyse the impact of higher shares of renewable energy down to the hour.    The model can be used at EU country or regional level, right down to the 276 economic regions in the EU which are used by analysts.    METIS works alongside other energy system models including PRIMES and POTEnCIA. It is used by European Commission experts to further support the European Commission’s energy department’s evidence-based policy making, for electricity and gas. Recently it has been used to inform the Commission’s proposals for a new energy market design, as well as renewable energy and energy security issues.      For further information, please visit the tool's website at the link below.   * Tool website URL(s):   <https://ec.europa.eu/energy/en/data-analysis/energy-modelling/metis> | |
| Decision support and awareness rasining for public  (2016) ([source](http://www.buildup.eu/en/learn/tools/front-project-decision-making-tool-consumers-0)) | The Decision-Making Tool for Consumers, developed in the framework of the [FROnT project](http://www.buildup.eu/en/explore/links/front-project-fair-renewable-heating-and-cooling-options-and-trade-0), uses a systematic process to guide the consumer through some targeted questions aimed at finding the best available Renewable Heating and Cooling (RHC) solutions. The tool is accompanied by [information factsheets](http://www.front-rhc.eu/decision-making-tools-for-consumers/#fact) on available technologies and by an animated video which provides simple and clear information about heating and cooling services and their possible combinations.    For further information please visit the project's relevant webpage at the link provided below.  Tool website URL(s):  <http://www.front-rhc.eu/decision-making-tool/> | |
| Comparing energy costs (2016) ([source](http://www.buildup.eu/en/learn/tools/front-project-rhc-costs-calculation-tool-0)) | The Renewable Heating and Cooling (RHC) Costs’ Calculation Tool, developed in the framework of the [FROnT project](http://www.buildup.eu/en/explore/links/front-project-fair-renewable-heating-and-cooling-options-and-trade-0), aims to assess the competitiveness of renewable energy technologies (biomass, solar thermal, air-source heat pump and ground-source heat pump) against traditional fossil fuels.    The tool facilitates transparency and comparability of heating and cooling options. Based on the comparison of levelised costs of heating and cooling, it allows to estimate costs, payback period, and the environmental benefits of RHC technologies through a user-friendly interface.    The RHC Costs’ Calculation Tool is accompanied by a series of [Guidelines](http://www.front-rhc.eu/download/2188/) on the use of the RHC costs’ estimation methodology and by a set of [Frequently Asked Questions](http://www.front-rhc.eu/download/2190/).    For further information please visit the project's relevant webpage at the link provided below.  Tool website URL(s):  <http://5.196.164.88/> | |
| Energy use visualisation (large scale consumers?) (2016) ([source](http://www.buildup.eu/en/learn/tools/energyelephant-tool-automated-energy-management-analysis-smbs)) | By combining energy usage data with weather/climate, grid and building the tool automatically gives users insight into their energy usage, and provide suggestions on the best way to reduce their expenditure and energy usage.    Useful tool for Energy Professionals to process energy bills quickly  Tool website URL(s):  [https://energyelephant.com](https://energyelephant.com/)  (**FAQs from above website)**  How is EnergyElephant able to help our business reduce energy?  Why is it so difficult to understand your energy bills and motivate staff to reduce energy waste, and yet most staff when asked want to help reduce their environmental impact?  Well EnergyElephant is here to fix all that!  We believe all businesses want to use energy efficiently and to reduce their environmental impact, they just need to be shown how easily it can be done.  We do this through our smart energy analysis system.     **How does it work** You send us your energy data.  We analyze it.  We send you the key insights, such as when do you use most energy, how seasonal is your usage, what percentage of energy is for thermal uses,  what is your split between standing and variable charges.  You act on the insights to reduce energy waste and become more energy efficient.   **What is the 3C+ system** 3C+ is a software-as-a-service solution. The ‘3Cs’ represents the cost, carbon and consumption elements of energy use, with the ‘+’ representing the secret sauce of the system, namely creating competition and community behaviour changes.   **How do I give you my energy data** We're all about making this as simple as possible, that is why we have created a number of simple to use options for getting your energy data to us.  You can either upload your e-bill by dragging and dropping them into our drag-and-drop system, select and upload them or if easier just pop them in an email and send them to us at [bills@energyelephant.com](https://energyelephant.com/faqs)   **How can we help with CSO energy return?** The Business Energy Use Survey is an annual survey jointly conducted by the Central Statistics Office (CSO) and the Sustainable Energy Authority of Ireland (SEAI) collecting information about energy use by business in Ireland under regulation (EC) No. 1099/2008 of the European Parliament and the Council of 22 October 2008. This form can be confusing and time consuming to complete. Using your EnergyElephant account for the given year, most businesses can quickly and easily complete the return saving you time and money. For further information please see  <https://eforms.cso.ie/BEEU.html>   **How can we help with the Sustainable Energy Authority of Ireland (SEAI) public sector annual return?** Since 1st January 2011 all public sector bodies are required to report annually on their energy usage and actions taken to reduce consumption – in accordance with S.I. 426 of 2014 (and previously with S.I. 542 of 2009). The Public Sector has been set a verifiable energy-efficiency savings target of 33%. This target requires senior management commitment and the involvement of all employees. The online monitoring and verification system can be confusing and time consuming to complete. Using your EnergyElephant account for the given year, most businesses can quickly and easily complete the return saving you time and money. Data we provide includes your MPRN and GPRN numbers, total costs, oil consumption totals and other useful data. You can even include the use of EnergyElephant energy management system in your list of energy saving projects. We can also provide ad-hoc assistance on selection of activity metrics and baseline periods. For further information please see  [SEAI Reporting](http://www.seai.ie/Your_Business/Public_Sector/Reporting/)   **Can you provide our Display Energy Certificate (DEC)?** From the 9th January 2013 publicly and privately owned buildings over 500m2, frequently visited by the public, are required to exhibit a DEC, in a prominent place, clearly visible to the public. The DEC is intended to encourage public authorities to adopt environmentally responsible and efficient use of energy in buildings. Display Energy Certificates are based on primary energy use and should be confused with actual metered energy use in the building. This means that if a building uses 100 kWh/m2 on its DEC and it 1000 m2, its bills will not add up to 100,000 kWh per year. In fact the billed energy use will usually be less than half the energy certificate level shown.   **What is a virtual energy audit / assessment?** A virtual energy assessment involves no physical visit to the building being assessed. EnergyElephant carries out all its energy assessments using the data available through your energy bills and by supplementing it with meter readings via your smart phone. It really is that simple.   **How do I submit a meter reading (electricity and gas meters)** If you have a smart phone, you can use the EnergyElephant App to quickly and easily take a photo of your current meter reading and submit it to us.  We will email you your up-to-date meter reading and can link with your meter system operator to make sure the meter reading is used to make sure your energy bills are accurate and you only pay for what you use.   **How do I get a meter key** If you do not have a meter key to open your electricity meter box you can apply for a free one by emailing [esbnetworks@esb.ie](mailto:esbnetworks@esb.ie?subject=Meter%20box%20key%20request) (Ireland only) or for a gas meter box you can apply for a free one [here](http://www.gasnetworks.ie/en-IE/Your-Meter/Meter-Readings/Request-A-Meter-Key/)(Ireland only).  We want to help people understand their energy usage  There is a lot of confusion around energy terminology.  These pages explain some of the main concepts behind Energy Elephant.   * [Five Year Estimate](https://energyelephant.com/fiveYearEstimateInfo) * [Cost Data Explained](https://energyelephant.com/costInfo) * [kWhs Data Explained](https://energyelephant.com/kwhsInfo) * [Carbon Data Explained](https://energyelephant.com/carbonInfo) * [Degree Data Explained](https://energyelephant.com/degreeDayInfo) * [Next Bill Estimate](https://energyelephant.com/nextBillEstimateInfo) * [Tariff Comparison Rate](https://energyelephant.com/effectiveUnitCost) | |
| Assessing viability of district energy systems (2016) ([source](http://www.buildup.eu/en/learn/tools/plan4de-plan-district-energy-0)) | Plan4DE (Plan for district energy) is an Excel-based modelling tool to assist in determining the viability of district energy in a certain district or neighbourhood area, based on the existing or planned urban form within that district area. It is intended to be used as a “pre-pre-feasibility” tool during the development of community, secondary or neighbourhood plans, to assist planners in understanding the relationship between built form, energy demand, and the potential for district energy.    Plan4DE has been developed to function as a tool to assist planners to consider the impacts of land use or development plans on the potential for district energy. Plan4DE enables swift calculation of total heat demand, district heat demand density, and DE system costs for any identified area. This enables planners to quickly identify the implications of any built form for DE potential, and understand the impact of changing the built form (through land use changes or building densities) on that potential.    Plan4DE can be applied to evaluate the potential for district energy in a greenfield or brownfield development setting. Through the model interface, a user is able to enter the proposed building mix and district size, and see the resulting total heat demand, district heat density, and cost comparison with individual heating. By changing the input variables (representing a change in building mix), the associated results can be easily compared. This facilitates the ability to very quickly develop and evaluate different building mix scenarios (represented by different land use or development plans), essentially assisting planners to consider “ruling-in” the option of district energy rather than ruling it out.    In addition, when assessing future built environments, planners face a complex trade-off in that they need to contribute to and plan for decreased energy use at the building level (through higher performing buildings), while increasing energy density at the district level to increase the potential for district energy. Plan4DE can be used to explore this trade-off, providing useful insights for decision making.    Three versions of the model are provided (basic, intermediate and advanced) to accommodate a range of knowledge and technical user experience. The advanced version is fully unlocked, to allow customisation.    Fo further information please visit: <http://plan4de.ssg.coop/>  Tool website URL(s):  <http://plan4de.ssg.coop/> | |
| Stakeholder interaction tool (2016) ([source](http://www.buildup.eu/en/learn/tools/dhc-consortium-building-tool-0)) | The DHC+ technology platform has been set up under the umbrella of Euroheat & Power and is a European hub for research & innovation in district heating and cooling. It has a strong group of stakeholders from academia, research, business and industry committed to moving to a sustainable energy system.    In an effort to**facilitate the creation of EU project consortia**, DHC+ has developed a number of services which allow members to overcome factors of distance, lack of time and resources. The DHC+ Portal is one of them and it is available to the wider heating and cooling community, allowing a more important cross-sectorial collaboration on a project proposal.    The Portal has been conceived as an **incubator for project ideas**: you can shortly describe your idea, concept or draft proposal, indicate the kind of partners or expertise you are looking for – and be contacted by the organisations interested in joining your consortium. You can look through the existing project ideas and consider joining them. You can also use the DHC+ Portal as a **highly interactive professional platform**: describe the added value you can bring to a successful project proposal and search for the experts in a particular field.  Please register for free to create your expert profile, publish your project idea and to be able to browse through the existing public entries. DHC+ / Euroheat & Power members benefit from a privileged-level access: they can log-in with their website log-in details, see all entries in the database and request free email alerts containing newly published project ideas and partner profiles.   Portal is launched in BETA version. It contains most of the major features available for general public. After a testing period, DHC+ reserves the right to restrict access to certain features to DHC+ members only. If you like the DHC+ Portal, make sure to have privileged-level access to it by becoming a DHC+ member.  Tool website URL(s):  <http://www.euroheat.org/dhc/dhc-portal/> | |
| Decision support tool. For public authorities about public buildings (2016) ([source](http://www.buildup.eu/en/learn/tools/finsa-free-tool-calculate-and-compare-refurbishment-costs-municipal-buildings-0)) | The FinSa tool, developed by the ZNES Europa University Flensburg, allows to calculate and compare refurbishment costs of municipal buildings. The tool was developed with the research project “Climate Protection Concept 2050 for Municipal Buildings” in cooperation with ten German local authorities. While public buildings shall act as leading examples for the energy-efficient building renovation, most cities and communities are facing financial difficulties that prevent them from to realising high renovation rates.    The FinSa software program supports local authorities to develop long-term building refurbishment strategies since it allows for an estimation of the costs for an energy-efficient refurbishment of all buildings owned by the local authority by 2050. Three scenarios are possible: a business as usual scenario, a climate protection scenario and an individually defined scenario by the authority.    The tool is available at: <https://www.uni-flensburg.de/?18249>    *The German description of this tool is available*[here](http://www.buildup.eu/de/learn/tools/finsa-kostenfreies-computerprogramm-fur-die-berechnung-und-den-vergleich-von-2)*.*  Tool website URL(s):  <https://www.uni-flensburg.de/?18249> | |
| Tool to evaluate energy efficiency policies (municipalities and social housing) (2015) ([source](http://www.buildup.eu/en/learn/tools/eemeasure-tool-evaluate-energy-efficiency-measures)) | eeMeasure is a web based software developed for the European Commission, which enables social housing organisations and municipalities to quickly evaluate their energy policies. Available online since January 2012, eeMeasure allows for a harmonised way of recording and calculating energy savings of Information and Communications Technology Policy Support Programme (ICT PSP) funded projects, through a consistent methodology. In turn this enables the European Commission and other interested parties to produce a better quantitative analysis on the energy savings potential of ICT based solutions in residential and non-residential buildings.    The software tool is designed to facilitate the evaluation of all kinds of energy saving effects produced by a variety of ICT-based solutions, including behavioural changes due to installed ICT solutions and improved public awareness through ICT-based services.    The eeMeasure software contains a Public Area and a [Restricted Area](http://82.165.143.35:8080/eemeasure/projectManager/index).    The Public Area contains:     * [Published Results:](http://82.165.143.35:8080/eemeasure/generalUser/search) energy savings data and project information; * [Methodologies:](http://82.165.143.35:8080/eemeasure/generalUser/methodology) An overview of the measurement and verification methodologies with links to the latest documents; * [ICT PSP Information:](http://82.165.143.35:8080/eemeasure/generalUser/public_area) introduction to ICT PSP and projects.     The Restricted Area is used by ICT PSP project teams to upload and model project data, then calculate and publish results that can ultimately be accessed in the Public Area.    The European Commission co-funds pilot projects in the energy efficiency domain under the Information and Communications Technology Policy Support Programme (ICT PSP). Further information about the ICT PSP, which is one of the three specific programmes of the Competitiveness and Innovation framework Programme (CIP), can be found at [www.ec.europa.eu/information\_society/activities/ict\_psp/index\_en.htm](http://www.ec.europa.eu/information_society/activities/ict_psp/index_en.htm).    The aim of ICT PSP projects is to demonstrate the energy efficiency benefits ICT can bring to building owners and their inhabitants. ICT PSP projects currently include approximately 10,000 social dwellings and 30 public buildings (hospitals, schools, etc.)   Tool website URL(s):  <http://www.empirica.biz/projects/energy/details/?projectid=211>  <http://82.165.143.35:8080/eemeasure/> | |
| Public awareness rasing and participation (2015) ([source](http://www.buildup.eu/en/learn/tools/social-electricity)) | **Social Electricity** is an online, social application for managing your electrical consumption, collaborate with other citizens from the same country or all around Europe, compare consumptions to perceive the user's footprint, see statistics, play games relating to energy and minimise expense in energy consumption.    The application targeted initially only the citizens of Cyprus, with the support from the Electricity Authority of Cyprus. After three years of operation in Cyprus and more than 2,000 users, now it supports citizens from all around Europe.      **Features-Services**    *Comparisons*  Comparisons can be performed among Facebook friends, citizens living at the same street or town/village, citizens from the same city/country, or users sharing similar house characteristics (e.g. house size and type, heating/cooling method etc.). Users can also compare their consumption with the average one of their local street. Temporal comparative feedback on energy consumption is supported too, regarding previous months and for the same month in previous years. Users may also compare with other users’ temporal patterns.    *Rankings*  Rankings are offered indicating the least and most energy-efficient citizens among various user groups. Rankings are also derived for streets and villages near the user's location, motivating people to take actions to help the local community achieve a better ranking.      Both features are presented by means of easy-to-understand graphs, with consumption and price figures. Moreover, users can add their personal electrical appliances and declare how they use them, and then view detailed breakdowns of their overall monthly consumption.    Besides the main features, Social Electricity provides useful energy-saving tips about best energy-saving practices. Other features include simple goal setting for future savings, competitions for savings among different groups of users, learning material about general green practices, online educational social games related to energy, statistics about the areas, villages and towns with the highest/lowest energy consumption around the country and the option to associate electricity with actual costs, allowing users to have a more meaningful view of their energy profile.    During the last six months, Social Electricity has been re-designed, during the implementation activities of the[SEOP EU research project](http://www.seop-project.eu/)taking into account people’s feedback and suggestions towards better management of their electrical energy consumption through a social, collaborative online environment.    Social Electricity has been awarded the first prize for the most innovative green International Telecommunication Union (ICT) application at the 2nd Green ICT Application Challenge.      For further information, please visit the [Social Electricity website](http://www.social-electricity.com/).   Tool website URL(s):  <http://www.social-electricity.com/> | |
| Energy analysis platform for energy efficient urban environments (2015) ([source](http://www.buildup.eu/en/learn/tools/eecities-energy-analysis-platform-urban-environmentenergy-efficient-cities)) | **EECITIES** is an energy analysis platform that supports planners, energy consultants, and policy makers in making informed decisions on how to improve the energy efficiency of urban areas as well as how to reach carbon emission reduction targets in buildings, cities and regions.  The services are based on the integration of dispersed energy-related data from multiple sources, including geographic information, cadastre, economic indicators and consumption. The integrated data is analysed using assessment and simulation tools which are specifically adapted to the needs of each case.  Support is available for the necessary training to analyse and explore an accurate urban energy model of your neighbourhood, town, city or region. Alternatively, studies can be carried out by our experts according to the criteria you specify.    The **EECITIES** services include:   * assessment of current energy performance of buildings in towns and cities; * identification of priority areas and buildings for energy efficiency interventions; * evaluation of impact for proposed new buildings on an urban level; * evaluation of impact for refurbishment of buildings on an urban level; * evaluation of impact of local policies and interventions according to the rules of the Sustainable Energy Action Plans (SEAP); * generation of missing data to enable classification of buildings according to their energy performance     Tool website URL(s):  [http://www.eecities.com](http://www.eecities.com/) | |
| Scenario building tool on energy renovations (2014) ([source](http://www.buildup.eu/en/learn/tools/entranze-online-scenario-tool)) | This tool performs calculated assumptions about the future deployment of nZEB and RES-H/C in the EU building stock while also assessing the corresponding costs, expenditures and benefits. The overall objective of the scenario development was to analyse the effects of different policies on realities on the ground. The impacts of different policy instruments on the diffusion process and the building related energy demand is taken into account as well as economic, technical, non-technical and institutional barriers and rebound-effects. The scenarios were developed until the year 2030 with a particular focus on the year 2020, according to the targets set by the EPBD and RED.  The national policy scenarios were defined according to the specific needs, ideas and suggestions of the policy makers and stakeholders included in the national discussion processes that took place at every key stage of the project in the target countries.  The scenario calculation was done by a coupling of the well-established models POLES and INVERT/EE-Lab. Thus, POLES delivered the projection of key input data concerning the overall energy system like end-user energy prices and of the power mix, so as to derive the average primary energy and emission factors of power generation in each country (respectively, toe/kWh and CO2/kWh). Invert/EE-Lab was used to derive scenarios for the heating, hot water cooling and lighting energy demand scenarios.  Tool website URL(s):  <http://www.entranze.eu/tools/scenario-results> | |
| Reference framework for sustainable cities (online community and tool for cities) (2014) ([source](http://www.buildup.eu/en/learn/tools/reference-framework-european-sustainable-cities-rfsc)) | The Reference Framework for European Sustainable Cities (RFSC) is an online toolkit launched at the initiative of EU Member States, the European Commission and European organisations of local governments to help cities promote and enhance their work on integrated sustainable urban development. A joint initiative of the Member States, the European Commission and European organizations of local governments, the RFSC gives a common space and language to the community of cities that are interested in learning from each other, while respecting the diversity of local priorities.  RFSC City status is recommended for cities that want to:   * mainstream sustainability principles within their administration, * improve the sustainability focus of local policies, * benefit from dedicated training support and peer learning opportunities, * be part of the European community of active cities, * showcase their commitment to sustainable development.   The tool is available to all European cities and municipalities free of charge to all European local authorities and offers practical support in integrating sustainability principles into local policies and actions. Online registration is accompanied with a Letter of Commitment.  Tool website URL(s):  [http://www.rfsc-community.eu](http://www.rfsc-community.eu/) | |
| Training and decision support software | The goal for EcoAdvisor is to develop a series of training and decision-support modules to provide guidance on achieving sustainable buildings. The modules will cover all building systems, all phases of a building&#39;s life cycle, and key differences in types of building use.</p><p>The specified areas covered in the tool are:</p><ul><li>Daylighting</li><li>Lighting</li><li>Natural Ventilation</li><li>HVAC</li><li>Integrated Building Design</li></ul>   * Tool website URL(s):   <http://www.ecoadvisor.com/> | |
| business models regarding local energy production – Austria ([source](http://www.energy-innovation-austria.at/wp-content/uploads/2016/10/eia_04_16_E_fin.pdf)) | Smart Services Business models for resource-optimated urban energy systems To realize pioneering technologies and solutions for the Smart City, novel service approaches and business models, so-called “Smart Services“, must be developed and tested. A project headed by e7 Energie Markt Analyse GmbH and carried out in collaboration with Energy Center Wien (tinavienna), SIR (Salzburger Institut für Raumordnung und Wohnen) and the Institute of Urbanism at Graz University of Technology is concerned with the implications of the Smart City approach for providing and using energy within delimitable urban districts. The project team develops practical business models for supplying heat from renewable sources of energy to built-up areas as efficiently as possible. To the experts Smart Services are service packages that make it possible to integrate the demand for and supply of energy in a comprehensive strategy for the settlement or urban district in question. Sample applications In the course of the project Smart Services will be configured for specific applications in three Austrian urban development areas, and their practicability checked in a comprehensive stakeholder process. For a new neighbourhood with a total of 6,000 flats in Wien Donaufeld one option would be a low-temperature district heating grid with heat pumps and downhole heat exchangers, which could supply the entire settlement with energy from renewable sources. The strategy has been reviewed by experts from e7 from the technical and economic point of view and found to be feasible. As part of the project a funding scheme has been drafted: for this project a mix of project funding, crowd funding and contributions from property developers appears to be suitable. In the urban development area of Graz Reininghaus the waste heat and cold from nearby industrial enterprises (Marienhütte, Stamag and Erber Brunnen) is to be utilized. In addition PV modules could be installed on roof and façade surfaces to supply electricity for the heat pumps and the facilities in general. As the investor here has an operating company, an all-in-one business model might be a good choice. In the case of the 200-flat Sonnengarten Limberg housing complex in Zell am See, using electricity straight from PV modules is to be reviewed. The investigation will cover several ways of consuming the power from a 900 m2 PV facility (140 kWp) on the spot, if possible without buffer storage. Here the system for supplying heat is to be put out to tender, for a contractor to handle. | |
| Legal barriers for business models regarding local energy production – Austria ([source](http://www.energy-innovation-austria.at/wp-content/uploads/2016/10/eia_04_16_E_fin.pdf)) | Strombiz Business models for generating and distributing electricity locally Up to now electricity generated locally with PV has either been consumed by the owner of the property himself or fed into the public power grid. No suitable business models exist for supplying tenants in flats, flat owners or commercial consumers in large buildings directly or distributing the power generated locally to nearby properties via microgrids. The technical, economic and legal feasibility of such business models has been thoroughly investigated in a survey conducted by IIBW (Institut für Immobilien, Bauen und Wohnen GmbH) in collaboration with experts in science, law and the energy and construction industries. On the basis of specific applications a total of seven models have been developed, tested and documented. Today it is already possible to use electricity generated locally from renewables for the shared facilities in a large housing complex; however, there are legal barriers to supplying individual flats directly. Technical and economic feasibility Even today systems of this kind are technically feasible. On the economic front it has been shown that, with the cost of components continually sinking, payoff periods shorter than 15 years are realistic – even without subsidized feed-in tariffs. Relatively large PV facilities (from about 25 kWp) can achieve payoff periods shorter than 10 years. Legal reform The main obstacles to implementing these business models are in the legal fields concerned with energy, housing tenure and consumer rights. In the course of the survey the manifold legal constraints were analysed and recommendations drawn up. The Austrian statute governing the power supply industry (ElWOG) has to be be reformed, so that the potential of using PV electricity locally can be exploited in future. With communal facilities the promoter will become the power supplier in many cases, which in turn generates new legal issues. And there are other regulations in energy law (such as free choice of supplier, compulsory separate meter per flat, etc.) which make implementation more difficult. Potential Some models, such as tenants of individual flats renting small PV facilities, or flat-rate leasing contracts (for student hostels or nursing homes), can be implemented in line with current law even today. With minor amendments to energy law it would be possible to transfer PV yields to households on a strict accounting basis; within a customer complex the grid operator would assign the yields from a communal PV facility to individual households for accounting purposes. The experts see considerable potential both in existing non-commercial housing and in future construction. Once suitable business models for this sector are available, they can be expected to come on the market very soon. | |
| Approach to planning (Austria) ([source](http://www.energy-innovation-austria.at/wp-content/uploads/2016/10/eia_04_16_E_fin.pdf)) | In 2012 a Master Plan for 2025 with which to achieve these aims was developed in collaboration with stakeholders; it contains numerous detailed projects. An interdisciplinary, multi-technology approach is employed, linking up the fields of buildings (new construction and renovation), energy production and distribution, transport, the planning of open spaces, social aspects and involving the general public to arrive at a comprehensive strategy. The development process is supervised by SIR (Salzburger Institut für Raumordnung und Wohnen). In 2013, as part of a building structure analysis, urban districts and clusters of buildings suitable for large-scale renovation were identified. | |
| Smart energy strategies – key messages ([source](http://www.energy-innovation-austria.at/wp-content/uploads/2016/05/eia_02_16_E_fin.pdf)) | Key messages from the strategy finding process Smart Grids 2.0  Decentralizing and participation need an interactive power system – smart grids must provide an arena for citizen involvement  Smart energy strategies make sense for the economy as a whole – provided that costs and benefits are assigned in the right way  Flexibility options for a dynamic energy system exist – we must tap them cost-effectively  Smart services bring the smart grid to life – we must cooperate on digging up the “buried” data  Reliability of supply, resilience and data privacy have top priority – they must be integral design parameters for smart grids | |
|  | <http://www.buildup.eu/en/node/52320> might be useful | |
| “Smartness indicator” for buildings ([source](http://www.buildup.eu/en/learn/ask-the-experts/what-can-be-said-about-smartness-indicator-0?gid=50721)) | As part of the [proposals released by the European Commission](http://www.buildup.eu/en/practices/publications/european-commission-proposal-revised-energy-performance-buildings-directive-0) on November 30 2016, the introduction of a ‘smartness indicator’ is foreseen.    With respect to the features of this smartness indicator, the following description is provided:    A smartness indicator will reflect the ability of buildings to:     1. adjust to the needs of the user and empower building occupants providing information on operational energy consumption (complementing the energy performance information provided in the EPCs); 2. ensure efficient and comfortable building operation, signal when systems need maintenance or repair; and 3. readiness of the building to participate in demand response, charge electric vehicles and host energy storage systems.   The European Commission has launched a call for tender ([ENER/C3/2016-554](https://ec.europa.eu/energy/en/funding/funding-and-support-programmes/support-setting-smart-readiness-indicator-buildings-and)) entitled “Support for setting up a Smart Readiness Indicator for Buildings and related impact assessment”.    For further information, see also Sylvain Robert’s (European Commission DG energy) presentation on “[Smart buildings in the context of the EPBD](https://www.youtube.com/watch?v=VdPNAc4LBeg&t=20s&index=4&list=PLIz1NUdQ7uNx8y05SImbqh50e5RhOIQCp)” at the “[Smart Buildings for a greener Europe: Emerging Policy and Practice](http://www.buildup.eu/en/events/smart-buildings-greener-europe-emerging-policy-and-practice)” livestreamed workshop held in Malta on February 14, 2017 | |
| Automated Smart home technology importance of feedback for residential users ([source](http://www.buildup.eu/en/news/smart-buildings-energy-efficiency-what-price-1?gid=50721)) | While the increased scale of energy consumption in non-residential buildings means there is greater scope for savings, the potential for reducing energy through smart home technology is less clear-cut.    Several studies have shown that consumers are largely ignorant of their domestic energy consumption, says Dario Bonino, researcher at Institute Mario Boella (ISMB), Italy. In this context, a review carried out by the Oxford University's centre for the study of environmental change, outlines “the importance of feedback [mostly via display monitors] in making energy more visible and more amenable to understanding and control”.    Home automation systems increase awareness of how energy is used in the home and can lead to a reduction in consumption. However, installing a full automation system could be prohibitive for many consumers, making smart solutions less attractive.    “It is heavily dependent on the place where you are applying the technology,” says Bonino. “For example in southern Europe, in countries like Italy, Spain, probably there is actually not much gain that you can achieve for high energy saving. Because, for example, at the residential level, the consumption level [for heating] is so low that when you get to the numbers and see how much you can save, you will probably spend more on the home automation system than what you could save in a lifetime.”    Another important issue is the user interface, and the requirement that it should be accessible to the layperson, and also efficient. “Most of the current home automation systems are more or less assuming that everything should be controlled through a smartphone or something similar, which might not be the most efficient solution in many cases,” says Bonino.    “There are well-known interaction paradigms that are hard to replace with smartphone-mediated interaction. Think for example to the light switch, is it really more efficient to have to grab your phone, open a dedicated app and touch a button to switch-on a light? Probably other interactions, e.g., gesture or automatic operation depending on habits and context could be better.”    Automating systems in residential homes can provide other challenges, such as integrating devices produced by different manufacturers. Consumers who purchase a variety of different smart devices produced by a range of developers will likely face problems when they try to get these solutions to work together, or to respond to a single unified command system, says Bonino. Meanwhile, other challenges include guarding against security risks in the form of malicious hackers attempting to gain access to the system.    Sabate argues that these problems are all reduced when applying an integrated home automation system, rather than a series of so-called smart devices with Internet of Things (IoT) functionality (the capacity to connect to cloud services on the internet and report usage, receive instruction from these services).    However, the IoT market is growing dramatically, 3.3 billion devices are expected to be in use by 2018, so questions of integration look set to remain important in the coming years. | |
| Financing | Energy Cities says that, although many cities and regions have engaged into the energy transition, financing sustainable energy measures remains a great challenge. Some project investment costs are high, and covering them by using only municipal budget and traditional financing mechanisms is difficult.    Local and regional authorities have to be resourceful and open-minded to invent and test new financing mechanisms, business models, organisational structures and partnerships to make their sustainable energy projects happen. This requires strong technical, financial, legal and coordination skills and expertise in local authorities.    The new guidebooks present solutions based on the comprehensive analysis of Stuttgart innovative financing schemes and 6 other Energy Cities members’ replication experiences within the Infinite solutions project. | |
| Financing the energy renovation of public buildings through Internal Contracting | |
| Financing the energy renovation of residential buildings - Infinite Solutions Guidebook | |
| Importance of holistic governance programmes  ([source](file:///C:\Users\eszterj\Downloads\UrbanEfficiencyII_FINAL_HI_RES%20%25281%2529.pdf)) | Governance instruments to advance energy efficiency and retrofitting  The surveyed programmes provided much insight into the array of basic governance instruments used by city officials as they work to advance operational energy efficiency and retrofitting in the existing, private sector building stock. As shown in Table 4, what we have termed a single city “programme” is in fact a package or mix of various governance instruments. By integrating multiple governance measures into single programmes, and also by cross-linking multiple programmes, city policymakers are able to mandate or encourage multiple forms of action or engagement from building owners and tenants. For example, as shown in the case of Tokyo, instead of just measuring and submitting energy consumption and GHG emissions data, reporting facilities and enterprises are also encouraged to display performance ratings based on benchmarks. In addition, the Carbon Reduction Reporting Program also provides various forms of capacity raising to improve access to finance and acquire industry relevant best practices for energy reduction measures. In this way, with each city programme consisting of various instruments, the multiple components complement each other by carrying out interrelated yet subtly unique functions. The net impact of this is a situation where the totality of the mix of governance measures can prove “greater than the sum of the parts” ([Van der Heijden, 2016](http://www.tandfonline.com/doi/pdf/10.1080/09613218.2016.1159394?needAccess=true)). | |
| Incentives ([source](file:///C:\Users\eszterj\Downloads\UrbanEfficiencyII_FINAL_HI_RES%20%25281%2529.pdf)) | Given that all programmes are either completely or partially voluntary in nature and that success depends on successful engagement of the targeted building sector, cities developed an interesting array of incentives to entice participation. Some of the most noteworthy are showcased in Table 7.  Type of incentive Notable case examples  Financial or economic  • Mexico City: Payroll and property tax reductions increasing with higher levels of certification. Pa rticipating buildings also gain access to a special retrofitting loan support scheme . • Seoul: Attractive loan conditions such as low-interest rates, grace-periods for commercial customers and long payback periods. In addition, insulated windows and entrances provided through suppliers at discount rates. • Shenzhen: Allocation of subsidies per m 2 of retrofitted floor space. Provision of loan support for retrofitting and nurturing new business ventures . • Tokyo: Buildings participating in programme gain eligibility for retrofitting subsidies, tax credits and loan support schemes.  Marketing tools  • Tokyo: Provision of low-carbon industry benchmarks, broken into more than 30 business categories and carbon report cards. When combined with carbon report cards, these provide owners with new information and tools to market the property and potentially pursue green premiums  Knowledge and capacity building  • Chicago: Organisation of networking events and engineer roundtables, peer-to-peer learning through sharing best practices, and consultations with technical experts . • Tokyo: Organisation of industry seminars for showcasing building sector emissions trends and best practice reduction measures.  Awards and public recognition  • London: Recognition by Mayor of London through awards ceremony . • Chicago: Recognition of participants on official website and newspaper advertisements. • Tokyo: Official programme participation plaques for display in building lobbies. High performing buildings awarded a certification and featured on official website. | |
| Innovative success factors ([source](file:///C:\Users\eszterj\Downloads\UrbanEfficiencyII_FINAL_HI_RES%20%25281%2529.pdf)) | Case studies revealed an array of strategies to increase the effectiveness and appeal of city programmes. Notable examples are compiled into Table 11. We found that these factors were often related to programme design features, as generic policy instruments (e.g. carbon reporting or building certification schemes) are appropriated from elsewhere and then tailored to local conditions and contexts. This fine-tuning and modification of generic policy instruments is an important driver of policy innovation and trailblazing in the C40 PBE network (Trencher, 2016). Newly added design features become a powerful driver of programme outcomes, also creating attractive incentives to entice building industry participation. We also highlight how collaboration with external experts was underlined as a major success factor by programmes. For example, production of the master plan for the International Low Carbon City in Shenzhen involved extensive collaboration between city officials and Dutch and local urban planning experts (see De Jong, Wang et al. 2013; De Jong, Yu et al. 2013). There was also strong evidence of collaboration in other city programmes during both design and implementation. Chicago’s programme is co-implemented by a team of experts from organisations such as C40, National Resources Defence Council and Environmental Defence Fund. Tokyo’s programme collaborates tightly with industry organisations to recruit new participants, compile and then diffuse knowledge on best energy saving practices through manuals and seminars. | |
| Challenges and counter-measures ([source](file:///C:\Users\eszterj\Downloads\UrbanEfficiencyII_FINAL_HI_RES%20%25281%2529.pdf)) |  | |
| Assessment of readiness for smart systems ([source](http://www.buildup.eu/en/practices/publications/analysis-europe-ready-smart-buildings-revolution-0?gid=50721)) | **An analysis by the Buildings Performance Institute Europe (BPIE) on the readiness of EU countries to transition to smart buildings concludes that no Member State is fully prepared to take advantage of the benefits that smart building technologies will entail. BPIE assesses aspects such as dynamic operability, energy-system responsiveness, renewable energy uptake as well as dynamic and self-learning control systems to judge how well prepared Europe is for an increasing share of smart buildings.**    **Smart buildings are flexibly connected and interacting with the energy system, being able to produce, store and/or consume energy efficiently.**    The leading countries in terms of a smart-readiness, Sweden, Finland, Denmark and the Netherlands, have implemented enabling policies. But most countries show little progress in opening the market to demand response or in encouraging the penetration of energy storage capacity in buildings. The report presents a series of progressive policies and innovative frontrunner projects which prove the economic viability of smart buildings.    The analysis finds that “smart infrastructure” is not yet in place. Only three countries, Sweden, Finland and Italy, have completed their deployment of smart meters, with nearly all consumers equipped with smart meters. Several countries have started their deployment, but progress is slow. EU legislation could play a more effective role to encourage the roll-out of ‘smart infrastructure’ by enabling an electricity market with flexible pricing, empowering consumers, and increasing renewable energy production, self-consumption and storage. The technological development will enable buildings to play a pro-active role in the energy system, providing also benefits for the occupants. But first and foremost, buildings have to be energy efficient as a prerequisite for a smart building stock. | |
| Challenges and barriers for utilizing residential building performance data  ([source](http://www.imt.org/uploads/resources/files/IMT_CatalyzingEfficiency_2016.pdf)) | According to the report, energy and water efficiency opportunities will remain unrealised, until multifamily stakeholders work together to use and value building performance data effectively in consistent, transparent formats. Challenges addressed include: data access issues that prevent multifamily owners and managers from gathering adequate data; market confusion over how benchmarking data can be deployed to spur and track efficiency investments; barriers preventing residents from factoring performance into their apartment decision-making process; and the fact that most lenders and investors do not yet factor building performance data into their standard business practices. | |
| Quality of implementation (building level) ([source](http://qualicheck-platform.eu/wp-content/uploads/2016/03/QUALICHeCK-source-book-Quality-of-Works-DRAFT.pdf)) | Quality assurance and tracing on building works. Importance for energy savings. (relevance?) | |
| EnerGAware (Energy awareness game for social housing tenants) ([source](http://www.buildup.eu/en/explore/links/energy-game-awareness-energy-efficiency-social-housing-communities-energaware-projec-0?gid=50721)) | The main objective of the EnerGAware project is to decrease energy consumption and emissions in an affordable housing pilot and increase the affordable housing tenants’ understanding and engagement in energy efficiency. The project will develop and test, in 100 affordable homes, a serious game called "Energy Cat: the House of Tomorrow” that will be linked to the actual energy consumption (smart meter data) of the game user’s home and embedded in social media and networking tools.    The EnerGAware solution will provide an innovative IT ecosystem in which users can play to learn about the potential energy savings from installing energy-efficiency measures and changing user behaviour. The user will need to learn to balance the energy consumption, comfort and financial cost of their actions. Energy savings achieved both virtually in the game, calculated by building performance simulation, and in reality, in the users’ actual homes, measured through smart meter data, will enable progression in the serious game.    The social media features will provide users a platform to share data of their achievements, compete with each other, give energy advice, as well as, join together to form virtual energy communities.    The EnerGAware solution will be developed and deployed with the ‘cleanweb’ philosophy in mind: “Capital light, Quick to market and Quick to scale”, therefore the project will aim to go beyond just testing in an affordable housing pilot, but will seek commercial exploitation of the solution at the end of the project, through our industrial partners, in particular EDF Energy, a global energy provider, with 38 million European energy customers.    Expected impacts delivered by the EnerGAware project are:       Systemic energy consumption and production and emissions reduction   * Accelerate wide deployment of innovative ICT solutions for energy efficiency * Greater consumer understanding and engagement in energy efficiency * Reduction in fuel poverty/percentage of household income spent on energy bills * Increase of the IT-literacy of affordable housing tenants * Increase of the empowerment and e-inclusion of affordable housing tenants | |
| Energy performance eval sofrtware (N/A!!) ([source](http://www.buildup.eu/en/practices/publications/cypriot-methodology-and-software-calculating-energy-performance-buildings?gid=6162)) | The programme for the evaluation of energy performance of buildings, and for issuing an energy performance certificate for existing buildings or a temporary energy performance certificate for designed buildings (new and reconstructed). The software runs on Microsoft Excel sheets and is available free of charge on the Ministry of Economics’ website. The programme use is limited - it can do the calculations for most existing buildings with no more than three heating zones, but it does not detail what is required for low-energy buildings or buildings needing complex solutions. (N/A!!) | |
| Energy performance assessmment methodology and sofrtware (in greek!!) ([source](http://www.buildup.eu/en/practices/publications/cypriot-methodology-and-software-calculating-energy-performance-buildings?gid=6162)) | The document "[Methodology for Assessing the Energy Performance of Buildings](http://www.mcit.gov.cy/mcit/mcit.nsf/All/E074577C58AD9EFCC22575B60047BEA8/$file/Methodology%20for%20Assesing%20the%20Energy%20Performance%20of%20Buildings.pdf.pdf)" describes the methodology for calculating the energy performance of buildings in Cyprus. The methodology and all related guidelines, examples and software tools necessary for the calculations are available on the national website [here](http://www.mcit.gov.cy/mcit/mcit.nsf/All/E074577C58AD9EFCC22575B60047BEA8?OpenDocument), both in Greek and in English language. | |
| ECOFFICES challenge (ICT enabled competition) ([source](http://www.buildup.eu/en/practices/publications/improving-energy-awareness-and-use-office-buildings-ict-enabled-ecoffices?gid=6162))  ([publication](http://www.buildup.eu/sites/default/files/content/icccbe2012_zarli_paper_formatted%20%28FINAL%29.pdf)) | It is now fully acknowledged that one of the priorities to deal with energetic and environmental challenges and to reach an important decrease on energy consumption is to improve energy management in the building (residential and service) sector. To reduce energy consumption in the built environment, and besides for optimizing the building envelope and improving the overall management of building equipments and systems, the building energy consumption by users and the impact of use and occupancy are critical aspects. This article focuses on approaches to make people aware of the importance of saving energy, and introduces to the “EcOffices” energy challenge, a competition for saving energy in office buildings by change of behavior, based on a comprehensive use of ICT and including an advanced usage analysis on the acquisition of eco-friendly behaviors generated by this type of challenge | |
| EnPROVE (2011 project) (website N/A) ([source](http://www.buildup.eu/en/explore/links/enprove?gid=6162)) | EnPROVE is a European project with the objective of developing a software model for predicting the energy consumption of buildings, with different scenarios, implementing energy - efficient technologies and control solutions, based on actual measured performance and usage data.  EnPROVE is financially supported by the European Commission under the 7FP  [http://www.enprove.eu](http://www.enprove.eu/) | |
| CityCALC (Via Build UP, BauZ! congress) ([source](https://nachhaltigwirtschaften.at/en/sdz/projects/citycalc-calculation-tool-for-energy-efficiency-in-urban-planning.php)) | **CityCalc - Calculation Tool for Energy-Efficiency in Urban Planning**  **To assess the energy performance of urban planning projects in early design stages with low input and evaluation effort within the project CityCalc, an easily applicable planning and evaluation tool will be developed.**  **Short Description**  **Status**  ongoing  **Summary**  **Starting point / motivation**  As current energy planning and assessment tools for early design stages (urban planning, architectural competitions) are focusing on individual buildings, the interactions of buildings such as mutual shading and shadowing due to the surrounding objects are not taken into account. Although a great variety of tools for solar design are available, most of them are not suitable for architects and early design stages.  In future it will be of increasing importance to quantify the passive and active solar gains in order to fulfill ambitious legal and funding requirements and to implement future-oriented building concepts (eg passive house , zero energy, zero carbon or plus energy standard).  **Contents and goals**  Within the research project CityCalc, an easily applicable energy planning and assessment tool for urban planning projects in early design stages and for analysis of the existing building stock will be developed. CityCalc focuses exclusively on energy efficiency - the reduction of energy demand - with the best possible use of site-specific energy sources (gains from solar thermal and photovoltaic plants, wind energy, combined heat and power). In order to ensure a simple, user- friendly application for architects, a three-dimensional geometry and data acquisition and an interface to energy calculation software will be developed.  **Methods**  The assessment is based on the established algorithm of the Austrian energy certificate, following OIB directive Nr. 6 (OIB, 2011). The practical implementation is done with the calculation algorithm of the widely-used calculation software ArchiPhysik (ArchiPHYSIK, 2013), whose developer A-NULL Bauphysik GmbH is partner of the project.  **Expected results**  The developed planning and assessment tool is a prototype that will be tested and validated in selected planning competitions and projects within the research project.  After completion of the project a commercial use by third parties is intended together with accompanying support. Guidance documents (FAQs, manual, etc.) will be provided to ensure an easy application.  To avoid huge storage space and time consuming installation, CityCalc will be offered as online solution. This approach ensures a smooth integration in architectural competitions having a lot of participants. | |
| CityInfo (Via Build Up, BauZ! Congress) (Finland)  ([source](http://info.mapgets.com/en/for-cities/cityinfo/)) | cityinfo_infograafi_eng     * CityInfo is a browser-based 3D application for urban planning, intended to facilitate project work and the distribution of information within municipalities. * CityInfo helps to visualise the city view. * The application is based on a 3D MAPGETS platform, onto which cities can import their own data, such as city plans, construction project documents, services, BIM and infra models and other location based information. * The data in CityInfo is updated in real time. * CityInfo can be used to inform residents of decisions made by the city. It is also suited for the distribution of information within closed work groups, such as project teams. * Through the timeline function, citizens can participate in the development of their neighbourhood. The timeline also illustrates the city’s development plans. * CityInfo is compatible with all sources of information that can be accessed through an interface. These sources can be either open or closed systems. * Data can also be retrieved from external sources. * The annual licence fee for publishing city data is 5000 – 15 000 (VAT 0%) depending on the number of services included. * [RakSite application](http://info.mapgets.com/en/industrialsector/raksite/) is designed for the purposes of industrial operations and management. It uses open interfaces of CityInfo, too.   [CONTACT US](http://info.mapgets.com/contact-us) | |
| PEAKapp, personal energy administration ([source](http://www.buildup.eu/en/explore/links/peakapp-project-0?gid=6162)) | [[http://www.buildup.eu/sites/default/files/styles/page_main/public/illustrations/puzzle-hoch.png?itok=OvVZEM7u](http://www.buildup.eu/sites/default/files/illustrations/puzzle-hoch.png)](http://www.buildup.eu/sites/default/files/illustrations/puzzle-hoch.png)  [http://www.peakapp.eu/](http://www.buildup.eu/sites/default/files/illustrations/puzzle-hoch.png)  **Personal Energy Administration Kiosk application: an ICT-ecosystem for Energy Savings through Behavioural Change, Flexible Tariffs and Fun**      *The PEAKapp, a Horizon 2020 project, targets the development of an unprecedented ICT-to- Human ecosystem to trigger lasting energy savings through behavioural change and continuous engagement, to enable increased consumption of clean and low-priced electricity from the spot market for household customers, to connect them to social networks, to motivate them through serious gaming, and to boost the efficacy of Smart Home building energy management systems by integrating their functionalities into the PEAK app solution.*      The PEAKapp consortium will develop an innovative and new ICT-to-Human ecosystem 2.0 (application), which consists of six components. This app will enable energy retailers to forward low-price, green, low-carbon energy from the spot market to households. By using the PEAKapp, they will learn how to adapt their energy consumption behaviour and how to actively participate in the electricity market to benefit from monetary savings.    PEAKapp objectives are to empower the end-user, to create a competitive advantage for the provider, to research and facilitate behavioural change, and to remove barriers for market uptake.    More specifically, PEAKapp aims at:     * Triggering lasting energy savings through behavioural change * Enabling increased consumption of clean and low-priced electricity from the spot market to household customers * Connecting customers to social networks * Motivating them through serious gaming * Boosting the efficacy of Smart Home building energy management systems by integrating their functionalities into the PEAKapp solution | |
| PROJECT, MOBISTYLE ([source](http://www.buildup.eu/en/explore/links/mobistyle-project-1?gid=6162)) | **MOBISTYLE - Motivating end-users behavioral change by combined ICT based tools and modular information services on energy use, indoor environment, health and lifestyle.**    MOBISTYLE in one sentence:  The overall aim of MOBISTYLE is to raise consumer awareness and motivate behavioral change towards energy efficient building usage by providing attractive personalized combined knowledge services on energy use, indoor environment, health and lifestyle, by ICT-based solutions.  **Project objectives:**      To offer the user information on their energy usage, health and the generated indoor environmental quality. To complement the existing energy monitoring system with body monitoring by several low-cost non-intrusive wearables and indoor environment evaluation by installing state-of-the-art smart sensors.      To transform measured data into understandable information for identified user profiles raising awareness on energy use, health and indoor environment.      To develop easy to use ICT-based tools which will make energy monitoring a well-accepted and attractive ‘daily activity’ (routine).      To motivate behavioral change of end users by combined modular information on energy use, health and lifestyle. Gamification will be introduced as a solution that will encourage occupants to be better in comparison to the other users (mutual-control) and in relation to past achievements (self-control).      To deploy and validate the developed solutions for 5 demonstration cases featuring different building and end user types: patients in a rehabilitation clinic, residents in social housing, students and staff in university buildings, residents living in a smart city and guests staying in a hotel.       To foster new business models and applications.  MOBISTYLE has the following specific measurable qualitative objectives:     1. To present understandable information and indicators, related to energy use and energy efficiency, in an easy to handle and attractive way for consumers. 2. To provide understandable personalised information for consumers by combining energy monitoring with monitoring of indoor environmental quality, behavior parameters and daily habits 3. To motivate a prolonged change of consumers’ habits and daily practices on energy use by combined modular personalised information on individual energy use, health and lifestyle 4. To foster new business models and applications for future developer engagements 5. To demonstrate a sustainable behavioral change towards significant reduction of energy use in different real environments by deploying and validating the developed solutions and services.     **MOBISTYLE solutions:**  Tailor made tools, user-friendly and cost-effective applications and information services will be developed for the different end user groups where the end user will have self-control on which information he/she wants to obtain, how long and during what time and which type of data will be offered.  **The pilots:**    The practical usability of the developed products and services will be demonstrated on 5 study cases in different geo-clusters:        Denmark, Aalborg - Residential area Kildeparken     Slovenia, Ljubljana - Buildings of University of Ljubljana     Italy, Turin - Hotel LÓrologio     The Netherlands, Maastricht - Health care centre Mosae Vita     Poland, Wroclaw - Smart city Wroclaw    **More information about about MOBISTYLE below:**  WEBSITE: <http://www.mobistyle-project.eu/en/mobistyle/Pages/default.aspx>  TWITTER:  <https://twitter.com/MOBISTYLE_EU>  Contact the MOBISTYLE team today: [info@mobistyle-project.eu](mailto:info@mobistyle-project.eu)    Project duration: From 01-10-2016 to to 31-03-2020.  This project has received funding from the European Union’s Horizon 2020 framework programme for research and innovation under grant agreement no 723032. | |
| SEAF IT Platform, investment tool ([source](http://www.buildup.eu/en/news/seaf-technology-platform-beta-launch-milan?gid=6162))  ([website](http://www.equadcapital.com/)) | **SEAF technology platform beta launch at 3/8 Milan event.**    Financial firm Joule Assets Europe sees a promising future in Italy as it sets to launch investment tool, representing €1.2 billion worth of potential investment, in the Italian energy efficiency market.  The**Sustainable Energy Asset Framework** (SEAF) will launch the beta version of SEAF IT Platform on March 8th. The launch will be formally announced at the SEAF Investor Forum, an event for ESCOs and investors that will take place at the Palazzo Giureconsulti in Milan, Italy.    About the platform  A first of its kind offering, the SEAF IT Platform aims to boost energy efficiency project uptake across Europe by providing access to investment by streamlining the due diligence process and introducing appropriate investors to proposed efficiency projects.    Jessica Stromback, Chairman of Joule Assets Europe said, ‘The SEAF team have made a decision to focus on the Italian market due to the high level of professionalism within the SME ESCO community and the excellent project opportunities. We are excited to use international experience to empower our local partners.’    The platform combines third-party financial analytics provided by Joule Assets Europe, ICP (Investor Confidence Project) accreditation, and energy efficiency project performance insurance from global leader HSB Engineering Insurance. Once valued through the SEAF Platform, projects are matched directly to an appropriate finance solution from the SEAF investor network.    Positive indications  The first projects to be valued through SEAF in its earliest stages of development successfully resulted in quick investment.  With an investor network representing €1.2 billion in ready capital, the platform holds massive potential for facilitating the completion of efficiency projects pan-Europe.    Panama Bartholomy, Director of ICP Europe, says, 'The SEAF IT Platform is an indispensable tool for contractors who are looking to transform their energy efficiency projects into bankable investments. ICP Europe is excited to partner with SEAF, as the SEAF platform will enable projects to achieve ICP Certification, a recognized standard for the project underwriting process.'    [**SEAF Investor Forum Milan**](http://www.buildup.eu/en/node/51403)  The event agenda includes discussions with experts and presentations about energy efficiency finance—including presentations by SUMA Capital, SI Capital, EEEF, SUSI Partners, HSB Engineering Insurance and Adaxia Capital Partners.  The SEAF Investor Forum Milan is a free event, sponsored by the European Commission under the Horizon 2020 programme. | |
| PROJECT Fissac  (source)  ([website](http://fissacproject.eu/en/)) | The FISSAC project involves stakeholders **at all levels of the construction and demolition value chain** to develop a methodology and [software platform](http://fissacproject.eu/en/fissac-software-platform/), to facilitate information exchange, that can support industrial symbiosis networks and replicate pilot schemes at local and regional levels.    The model will be based on three sustainability pillars:   * Environmental (with a life-cycle approach) * Economic * Social (taking into consideration stakeholder engagement and impact on society).     FISSAC aims to demonstrate the effectiveness of the processes, services, and products at different levels, with the ambition that the model created by the project can be replicated in other regions and other value chain scenarios.  [**Industrial symbiosis**](http://fissacproject.eu/en/what-is-industrial-symbiosis/)is a form of brokering to bring companies together in innovative collaborations, finding ways to use the waste from one as raw materials for another.  Local or wider co-operation in industrial symbiosis can reduce the need for virgin raw material and waste disposal, thereby closing the material loop – a fundamental feature of the circular economy and a driver for green growth and eco-innovative solutions. It can also reduce emissions and energy use and create new revenue streams.  The FISSAC project will be working with stakeholders to understand these aspects and build a model and supporting systems that will endeavour to overcome the challenges.    **FISSAC**stands for *Fostering Industrial Symbiosis for a Sustainable Resource Intensive Industry across the extended Construction Value Chain*.  The project is funded by the European Union's Horizon 2020 programme and runs from September 2015 until February 2020. | |
| Project FASUDIR ([via](http://www.buildup.eu/en/events/workshop-research-market-innovative-technologies-ict-solutions-energy-efficiency-0?gid=6162))  ([website](http://fasudir.eu/about-fasudir/)) | The traditional approach to the building energy efficient retrofitting brings poor results in relation to the urban sustainability, resource efficiency and economic return. Although the district retrofitting approach is frequently the most sustainable and cost-effective, the complexity of decision making grows exponentially when the intervention targets larger scale, even more when considering the fragmentation of the construction sector.  The FASUDIR project was born to develop new business models and financial supporting tools, to support the necessary building-retrofitting market mobilization in Europe to fulfill EU-targets in 2020 and 2050. The key instrument will be the [Integrated Decision Support Tool (IDST)](http://fasudir.eu/the-idst/), developed to help decision makers to select the best energy retrofitting strategy to increase the sustainability of the whole district. With [stakeholder feedback loops](http://fasudir.eu/stakeholder-outreach/) and validation in [three diverse urban areas](http://fasudir.eu/case-studies/), the IDST will ensure robustness and applicability in the entire value chain. | |
| Smart home + Smart grid connections ([incl. experiences](http://www.mdpi.com/1996-1073/9/5/348)) ([source](http://www.buildup.eu/en/explore/links/linking-smart-homes-smart-grids-current-market-and-future-trends-0?gid=6162)) | In this [freely downloadable paper published on Energies 2016](http://www.mdpi.com/1996-1073/9/5/348), the authors introduce the technical description of the systems before pointing out advantages and disadvantages of each technology and product today available on the market. The article discusses also the barriers, benefits and challenges of the technologies as well as the important role of users.    **Abstract**  In the actual era of smart homes and smart grids, advanced technological systems that allow the automation of domestic tasks are developing rapidly. There are numerous technologies and applications that can be installed in smart homes today. They enable communication between home appliances and users, and enhance home appliances’ automation, monitoring and remote control capabilities. This review article, by introducing the concept of the smart home and the advent of the smart grid, investigates technologies for smart homes. The technical descriptions of the systems are presented and point out advantages and disadvantages of each technology and product today available on the market. Barriers, challenges, benefits and future trends regarding the technologies and the role of users have also been discussed. [View Full-Text](http://www.mdpi.com/1996-1073/9/5/348/htm)  *Keywords:*[smart home](http://www.mdpi.com/search?q=smart%20home); [smart grid](http://www.mdpi.com/search?q=smart%20grid); [energy management system (EMS)](http://www.mdpi.com/search?q=energy%20management%20system%20(EMS)); [integrated wireless technology (IWT)](http://www.mdpi.com/search?q=integrated%20wireless%20technology%20(IWT));[smart home micro-computers (SHMC)](http://www.mdpi.com/search?q=smart%20home%20micro-computers%20(SHMC)); [home automation (HA)](http://www.mdpi.com/search?q=home%20automation%20(HA)) | |
| ICT Apllications for energy efficiency in social housing ([via](http://www.buildup.eu/en/explore/links/information-and-communication-technologies-ict-applications-energy-performance-social?gid=6162)) ([source](http://www.powerhouseeurope.eu/plug_in_to_power_house/ict_applications/)) | ICE-WISH - Demonstrating through Intelligent Control, Energy and Water wastage reductions In European Social Housing  **[ICE-WISH - Demonstrating through Intelligent Control, Energy and Water wastage reductions In European Social Housing](http://www.ice-wish.eu/uk/icewish.asp)**  **Project timeline:** April 2011 - March 2014 **Programme:** ICT Policy Support Programme **Website:** [**www.ice-wish.eu**](http://www.ice-wish.eu/)  **Description:** ICE-WISH project aimed to design, integrate and pilot an innovative solution for social housing, using mature and interactive ICT, to enable sustained reductions of energy and water consumption of at least 15% below the current practice, without compromising living conditions, across 300 social dwellings in ten European countries.  ICE-WISH provided a ‘user-friendly’ and widely accessible ICT-based service to engage individual households as active players in developing water and energy conservation practices as well as by providing effective and real-time ICT monitoring and control of energy and water usage and environmental conditions and user behaviour. Furthermore, by providing real-life information to key stakeholders, the project encouraged the implementation of environmental-energy-related policy actions, incentives or/and investments’ decisions at public and private level.  **Housing Federation(s)/Organisation(s) involved:** Bournemouth County Council (UK) - Boligforeningen Ringgården (Denmark) - Consorzio Nazionale CasaQualità (Italy) - City of Warsaw (Poland) - Joseph-Stiftung (Germany) - Oikistikes Anaptykseis SA (Greece) - OPAC38 (France) - Union of Homeowners Associations (Bulgaria) - Viviendas Municipales de Bilbao (Spain) - Vlaamse Maatschappij voor Sociaal Wonen (Belgium)  **Resources and Case studies produced in the framework of the ICE-WISH project:**   * No key outputs available at this stage   E3SoHo - Energy Efficiency in European Social Housing  **[E3SoHo - Energy Efficiency in European Social Housing](http://www.e3soho.eu/)**  **Project timeline:** February 2010 - September 2013 **Programme:** ICT Policy Support Programme **Website:** [**www.e3soho.eu**](http://www.e3soho.eu/)  **Description:** E3SoHo project aimed at implementing and testing an integrated and replicable ICT-based solution able to bring a significant reduction of 25% of energy consumption in European social housing by providing tenants with feedback on actual consumption and by offering them personalised advice. Furthermore, the project monitored and transmitted consumption data to Energy Services Companies which could enable real time energy audits in order to perform more accurate refurbishment decisions as well as maintenance operations.  **Housing Federation(s)/Organisation(s) involved:** CECODHAS Housing Europe (EU) - ARTE Genova (Italy) - City of Warsaw (Poland) - Zaragoza Vivienda (Spain)  **Resources and Case studies produced in the framework of the E3SoHo project:**   * [**Best Technical and Cost-effective ICT-based Energy Efficiency solutions**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/E3SoHo_Best_Technical_Solutions.pdf&t=1489592412&hash=1ad1040a686103f8fb4ebb6172a595e8) * [**Methodology for the Implementation of the identified ICT-based Energy Efficiency solutions**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/E3SoHo_Methodology_Implementation.pdf&t=1489592412&hash=c311541a4a8414ad598ddf1b189a76e4) * [**User’s acceptance Report on ICT-based Energy Efficiency solutions**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/E3SoHo_Users_Acceptance.pdf&t=1489592412&hash=986f5bbb51ef3dfbe0fc7d3224ed75eb) * [**Final Report**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/E3SoHo_Final_Report.pdf&t=1489592412&hash=b7a5c974889ad1edd5083b8d75e143b2)   eSESH - Saving Energy in Social Housing with ICT  **[eSESH - Saving Energy in Social Housing with ICT](http://www.esesh.eu/index.php)**  **Project timeline:** March 2010 - February 2013 **Programme:** ICT Policy Support Programme **Website:** [**www.esesh.eu**](http://www.esesh.eu/)  **Description:** eSESH project aimed at designing, developing and testing new solutions to reduce energy consumption in European social housing by providing usable ICT-based services. Trough Energy Awareness Services (EAS), the project provided direct, timely and comprehensible feedback on energy consumption, enabling tenants to adapt their energy-behaviour. In addition, a comprehensive set of Energy Management Services (EMS) helped housing providers reducing consumption peaks and optimise the timing of domestic consumption.  **Housing Federation(s)/Organisation(s) involved:** Coop Casa SC (Italy) - FINABITA-Legacoop Abitanti (Italy) - Gemeinnützige Wohnungsgesellschaft der Stadt Linz GmbH (Germany) - Le Toit Angevin (France) - Moulins Habitat (France) - Piacenza74 (Italy) - Union Sociale pour l’Habitat (France) - Villaggio dell’Amicizia (Italy) - Volkswohnung GmbH (Germany) - Zonnige Kempen (Belgium)  **Resources and Case studies produced in the framework of the eSESH project:**   * [**Report on the current status of the Pilot Projects developed**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=96)   BECA - Balanced European Conservation Approach  **[BECA - Balanced European Conservation Approach](http://www.beca-project.eu/index.php)**  **Project timeline:** January 2011 - December 2013 **Programme:** ICT Policy Support Programme **Website:** [**www.beca-project.eu**](http://www.beca-project.eu/)  **Description:** BECA project built on existing services providing feedback on energy consumption to social housing tenants, by developing, providing and piloting advanced ICT-based Resource Use Awareness Services (RUAS) and Resource Management Services (RMS). Through the awareness raising services provided, tenants were empowered to control and reduce their energy consumption by using internet portals, in-home displays, alerts and SMS.  **Housing Federation(s)/Organisation(s) involved:** ATC Torino (Italy) - Bauverein AG Darmstadt (Germany) - DELPHIS (France) - Foment de la Rehabilitació Urbana de Manresa, S.A. (Spain) - MRA Mestska Realitni Agentura SRO (Czech Republic) - ÖrebroBostäder AB (Sweden)  **Resources and Case studies produced in the framework of the BECA project:**   * [**Videoclips of Pilot Projects to Raise Awareness among Tenants via ICT devices**](https://www.youtube.com/playlist?list=PLVBzL7WI9g00OQcohO68puaSOyRKdIfk0)   SHOWE-IT - Real-life trial in Social Housing, of Water and Energy efficiency ICT services  **[SHOWE-IT - Real-life trial in Social Housing, of Water and Energy efficiency ICT services](http://showe-it.eu/)**  **Project timeline**: January 2011 - December 2013  **Programme**: ICT Policy Support Programme **Website**: [**www.showe-it.eu**](http://www.showe-it.eu/)  **Description:** SHOWE-IT project aimed to demonstrate, under real conditions, how advanced ICT components and systems can enable services that reduce energy and water consumption in Social Housing across Europe while improving tenants’ quality of life. To achieve this, the project took a demand-driven approach, prioritizing as starting point an affordable investment (max. investment € 3.000 per dwelling), and putting in place a 'menu' of cost-effective, integrated and easy replicable ICT-based services.  **Housing Federation(s)/Organisation(s) involved:** Botkyrkabyggen (Sweden) - Cité Nouvelle (France) - Rochdale Boroughwide Housing (UK)  **Resources and Case studies produced in the framework of the SHOWE-IT project:**   * [**Preliminary Conclusions and Possibilities for Replication**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/SHOWE-IT_Findings.pdf&t=1489592412&hash=9eea4515dfd960463c2fb273e281cabc) | |
| Training for energy efficiency in social housing ([source](http://www.powerhouseeurope.eu/plug_in_to_power_house/dividedcooperative_ownership/)) | TRAINREBUILD - Training for Rebuilding Europe  **[TRAINREBUILD - Training for Rebuilding Europe](http://trainrebuild.eu/)**  **Project timeline:** December 2010 - December 2012 **Programme:** Intelligent Energy Europe **Website:** [**www.trainrebuild.eu**](http://www.trainrebuild.eu/)  **Description:**TRAINREBUILD project aimed to design a comprehensive value chain strategy to generate a change in the thinking of public and private building owners regarding the link between energy efficiency and value related to building ownership. The project also aimed to encourage retrofitting in a wide range of residential buildings, spanning from individual to multi-family houses and from private to social housing.  **Housing Federation(s)/Organisation(s) involved:** none  **Resources and Case studies produced in the framework** **of the TRAINREBUILD project:**   * [**Final Report including Needs Analysis and Success Stories**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/TRAINREBUILD_Final_Report.pdf&t=1489592525&hash=7fd603ea0721f1b67c3bd708a03a78ab) * [**National adaptations of the Toolkit**](http://trainrebuild.eu/toolkits) | |
| Fin ancing energy efficiency in social housing  ([source](http://www.powerhouseeurope.eu/plug_in_to_power_house/financing_ee_res/)) | PV Financing **[PV Financing](http://www.pv-financing.eu/)**  **Project timeline:** January 2015 - June 2017 **Programme:** Horizon 2020 - LCE **Website:** [**www.pv-financing.eu**](http://www.pv-financing.eu/)  **Description:** The PV FINANCING project aims at defining and developing new business and financing models for photovoltaics installations, to disseminate them among stakeholders, to shape the necessary policy framework for their application and to remove barriers that prevent those models from realization.  By doing so, PV FINANCING will help stakeholders from specific PV segments to implement projects based on these new business models, while applying innovative equity and debt financing schemes. Private investors, decision makers in banks and insurance companies will be introduced to the new business models, allowing them to include these results in their decision making process as regards new investments while decreasing the transaction costs and increasing the availability of financing for PV projects.  **Housing Federation(s)/Organisation(s) involved:** Housing Europe (EU)  **Resources and Case studies produced in the framework of the PV Financing project:**   * [**Good Practices of PV Business Models**](http://www.pv-financing.eu/good-practices/)  Resources on Energy Performance Contracting **[Resources on Energy Performance Contracting](http://ec.europa.eu/energy/intelligent/in-action/energy-performance-contracting/index_en.htm)**  **Project timeline:** 2004 - today **Programme:** Intelligent Energy Europe **Website:** [**http://ec.europa.eu/energy/intelligent/in-action/energy-performance-contracting/index\_en.htm**](http://ec.europa.eu/energy/intelligent/in-action/energy-performance-contracting/index_en.htm)  **Description:** Energy Performance Contracting is identified at the EU level as a key instrument to finance and implement ambitious energy efficiency investments. However, its roll out faces numerous barriers including a lack of understanding and information, distrust in suppliers, high transaction costs, inadequate accounting and procurement rules, different procedures in each country and problems accessing financing. Since 2004, the Intelligent Energy Europe Programme has co-financed a certain number of projects that have been active in supporting the development of the Energy Performance Contracting market in Europe.  **Resources produced in the framework of relevant IEE-funded projects:**   * [**Click here to improve your know-how on EPC by accessing the various training materials, handbooks, tools, model contracts or tender documents developed to date.**](http://ec.europa.eu/energy/intelligent/in-action/energy-performance-contracting/index_en.htm)  FRESH - Financing Energy Refurbishment for Social Housing **[FRESH - Financing Energy Refurbishment for Social Housing](http://www.fresh-project.eu/)**  **Project timeline:** June 2009 - May 2012 **Programme:** Intelligent Energy Europe **Website:** [**www.fresh-project.eu**](http://www.fresh-project.eu/)  **Description:** FRESH project aimed to pave the way and demonstrate to social housing operators that Energy Performance Contract (EPC) can be used for low energy refurbishment on a large scale. The consortium tested the implementation of EPC for comprehensive refurbishments in the social housing sector in France, UK, Italy and Bulgaria and produced concrete tools which social housing organisations and ESCOs can use to implement energy performance contracts.  **Housing Federation(s)/Organisation(s) involved:** ACER Reggio Emilia (Italy) - Bulgarian Housing Association (Bulgaria) - Immobilière des Chemins de Fer (France) - Places for People (UK)  **Resources and Case studies produced in the framework of the FRESH project:**   * [**Energy Performance Contracting: Implementation Guide**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=88) * [**Proposals for the development of Energy Performance Contracting in Social Housing**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=89) * [**Strategic Guidance: Energy Retrofitting of Social Housing through Energy Performance Contracts: a feedback from the FRESH project from France, Italy, UK and Bulgaria**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=87)  SF - Energy Invest **[SF - Energy Invest](http://sf-energyinvest.eu/)**  **Project timeline:** July 2010 - December 2012 **Programme:** Intelligent Energy Europe **Website:** [**www.sf-energyinvest.eu**](http://www.sf-energyinvest.eu/)  **Description:** SF-Energy Invest project aimed to increase the share of Structural and Cohesion Funds money allocated to sustainable energy within the final phase of the programming period 2007-2013 by providing practical support in the development of project proposals in pilot regions, and by increasing awareness through targeted EU mobilisation campaigns. In addition, the project identified recommendations for the upcoming Structural and Cohesion Funds programming period 2014-2020.  **Housing Federation(s)/Organisation(s) involved:** CECODHAS Housing Europe (EU)  **Resources and Case studies produced in the framework of the SF-Energy Invest project:**   * [**Technical Input and Best Practices for Managing Authorities**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=90) | |
| Urban dimension in energy efficiency and social housing ([source](http://www.powerhouseeurope.eu/plug_in_to_power_house/building_stock_urban_dimension/)) | EPISCOPE - Energy Performance Indicator Tracking Schemes for the Continuous Optimisation of Refurbishment Processes in European Housing Stocks  **[EPISCOPE - Energy Performance Indicator Tracking Schemes for the Continuous Optimisation of Refurbishment Processes in European Housing Stocks](http://www.building-typology.eu/)**  **Project timeline:** April 2014 - March 2016 **Programme:** Intelligent Energy Europe **Website:** [**www.episcope.eu**](http://www.episcope.eu/)  **Description:** EPISCOPE project aims at making the energy refurbishment processes in the European housing sector transparent and effective. Starting point is the TABULA concept (see below) of residential building typologies which will be continued and expanded. As a further step, the scope of EPISCOPE is extended towards the elaboration of building stock models to assess refurbishment processes and project the future energy consumption. Pilot actions will be conducted in 16 countries to track the implementation of energy saving measures and their effect on the consumption.  **Housing Federation(s)/Organisation(s) involved:** none  **Resources and Case studies produced in the framework of the EPISCOPE project:**   * [**Steps towards NZEBs in different European Countries**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/EPISCOPE_NewBuildingsInTypologies.pdf&t=1489592530&hash=21e63d69088f40145918775b0a3f473f)   TABULA - Typology Approach for Building Stock Energy Assessment  **[TABULA - Typology Approach for Building Stock Energy Assessment](http://www.building-typology.eu/)**  **Project timeline:** June 2009 - May 2012 **Programme:** Intelligent Energy Europe **Website:**[**www.building-typology.eu**](http://www.building-typology.eu/)  **Description:** TABULA project aimed to create a harmonised model for European building typologies, linked to specific energy characteristics, in particular for the residential building sector. The development and utilisation of a web database, served as a data source for scenario analyses that could be used to support policy makers, at regional, national or EU level on the level of savings achieved by renovating each of the selected building typologies.  **Housing Federation(s)/Organisation(s) involved:** none  **Resources and Case studies produced in the framework of the TABULA project:**   * [**Fianl Report including Building Typologies Overview**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/TABULA_Final_Report.pdf&t=1489592530&hash=da556f025707c6a0247c9db0de9b7d7f)   PassREg - Passive House Regions with Renewable Energies  **[PassREg - Passive House Regions with Renewable Energies](http://www.passreg.eu/)**  **Project timeline:** May 2012 - April 2015 **Programme:** Intelligent Energy Europe **Website:**[**www.passreg.eu**](http://www.passreg.eu/)  **Description:** PassREg project aims to trigger the successful implementation of nZEBs throughout the EU, using Passive House supplied by renewable energies as the foundation. The project consortium will work to make successfully applied solutions accessible within the project regions and beyond by stimulating the market of suitable products and technologies and build capacity for quality training of construction professionals.  **Housing Federation(s)/Organisation(s) involved:** none  **Resources and Case studies produced in the framework of the PassREg project:**   * [**Success Guide on Passive House Regions with Renewable Energy Sources**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/PassREg_Success_Guide.pdf&t=1489592530&hash=591120ec06efb409916f591419ea1b52)   CASH - Cities Action for Sustainable Housing  **[CASH - Cities Action for Sustainable Housing](http://urbact.eu/en/results/results/?resultid=40)**  **Project timeline:** July 2010 - January 2013 **Programme:** URBACT II **Website:** [**http://urbact.eu/en/results/results/?resultid=40**](http://urbact.eu/en/results/results/?resultid=40)  **Description:**The ambition of the CASH project was to propose new solutions and promote new policies for the sustainable renovation of social and affordable housing units in the European Union. The network carried out an extensive, documented study in each partner city in order to set up Local Action Plans in each city and pilot model experiments in the volunteer partner cities.  **Housing Federation(s)/Organisation(s) involved:** none  **Resources and Case studies produced in the framework of the CASH project:**   * [**Local Support Group Toolkit: a guide on creating Local Action Plans**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=94) * [**Template for drafting Local Action Plans**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=95) | |
| Coordination for energy efficiency in social housing ([source](http://www.powerhouseeurope.eu/plug_in_to_power_house/professionals_coordination/)) | PROF-TRAC - Professional multi-disciplinary Training and Continuing development in skills for NZEB principles  **[PROF-TRAC - Professional multi-disciplinary Training and Continuing development in skills for NZEB principles](http://proftrac.eu/open-training-platform-for-nzeb-professionals.html)**  **Project timeline:** March 2015 - February 2018 **Programme:** Horizon 2020 - EE04 **Website:** [**www.proftrac.eu**](http://www.proftrac.eu/)  **Description:** PROF-TRAC project will create an open education platform for continuous vocational training of building professionals with an inter-disciplinary focus on nZEB design and construction and a strong European dimension across 7 countries.  **Housing Federation(s)/Organisation(s) involved:** Housing Europe  **Resources and Case studies produced in the framework of the PROF-TRAC project:**  MaTrID - Market transformation towards nZEB through widespread use of integrated energy design  **[MaTrID - Market transformation towards nZEB through widespread use of integrated energy design](http://www.integrateddesign.eu/)**  **Project timeline:** June 2012 - January 2015 **Programme:** Intelligent Energy Europe **Website:** [**www.integrateddesign.eu**](http://www.integrateddesign.eu/)  **Description:** MaTrID aimed to support the implementation of nZEB by contributing to the optimisation of the building design phase. Integrated Energy Design (IED) is a valuable approach to reduce the complexity of the design process and facilitate the interactions between the members of the design team while saving time, money and insuring the successful development of the project to be implemented on the ground.  **Housing Federation(s)/Organisation(s) involved:** none  **Resources and Case studies produced in the framework of the MaTrID project:**   * [**Guidelines on Integrated Energy Design**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/MaTrID_Process_Guideline.pdf&t=1489592530&hash=4a4a6ff4363ccfb227f0606ba351c122)   SHELTER - Promoting Professionals Coordination in Energy Renovation  **[SHELTER - Promoting Professionals Coordination in Energy Renovation](http://www.shelterproject-iee.eu/)**  **Project timeline:** June 2010 - May 2013 **Programme:** Intelligent Energy Europe **Website:** [**www.shelterproject-iee.eu**](http://www.shelterproject-iee.eu/)  **Description:** The aim of the SHELTER project was to bring together social housing organisations, architects and builders by promoting and facilitating the use of new models of cooperation, inspired by integrated design, for the energy renovation of the social housing stock. The consortium identified pros and cons of the procedures currently used by the six housing organisation involved in the project and developed, apply and test new models of coordination, adapted to their specific needs.  **Housing Federation(s)/Organisation(s) involved:** CECODHAS Housing Europe (EU) - ARTE Genova (Italy) - Black Country Housing Group (UK) - Bulgarian Housing Association (Bulgaria) - Dynacité (France) - LogiRep (France) - Société Wallonne du Logement (Belgium)  **Resources and Case studies produced in the framework of the SHELTER project:**   * [**Coordination of Professionals & Models of Coordination in energy refurbishment**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=93) * [**Recommendations for Public Authorities**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5bid%5d=105) * [**Guidelines on Delivery Methods**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5bid%5d=104)   AFTER - Cost Optimum and Standard Solutions for Maintenance and Management of the Social Housing Stock  **[AFTER - Cost Optimum and Standard Solutions for Maintenance and Management of the Social Housing Stock](http://afterproject.eu/)**  **Project timeline:** June 2010 - May 2013 **Programme:** Intelligent Energy Europe **Website:** [**www.afterproject.eu**](http://www.afterproject.eu/)  **Description:** AFTER project aimed at enabling Social Housing companies to improve the energy efficiency of their housing stocks by focusing on cost optimal solutions for the maintenance and management phase of their dwellings. Through the analysis of its pilots in six countries, the project assessed the actual performance of the technical solutions implemented, define and test economic, technical & socially optimum standards for long-term investment decisions and assessed, through the trends in consumption, the actual impact of the promotional campaigns targeting tenants’ awareness on energy that have been carried in the framework of the project.  **Housing Federation(s)/Organisation(s) involved:**L’Union Sociale pour l’Habitat (France), Federcasa (Italy), BL (Denmark), Le Toit Angevin (France), Confédération de la Consommation, du Logement et du Cadre de Vie (France), ATC Torino (Italy), Mestska Realitni Agentura (Czech Republic), Bauverein AG Darmstadt (Germany), Spekter (Slovenia)  **Resources and Case studies produced in the framework of the AFTER project:**   * [**Implementing strategies in Social Housing Companies to reach Energy-2020 objectives**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/AFTER_Implementing_Strategies.pdf&t=1489592530&hash=a246f697df4cd8b420c29894dbc7c2d2) * [**Best Practices concerning the management and maintenance of the European housing stock**](http://www.powerhouseeurope.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/users/phe/TaskForces/Resources/AFTER_Best_Practices.pdf&t=1489592530&hash=412385c59cd672739f5725ad2cf372e0) * [**Scientific Methodology Handbook**](http://www.powerhouseeurope.eu/nc/cases_resources/resources/single_view/?tx_phecasestudies_pi9%5Bid%5D=108) | |
| IDEAS, business models ([via](http://www.buildup.eu/en/news/build-webinar-recordings-ict-solutions-energy-positive-neighbourhoods?gid=6162)) ([presentation](http://www.buildup.eu/sites/default/files/content/BUILD%20UP%20Webinar%2020151026%20IDEAS%201%20Dr%20Tracey%20Crosbie%20EPN%20Definition.pdf)) | * A neighbourhood energy management tool to optimise energy production and consumption. | |
| IDEAS, French findings (see report in folder) ([source](http://www.ideasproject.eu/IDEAS_wordpress/ideas-project-main-findings-at-the-french-pilot-site/index.html)) | IDEAS Project – Main findings at the French pilot site  The IDEAS project ended last month with positive conclusions for the French demo site: University Institute of Technology (IUT Bordeaux 1)  The tools and interfaces tested in the French pilot study included:   * A neighbourhood Energy Management System (EMS) developed to optimise storage/retrieving and buying/selling energy and supply energy demand predictions for energy trading. * Innovative user interfaces developed to interact with the occupants of the IUT site:   + Interfaces required for energy consumers and producers to interact with the services required for Demand Side Management, Supply Side Management and energy trading etc.   + Community based interfaces, in the form of a wide screen and a 3D virtual environment, that raises energy awareness and ‘promotes’ the concept of an EPN to the occupants of the EPN and the wider public. * The Decision Support Urban Planning Tool ATLAS designed to inform the future development plans for neighbourhood energy infrastructures.   As the French pilot site has currently no meaningful renewable energy technology, two local energy sources (biofuel CHP plant and PV system + storage systems) were simulated and several optimisation scenarios were tested in order to identify the most promising or realistic approaches to move the neighbourhood towards energy positivity.  In terms of energy costs, the reductions calculated for the most promising scenarios are close to 50%. In terms of CO2 emissions, the reductions are above 30% for both tested scenarios which is above the initial objectives stated for the IDEAS project.  The findings from the deployment and qualitative assessment of the user interfaces at the pilot site show that the interfaces were well received by users and occupants of the site are more aware of their energy consumption and how to reduce it.  Introducing an EPN at the French demo site was not possible in the timeframe of the project. However, the energy consumption information made available to staff through the different interfaces developed and implemented as part of the IDEAS project has underpinned new initiatives in energy management and energy efficiency. In terms of energy efficiency it has supported the staff at the French Pilot involved in building management to decrease energy use (gas: -10%, and CO2 emissions: -30%). Moreover, new initiatives are now launched on site. The current plans being assessed include the implementation of a smart PV system, to enable the use of electricity produced by the PV to cover the base electricity demand highlighted by the IDEAS monitoring.  **[IDEAS French pilot impact](http://www.ideasproject.eu/IDEAS_wordpress/wp-content/uploads/2015/12/fr-pilot-7.png)**  *IDEAS French pilot impact* | |
| IDEAS, Finnish findings (see report in folder) ([source](http://www.ideasproject.eu/IDEAS_wordpress/ideas-project-main-findings-at-the-finnish-pilot-site/index.html)) | The IDEAS project ended with positive conclusions for the Finnish demo site: Omenatarha, a residential area in Porvoo. The pilot included 23 district heated detached residential houses, all equipped with a non-delayed electricity monitoring solution implemented as part of the pilot and district heat demand data and electricity demand data monitored via the billing meters of the local energy supply company.  The tools and interfaces tested in the Finnish pilot include:   * A neighbourhood energy management system (EMS) developed to optimise storage/retrieving and buying/selling energy and supply energy demand predictions for energy trading * Innovative user interfaces developed to interact with the occupants of an EPN:   + Interfaces required for producers to interact with the services required for Demand Side Management, Supply Side Management and energy trading energy etc.   + Home Energy Awareness Application (HEAA) for demand side management, in order to interact with the residents of the pilot households.   + Community based interfaces, in the form Public screens that raise energy awareness and ‘promote’ the concept of an EPN to the occupants of the EPN and the wider public.   The logic underpinning the Finnish pilot study was to identify if the tools and elements of the business model tested at the pilot site could move the neighbourhood towards a financially viable energy positive neighbourhood in the Finnish context as illustrated in the figure below:  **[Finnish pilot impact](http://www.ideasproject.eu/IDEAS_wordpress/wp-content/uploads/2015/12/fi-1.png)**  *Finnish pilot impact*  The research conducted included simulations that were used to test the viability of one of the key revenue streams underpinning business models developed in the IDEAS project: Namely reduced costs for energy production and increased profits from optimising the production, storage/retrieval and buying/selling of energy. The approach taken in the simulations and how they relate to the tools implemented at the site is illustrated below :  **<http://www.ideasproject.eu/IDEAS_wordpress/wp-content/uploads/2015/12/fi-2.png>**  Several optimisation scenarios were tested in order to identify the most promising or realistic approaches to move the neighbourhood towards energy positivity. The simulations clearly show that CO2 emissions can be significantly reduced using the EMS. However, the tools require investments that are not the most economical of the compared scenarios this is partly due to the currently low power market prices and high battery prices. It’s likely that power market prices will go up and the battery prices will reduce going down, which will make the proposed approach feasible.  Since the proposed optimised solution is able to reduce CO2 emissions with 42% compared to a baseline including similar wind turbine, this benefit might well outweigh the often small economical differences between the scenarios. The society has to pay more for reducing emissions, and the monetary aspect is not the only issue that affects decisions.  The findings from the usability testing of the HEAA suggest that it could considerably support demand side management and people would almost always shift their energy use according to advice provided by notifications from the HEAA :  **[fi 3](http://www.ideasproject.eu/IDEAS_wordpress/wp-content/uploads/2015/12/fi-3.png)**  Another significant finding for the incremental rollout of an EPN, is the people living in the Finnish pilot area prefer the idea of the joint procurements of renewables to the idea of investing in renewable energy technologies at the household level. This suggests that a community funded approach would be plausible at the pilot site.  83% of people found the content of the community interfaces included information that was new to them and found this new information interesting and inspiring. Over 59% were inspired to get more information. The layout and navigation was well received. | |
| Importance of data analytics protocols for management ([source](http://www.buildup.eu/en/learn/notes/analytics-solutions-data-overload-improved-building-performances?gid=6162)) | The advent of IoT increase considerably the potential number of smart devices collecting data, resulting in an **additional level of complexity** for facility managers.  **Analytics solutions effectively manage the new state of information overload**, identifying and focusing on key information and problems on real basis.  Thanks to more open protocols, existing components can easily communicate and integrate with the new solution. Nevertheless, **communication and engagement of all relevant stakeholders is still crucial** to properly implement Building Management Systems (BMS).  A [recent survey from Schneider Electric](http://blog.schneider-electric.com/building-management/2016/07/22/get-bms-analytics/) show that only 27% of building managers use data-driven analytics solutions. In the near future, facility manager will need to make the best of these available solutions in order to fulfill the demand of efficient operations | |
| European Display Campaign (2010) ([source](http://www.buildup.eu/en/learn/tools/european-displayr-campaign?gid=50715)) ([link](http://www.display-campaign.org/)) | The European Display Campaign is a voluntary scheme designed by energy experts from European towns and cities. When started in 2003 it was initially aimed at encouraging local authorities to publicly display the energy and environmental performances of their public buildings using the same energy label that is used for household appliances. The Display Poster is available in 26 languages. The online calculation tool, using monitored consumption data, is available in the participants section of the Display website. It can be adapted to complement any national implementation scheme (so far for France and Switzerland). It is easy to use and can be used for all buildings sizes and 11 building types. The tool also calculates the building’s water performance and allows users to simulate potential improvements thus enabling people to visualise real savings that can be made via refurbishments.  The European Display Campaign is a voluntary scheme designed by energy experts from European towns and cities. When started in 2003 it was initially aimed at encouraging local authorities to publicly display the energy and environmental performances of their public buildings using the same energy label that is used for household appliances. The Display Poster is available in 26 languages.  The online calculation tool, using monitored consumption data, is available in the participants section of the Display website. It can be adapted to complement any national implementation scheme (so far for France and Switzerland). It is easy to use and can be used for all buildings sizes and 11 building types. The tool also calculates the building’s water performance and allows users to simulate potential improvements thus enabling people to visualise real savings that can be made via refurbishments.  As most Member States now have a National certificate, Display is increasingly being used as a complementary communication tool. With its strong emphasis on local communication campaigns and large variety of communication tools Display goes beyond the basic requirements of the EPBD.  Display can be used as one key action in a city’s 2020 Sustainable Energy Action Plan: The visible use of the poster in numerous buildings, technical improvements as well as awareness-raising activities towards the users are an important stepping stone to reach the Covenant of Mayors commitment. | |
| Policy analysis modelling system ([source](http://www.buildup.eu/en/learn/tools/clasp-policy-analysis-modeling-system-pams?gid=50735)) | PAMS is an Excel spreadsheet designed to give first-order policy impacts projections for a wide range of countries with a minimum of preparatory research on the part of local policymakers.  This tool includes basic modeling inputs for over 150 countries; can be used "out of the box," with no additional research necessary; and offers the ability for customization in several critical areas, in order to improve the accuracy of forecasts where country-specific data is available.  PAMS is an ideal resource for countries with few technical or financial resources. | |
| Advice on large scale building renovation measures ([source](http://www.buildup.eu/en/learn/tools/renoveren-tool-advice-large-scale-building-renovation?gid=50735)) | "Renoveren A+" is a free tool to assist in the selection of necessary measures to accomplish deep renovation. The tool supplies information towards a solution strategy for a given energy ambition, whereby the starting point is the reduction of the energy demand. Results are given for annual energy values, but there are also possibilities for finance and particular interest towards building physics, building construction and installation. When the user of the tool chooses other options, different results will be given. For instance, if a roof is not insulated, effects on the Energy label are shown.  The tool can be accessed [here.](http://renoverenaplus.renda.nl/) (dutch sources) | |
| OPTIMUS e-SCEAF (Smart City Energy Assessment Framework)  ([source](http://www.buildup.eu/en/learn/tools/optimus-e-sceaf-smart-city-energy-assessment-framework?gid=50735)) | e-SCEAF (Smart City Energy Assessment Framework) Tool provides City Authorities with an effective framework for assessing the performance of a City in terms of energy optimisation, CO2 emissions reduction and energy cost minimisation. Using appropriate indicators, the progress of a city in that direction can be revealed by analysing and evaluating its ex-ante and ex-post status across three axes: ‘Political Field of Action’, ‘Energy and Environmental Profile’ and ‘Related Infrastructures and Information and Communications Technology (ICT). Although the framework is designed for the evaluation of the city as a whole, it can be also customised per sector, such as municipal buildings, providing more focused information. The tool was developed in the framework of the [OPTIMUS smart city project](http://www.buildup.eu/en/explore/links/optimus-smart-city-project-0).    For further information please visit: <http://sceaf.optimus-smartcity.eu/> | |
| HERON DST reflecting end-users behaviour in energy efficiency modelling ([source](http://www.buildup.eu/en/learn/tools/heron-project-decision-support-tool?gid=50735)) ([report](http://heron-project.eu/images/Deliverables/HERON_D3.2_DST.pdf)) | An innovative, friendly to the end user, software developed by KEPA in the frame of the HERON project (H2020, Grant AgreemENT. No. 649690) facilitates policy makers and market stakeholders in their energy efficiency policy making for buildings and transport.    For the first time, an innovative Decision Support Tool (DST) incorporates non-economic and non-market elements (social, educational and cultural) into energy efficiency scenario analysis.    The Decision Support Tool \* DST software is available free of charge - contact the HERON project:  [epgsec@kepa.uoa.gr](mailto:epgsec@kepa.uoa.gr) | |
| Energy efficiency data hubs for SMEs (source [1](http://www.buildup.eu/en/learn/tools/easme-energy-efficiency-data-hub-0?gid=50716), [2](http://www.buildup.eu/en/learn/tools/easme-data-hubs-0)) | The Energy Efficiency Data Hub is a new online tool developed by the [European Agency for Small and Medium-sized Enterprises (EASME)](http://ec.europa.eu/easme/). With interactive maps, key data and statistics, this application features the energy efficiency projects co-funded under Horizon 2020 programme. Several of these projects deal with the energy efficiency in buildings.    With this application it is now possible to simply search and filter projects by topic (buildings, consumers, heating & cooling, industry, products & services, innovative financing public authorities), country, project type, year (start or end date) and budget range. Users can do this by clicking on the blue arrow on the left side of the map.    Besides this, each project has a summary that includes some information about the project, the participants and a link for their website. This means that in a few clicks, users will be able to find lots of useful data! Statistics and figures are also available by clicking on the graphic icon on top left menu.    Furthermore, users  can embed the application to their website and allow theri visitors to benefit from the interactive tool.    For further information or to access the tool, please visit the relevant EASME webpage at the link below.    See also the relevant [BUILD UP Tool](http://www.buildup.eu/en/node/50893).  The [Executive Agency for Small and Medium-sized Enterprises (EASME)](http://ec.europa.eu/easme/) has developed an interactive tool that generates information on EU funding programmes. For the moment application is available for:     * [**Horizon 2020 SME Instrument**](https://h2020staccp.easme-web.eu/) * [**Horizon 2020 Societal Challenge 'Climate action, environment, resource efficiency & raw materials'**](https://sc5.easme-web.eu/?theme=green) * [**Horizon 2020 energy efficiency**](https://energy.easme-web.eu/)   The application consists of 3 different modules:     * A **dynamic map** showing all the beneficiaries of the programme. The red pins indicate project coordinators, the green ones, project partners. Clicking on a pin generates information on the beneficiary and the project, which is displayed in a pane on the right side of the screen. * **Beneficiaries and project lists**. To switch from beneficiaries to projects click on the buttons at the top right of the screen. * **Statistics**: on the main page the system presents the number of participants (individual companies selected for funding), the budget allocated so far and the number of projects selected for funding. When clicking on one of the 3 icons, a bar chart is generated. Mouse over a bar to display the full name of the country and the figure.   Available filters:     * Project type * Countries * Topics * Budget * Call date * Project start date * Project end date.   The application can be embedded in any website.     For further information or to access the tool, please visit the relevant EASME webpages at the links below. | |
| The Green Rating™ tool  ([source](http://www.buildup.eu/en/learn/tools/green-ratingtm-tool-0?gid=50716)) | [[http://www.buildup.eu/sites/default/files/styles/page_main/public/illustrations/slider_positioning.jpg?itok=u2yDjVj1](http://www.buildup.eu/sites/default/files/illustrations/slider_positioning.jpg)](http://www.buildup.eu/sites/default/files/illustrations/slider_positioning.jpg)  [www.trustepc.eu](http://www.buildup.eu/sites/default/files/illustrations/slider_positioning.jpg)  The upgraded Green Rating™ tool, one of the main outcomes of the [Trust EPC project](http://www.trustepc.eu/en/), will be developed as a sustainable energy investment assessment and benchmarking tool addressing building and facility renovations, principally targeted to:     * Banks and other financing institutions * Real estate asset managers * Tertiary sector stakeholders     Further, energy efficiency services providers offering Energy Performance Contracts (EPC) may also be interested in using the tool, together with utilities and insurances, which will also be involved in the  project’s exploitation and dissemination process.    The tool may be used either to assess the feasibility of a renovation investment, or to verify an investment already proposed by an ESCO or an EPC provider. The tool will allow stakeholders to:     * improve understanding of the technicalities of energy efficiency and sustainable energy measures applied to buildings or facilities by accurately modeling them, evaluating their cross effects and translating them into energy savings; * appreciate the effects of implementing such measures not only within the energy dimension, but also across the other 5 Green Rating™ indicators: carbon, water, transport, waste and wellbeing; * improve understanding of the economical and financial aspects of implementing such measures, in a language understandable by the financing side, as the tool will be developed taking their point of view into account.     Overall, EPC and in general energy efficiency project risk assessment will be greatly facilitated by the Green Rating™ tool.    The tool and methodology have been developed within the international initiative Trust EPC South, co-funded by the European Commission’s Horizon 2020 programme. | |
|  | Follow up on event? <https://ec.europa.eu/energy/en/events/financing-energy-efficiency-lessons-successful-horizon-2020-projects-and-other-initiatives>  Financing energy efficiency: lessons from successful Horizon 2020 projects and other initiatives across Europe  **30 March 2017**  **Location**  Residence Palace, Polak room, rue de la Loi 155, Brussels  This event, held in Brussels, will present a selection of on-going initiatives at local, national and European levels that are demonstrating that energy efficiency can be financed on a large scale through the mobilisation of private financing. Mostly funded under the Horizon 2020 Energy Efficiency programme, these initiatives provide inspiring insights on:     * Aggregation and assistance for project development: the event will feature successful projects developing an investment pipeline at local and regional levels, which can be adapted and replicated at a large scale across the EU * De-risking energy efficiency investments: the event will present the key initiatives in Europe that are making energy efficiency increasingly attractive for the financial sector through policy dialogue, standardisation and benchmarking of investments * More effective use of public funding: the event will present successful experiences of innovative financing schemes using public funds to leverage private finance for energy efficiency.   You can register for the event [here](https://docs.google.com/forms/d/e/1FAIpQLSf2TSj2nK-m67b1hGbICtbhMvaikB4XyyUvHb2rGnWEMy7irQ/viewform). For any questions, please email [events@seiforums.eu](mailto:events@seiforums.eu).      This event is organised by the [Executive Agency for Small and Medium-sized Enterprises (EASME)](https://ec.europa.eu/easme/) as part of the Sustainable Energy Investment Forums contract, funded under the EU's [Horizon 2020](https://ec.europa.eu/programmes/horizon2020/) programme. | |
| Refurbishment financing scheme ([source](http://www.buildup.eu/en/explore/links/h2020-transition-zero-project-0?gid=50716)) | **Transition Zero** is an EU Horizon 2020-funded project, carried out by [Energiesprong](http://energiesprong.eu/), to establish the right market conditions for the wide-scale introduction of net zero energy homes across Europe. This will build on the success of Energiesprong in the Netherlands and advance its implementation even further. Transition Zero has kick-started net-zero energy refurbishment markets in the UK and France, using the social housing sector as a catalyst. This is achieved by:     * Organising volume demand for net zero energy refurbishments. * Introduce performance-based solution requirements on integrated refurbishment packages. * Establishing long-term, warranted energy performance contracts. * Improving the regulatory and financing conditions for net-zero energy refurbishments.   In order to make Energiesprong solutions financeable, the resident’s monthly energy bill in the Netherlands is converted into an agreed and guaranteed Energy Plan, for which the resident pays a fixed amount each month to the housing provider for this Energy Plan. The Energy Plan is set at the same amount as the resident’s previous energy bill with the result that the resident is protected from future energy price increases. The resident gets a more comfortable and better home for what is essentially the same cost. When using more energy than agreed on, the resident pays more to the housing provider, when using less the resident gets money back.    Each country will adapt the model to their regulatory framework- see the [UK approach here](http://www.ukgbc.org/resources/blog/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes).     The model has some common principles:     * A guarantee of performance over 30 years by the construction/renovation company * The use of prefabricated elements for the renovation of the buildings allowing a full renovation in a maximum of 10 days * Net zero energy on the meter * Use of renewable and local energy to cover the remaining energy needs * The setting up of an energy fee to replace the energy bill. This fee is paid to the housing company which then pays the construction/renovation companies.     The project's duration is 3 years and is coordinated at  EU level by the[National Energy Foundation](http://www.nef.org.uk/), with [Stroomversnelling](http://stroomversnelling.nl/)in the Netherlands and [Greenflex](http://www.greenflex.com/)in France leading the market development through bringing together supply (construction/renovation companies), demand (social housing companies), finance (public or private institutions) and policy. | |
| Crowdfunding as financing scheme for energy efficiency ([source](http://www.buildup.eu/en/news/teenager-pensioner-green-energy-crowdfunders-0?gid=50716)) | **Boosting the use of renewable energy has long been an ambition in Europe, but some efforts have powered down amid an ever-changing political landscape and dwindling finances. Now crowdfunding is pulling in a new generation of green investors**    “I have always been interested in the environment. As a child, I thought ‘what if the world runs out of petrol? Petrol won’t be there forever.’” Librarian Erwin van Delden, 56, from Haarlem in The Netherlands, wanted to put his money where his heart is, in green energy.    He came across the Oneplanetcrowd platform, which has funded almost 160 projects since 2013, raising a total of 17.5 million euros. They range from solar panels for social housing to wood heating stations, which provide a sustainable alternative to gas.    “My main interests are in the sharing economy, recycling/upcycling and renewable energy,” explained van Delden, a husband and father who works in Amsterdam. He has invested in several projects through the platform, including WakaWaka (‘shine bright’ in Swahili), a social enterprise providing solar-powered products, including lights and battery chargers, to people lacking access to electricity.    More than a million people in developing countries and crisis situations have received help. They include victims of the Ebola crisis in Sierra Leone and refugees from Syria. Earthquake victims in Nepal and those affected by Hurricane Matthew in Haiti have also benefited.    The project attracted more than a thousand investors and raised more than 210,000 euros. “Crowdfunding gives you the opportunity to get involved with companies you favour, with relatively small amounts of money,” said van Delden.    Oneplanetcrowd and others in Europe raise money from individual investors to provide debt finance to renewable energy systems (RES) projects. Funding is offered through a mixture of loans and securities.    Research shows that crowd investors typically straddle across all age groups, ranging from 18-year-olds to individuals in their 90s. The majority are male and they invest anything from a few euros to hundreds of thousands.    For those like van Delden, it is all about being able to directly invest in a green project. For others, it is simply about making money, for their retirement, for example, or maybe a child’s future.    “There are three main types of crowdfunding investors,” explained Irene Maffini, 31, an independent consultant and PhD crowdfunding researcher at the Science Policy Research Unit, University of Sussex, in southern England.    “Platforms have attracted financial planners, investors that have planned for their financial future and just care about financial returns. Then there are progressive investors who are looking specifically for new opportunities to expand their portfolios. Making a positive impact is not their main objective, but they are more likely to go for a renewable energy project over a coal one,” she continued. “Ethical investors are the third group. They have a financial interest but also want to make an environmental and social impact.”    Wind power engineer Matteo Vitale, 30, from Copenhagen in Denmark, was attracted to the UK-based renewable energy platform Abundance, and has invested around 15,000 euros across several projects.    One of them is a solar farm in the English town of Swindon, developed by the local government authority as part of its efforts to achieve a low carbon economy by 2030.    Nearly 2.1 million euros has been raised by individual investors, including many Swindon residents, alongside 3.5 million euros of local authority funding. “I wanted my money to be invested in something positive for my pocket, society and the environment. I know where my money is and what it will be used for. It is also a robust investment,” said Vitale.    Gerard van Klaarbergen, 38, from Deventer in The Netherlands, has a background in finance and a keen interest in new trends. He joined the crowdfunding generation in 2014.    “I’ve crowdfunded through several platforms, loans, shares and convertibles,” he said. “I invest between 250 and 1000 euros. It depends on the kind of project, if I believe in the team and I can see the potential. I do this not only for the financial element, but also because of the impact we can have on sustainable and social developments. It’s what I call social interest. And it gives me a broader network among interesting people and founders.”    Crowdfunding for renewable energy is still in its infancy. Further development work is needed, including the formation of EU-wide rules and regulations.    The European CrowdFundRES project is aiming to help, forming policy recommendations and identifying key drivers for growth. Tech-savvy young people with savings are expected to be one of those drivers, helping to unlock the industry’s full potential.    “In the longer term, younger people will help develop crowdfunding platforms,” said expert Maffini.    “Millennials don’t really trust banks, they want to be in control of their savings and are used to ‘think-tech’ products, like online banking and crowdfunding. But it varies across Europe, depending on the technology and platforms available and the culture, whether people are actually happy to spend online.” | |
| Practical experiences with crowd funding: <http://www.crowdfundres.eu/wp-content/uploads/2016/09/CrowdFundRES_Case_Studies.pdf> | |
| EU-GUGLE project ([source](http://www.buildup.eu/en/explore/links/eu-gugle-project-0?gid=50716)) | [[http://www.buildup.eu/sites/default/files/styles/page_main/public/illustrations/eu-gugle-consortium.jpg?itok=tlqXAb11](http://www.buildup.eu/sites/default/files/illustrations/eu-gugle-consortium.jpg)](http://www.buildup.eu/sites/default/files/illustrations/eu-gugle-consortium.jpg)  [The EU-GUGLE Consortium, with partners in nine countries](http://www.buildup.eu/sites/default/files/illustrations/eu-gugle-consortium.jpg)    **Sustainable renovation models for smarter cities**      EU-GUGLE (European cities serving as Green Urban Gate towards Leadership in sustainable Energy), funded under the EU 7th Framework Programme for Research and Technological Innovation, aims to demonstrate the feasibility of nearly-zero energy building renovation models in view of triggering large-scale, Europe-wide replication in smart cities and communities by 2020.    Taking on the challenge of sustainable renovation in urban areas, the cities of Vienna (AT), Aachen (DE), Milan (IT), Sestao (ES), Tampere (FI) and Bratislava (SK) have committed to renovating a total of 226,000m² of living space during the 5 years of the project, with the objective of achieving 40 to 80% primary energy savings per pilot district while increasing the share of renewable energy sources by 25% by 2018. Gothenburg (SE) and Gaziantep (TR) will take part in the 5-year project as associated cities and will be expected to start smart renovation activities during the project’s lifetime.    To reach this objective, the 8 pilot cities will join efforts to combine the latest research results relevant to smart renovation of groups of buildings at district level and use this knowledge to implement a balanced mix of technical, socio-economic and financial solutions adapted to local needs. All aspects of the renovation process will be monitored and evaluated, from the energy performance of the renovated buildings to the financing schemes chosen by the municipalities.    In line with this objective, the pilot cities will therefore integrate the results of the project into comprehensive ‘smart renovation strategies’ that will be easily transposable to other municipalities, and which will be disseminated through an EU-wide replication campaign. | |
| Innovative financial schemes ([source](http://www.buildup.eu/en/news/smart-cities-and-innovative-financing-schemes-0?gid=50716¨)) | **Cities in Europe are experimenting new ways to invest in energy transition and finance green measures at local level. Innovative financing models are becoming a priority because of lack of public funding**    The pioneering city of **Stuttgart, Germany, was one the first to apply an innovative financing scheme back in 1995** and since then it has been bearing its fruit: [energy-efficiency funding](http://www.energy-cities.eu/Stuttgart-Germany-3866) has reduced the city’s CO2 emissions by tens of thousands of tonnes.    The scheme consists of setting up a [revolving fund](http://www.thefreedictionary.com/Revolving+Funds) from the city’s budget, using internal contracting to finance energy efficient measures. A unit of the Stuttgart administration takes on the role of an Energy Service Company (ESCO) offering energy services to other departments of the municipality.    **The savings from lower consumption are later returned to the initial budget line**. Over time the budget item is thus replenished so that, after an initial start-up phase, further funds can be made available for new measures. The absence of an external contractor cuts out transaction and administration costs.    **Stuttgart’s model has been embraced by the European association of local authorities in energy transition,**[**Energy Cities**](http://www.energy-cities.eu/-About-), which launched the “Infinite Solutions” project three years ago. It is aimed at spreading energy-efficiency funding solutions across Europe.    Using the same model, **cities allocate money to** **a fund that operates entirely within the city administration**, with no outside involvement. It is designed to help finance energy efficiency measures in public buildings, like installing low power devices, pumps, ventilators and photovoltaic panels, fixing energy efficient indoor lighting or building a new heating system, as well as thermal insulation.    **The time it takes to get the money back depends on the energy saving potential of the measures implemented.** Public lighting, for instance, is not only energy efficient but it also has a quick return. “When a city starts setting up such a fund, it will first implement smaller energy efficient measures, with a very short payback time of two to three years, so that it can reinvest easily. At a later stage, when the fund has proven a worthwhile scheme for financing building renovation, the private sector or the EU could contribute to this fund”, explains Jana Cicmanova, project manager at Energy Cities.    One of the towns that decided to apply the Stuttgart innovative model to finance energy efficient measures is**Agueda in Portugal, where the scheme has been adapted to a smaller context**. At the beginning of the year, this town of 48,000 inhabitants set up an internal revolving fund, designed to save electricity and water.    “We have strict rules governing local authority financing. Therefore, we don’t intend to look for other ways to extend fund”, asserts Célia Laranjeira, head of the division for the environment and sustainable development.    **This fund is only used to modernise public facilities**, as the Municipality is not allowed to invest in private buildings. Using this fund, they constructed a new control system for a stadium’s existing lighting installation. The device reduces the power consumed by the lamps while increasing the light intensity without changing the electric frequency.    The works are ongoing for installing solar panels at other municipal facilities: schools, a library and a business incubator. The buildings are all equipped with devices to control energy consumption. Smart metre systems have been fitted to track water consumption and detect water leakage during the irrigation of public green spaces.    Although the project has yet to be evaluated, **the municipality’s specialists expect to save at least 20% energy in each building to which energy efficient measures have been applied**. “We predict for next year the same amount of investment, coupled with the savings from implementing these measures”, says Laranjeira.    Residential buildings are also on the agenda for the coming years. **Stuttgart is preparing an all-round carefree package for the energy renovation of private homes**, including installations of heating systems or photovoltaics. “The investment costs are pre-financed by the municipal energy service company, while other energy measures, like insulation, have to be covered by the building’s owner”, explains Philipp Wenzel from the office for environmental protection, City of Stuttgart.    He expects these measures to raise the refurbishment rate of private houses, as well as the share of renewables. For the owners, the advantages are lower energy consumption, and increased building value and living comfort.    **Innovative financial instruments** such as green bonds and tax increment financing, are becoming**a priority because of lack of public funding**. **Nottingham in the UK, Valladolid in Spain and Tepebasi in Turkey**, acting as “lighthouses” for other European cities and working together in the [Remourban](http://www.remourban.eu/) project, will test them directly as part of their urban regeneration model. | |
| EU study on extending renewable energy in EU ([source](http://www.buildup.eu/en/practices/publications/study-extending-deployment-renewable-energy-eu-0?gid=50716)) | ***Study on the impact assessment for a new Directive mainstreaming deployment of renewable energy and ensuring that the EU meets its 2030 renewable energy target - Mainstreaming RES***      A new study funded by the EC explores policy options for increasing the deployment of renewable energy in Europe between now and 2030. The study addresses ways of generating long term funding for renewable projects across all sectors. It examines options for increasing the use of renewable energy in the transport sector and in the heating and cooling sector, in particular through obligations for suppliers. These would include requiring them to obtain a certain proportion of the energy they provide from renewable sources.    The study investigates measures aimed at ensuring more European citizens participate in the transition to clean energy, especially through the development of renewable energy communities. In these communities, people generate and consume renewable energy for themselves. The study also considers options for increasing regional cooperation between EU countries in the area of renewable energy. It also proposes other actions to ensure that the EU reaches its overall target of at least 27% renewable energy by 2030.    This study provided input to the Impact Assessment supporting the legislative proposal for a recast of the [Renewable Energy Directive](http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32009L0028), which is part of the Commission's ["Clean Energy for All Europeans" package](http://www.buildup.eu/en/node/50825).      To download the document, please visit the relevant DG Energy webpage at the link below.   * URL of the publication: [https://ec.europa.eu/energy/en/studies/study-impact-assessment-new-directive-mai...](https://ec.europa.eu/energy/en/studies/study-impact-assessment-new-directive-mainstreaming-deployment-renewable-energy-and-ensuring) | |
| Study on the Nordic energy system, carbon neutrality pathways ([source](http://www.buildup.eu/en/practices/publications/nordic-energy-technology-perspectives-2016-cities-flexibility-and-pathways-0?gid=50716)) | The Nordic edition of the International Energy Agency's (IEA)'s global [Energy Technology Perspectives 2016](http://www.buildup.eu/en/practices/publications/iea-energy-technology-perspectives-2016-0), offering detailed scenario-based analysis of how the Nordic countries can achieve a near carbon-neutral energy system in 2050.    The report identifies opportunities for policy makers and the private sector in three strategic areas:     1. incentivise and plan for a significantly more distributed, flexible and interconnected Nordic electricity system; 2. ramp up technologies to decarbonise energy-intensive industries and long-distance transport; 3. tap into cities’ positive momentum to strengthen national decarbonisation and enhance energy efficiency in transport and buildings.   According to the report, the Nordic Carbon-Neutral Scenario (CNS) achieves an 85% reduction of Nordic energy-related CO2 by 2050 (from 1990 levels) at lowest total cost. This takes place in the context of the IEA’s global 2-degree scenario (2DS) and uses the same models and assumptions.    Of particular relevance to BUILD UP:     * Building energy use per capita has continued to increase across the Nordic countries, despite energy efficiency measures over the last two and a half decades. Sweden is the one exception to this rule. * While direct fossil fuel use in the buildings sector in the Nordic countries has significantly decreased since 1990, significant effort is still needed to improve the overall energy intensity of buildings. * Nordic building energy demand is reduced by 27% under the CNS, compared with 2013, and average space heating energy intensities are improved by 55% as a result of aggressive energy renovations across existing building stocks along with low-energy intensity new building construction. * Urban buildings account for 70% of Nordic building energy reductions in 2050, with space heating demand reductions accounting for roughly 70% of urban building energy savings. * Urban building CO2 emissions go to zero in 2050 as a result of strong energy efficiency measures paired with decarbonisation of electricity and commercial heat production. * In Stockholm, moderate building efficiency measures, paired with carbon-neutral district heating investments, would lead to the greatest, most cost-effective energy and emissions reductions in 2050. * Buildings require the greatest relative increase in investments to achieve the CNS, followed by industry. Power entails a saving over the Nordic 4°C Scenario (4DS), while the system as a whole requires an increase of 10%.   To download and read the full report please click on the link provided below.  <http://www.iea.org/media/etp/nordic/NordicEnergyTechnologyPerspectives2016.pdf> | |
| Innovating Urban Energy, report ([source](http://www.buildup.eu/en/practices/publications/innovating-urban-energy-0?gid=50716)) | This report, prepared by [Arup](http://publications.arup.com/)on behalf of the [World Energy Council](http://www.worldenergy.org/), analyses the impact of key urban drivers on different energy scenarios and recommends key innovations. The paper assesses the concept of urban energy and how innovation paired with smart technology can be one factor of many to improve the energy in cities.    More than half of the global population now lives in a city - cities account to over half of global energy consumption. However, new solutions and opportunities are emerging which can enable cities – and energy actors in cities – to address these challenges in new and potentially more effective ways.    This paper selects and analyses five emerging urban energy innovations which hold the potential to substantially steer transition of the energy agenda in cities, towns and smaller conurbations. These innovations are:     * Transactive energy * City action networks * Integrated energy planning * Hydrogen economy * Financing energy action   Furthermore, the report explores the importance of local government, new digital platforms, hydrogen, city morphology and financial tools in securing a clean, resilient and affordable future for energy, transport and other city systems. It also emphasises that emerging technologies such as smart meters, local generation and hydrogen fuel cells can help cities wean themselves from fossil fuel.      To download the report, please visit the relevant World Energy Council webpage at the link below.   * URL of the publication: [http://publications.arup.com/~/media/Publications/Files/Publications/W/WEC%20Inn...](http://publications.arup.com/~/media/Publications/Files/Publications/W/WEC%20Innovating%20Urban%20Energy%20v2.ashx) | |
| ([source](http://www.buildup.eu/en/practices/publications/energy-efficiency-and-public-sector-odyssee-mure-project-0?gid=50716)) | **Energy Efficiency and the Public Sector - ODYSSEE-MURE Project**  This policy brief, elaborated in the context of the [ODYSSEE-MURE project](http://www.odyssee-mure.eu/), examines the role of public sector in energy efficiency in the European Union, as well as the most effective policies and barriers for energy efficiency in the public sector’ own operations..    More specifically, the report addresses the following topics:     * Role of the public sector * Lack of energy consumption data hampers monitoring and analysis * Barriers to energy efficiency * Smarter cities with good planning, digitalisation and upgrading know-how * Public buildings * Public procurement * Financing of investments * Networking, sharing of experience and international co-operation   Specifically regarding public buildings, the brief highlights the following:  Article 5 of the EED stipulates that each Member State shall ensure that, from 1 January 2014, 3% of the total heated and/or cooled floor area of buildings owned and occupied by its central government is renovated each year to meet at least the minimum energy performance requirements set by the Energy Performance in Buildings Directive (default approach). In an alternative approach Member States may decide to take other cost-effective measures, including deep renovations and measures for behavioural change of occupants. Out of the 28 EU Member States, 11 have chosen to implement the default approach and 17 have adopted the alternative approach. The EED sets the 3% renovation requirement only for the central government and does not make a similar provision for local authorities.    Various EPBD requirements concern also public buildings, namely mandatory inspections of boilers and air-conditioning systems (or use of alternative measures), regulations for nearly-zero energy buildings (nZEB) and the need to display energy performance certificates. New public buildings need to comply with nZEB regulations from the beginning of 2019.    Particularly developing the skills and building up motivation of operation and maintenance personnel is a necessity because technical systems in buildings are becoming increasingly complex.  Understanding wider systems is a prerequisite for effective energy management. According to the MURE database, over half of EU Member states mandate energy audits in large tertiary buildings, but Slovenia is one of the few countries to mandate appointment of an energy manager and Estonia is following a centralised energy management approach.      In general, the report concludes that the public sector alone cannot effectively pursue energy efficiency in the future but needs wider co-operation and new approaches together with businesses, other stakeholders and citizens.      To download the report, please visit the relevant ODYSSEE-MURE webpage at the link below.     * URL of the publication: [http://www.odyssee-mure.eu/publications/policy-brief/public-sector-building-ener...](http://www.odyssee-mure.eu/publications/policy-brief/public-sector-building-energy-efficiency.pdf) | |
| Review of financial instruments for energy efficiency measures – seminar ([source](http://www.buildup.eu/en/news/financial-instruments-local-energy-projects-outcomes-covenant-mayors-training-session-now-0?gid=50716)) | At the end of 2016, the [Covenant of Mayors Office](http://www.covenantofmayors.eu/)organised a two-day workshop on energy project financing. The training was designed to foster dialogue and learning opportunities amongst the ten participating cities and finance experts.    Through different roundtables, group discussions and presentations, representatives from cities had the opportunity to learn how to use the experts’ theoretical inputs for their own project idea by taking into consideration their cities' challenges and possibilities.    At the end, participants were invited to exchange on the role that initiatives like the Covenant of Mayors can play to help cities improve their access to finance resources through European funds and financing programmes.      **Presentations**    [**Finance Options for City Projects with a focus on Blending**](https://drive.google.com/file/d/0B5cldwM0HR10Mnd1eFVYenZSU00/view?usp=sharing)(Alexander Auboeck, EIB)    [**PACE Financing, a property-tax based financing mechanism for clean energy projects**](https://drive.google.com/file/d/0B5cldwM0HR10MDJiTlNwUVJndlk/view?usp=sharing)(Kristina Klimovich, PACE)    [**Standardisation – a key driver for energy efficiency investment uptake**](https://drive.google.com/file/d/0B5cldwM0HR10eUVRYjFDbGQyeFk/view?usp=sharing)(Luís Castanheira, ICP Europe)    [**Green City Bond**](https://drive.google.com/file/d/0B5cldwM0HR10WW85bzRfeVBydVU/view?usp=sharing)(Martin Stadelmann, South Pole Group)    [**From Project idea to implementation“ - Understanding the banking sector point of view**](https://drive.google.com/file/d/0B5cldwM0HR10NDRJZDBnZEZKbzg/view?usp=sharing) (Paola Rusconi, EEEF)      For further information, please visit the relevant Covenant of Mayors webpage at the link below.  <http://www.covenantofmayors.eu/news_en.html?id_news=796> | |
| Insights on energy policy ([source](http://www.buildup.eu/en/explore/links/insighte-project?gid=50716)) | INSIGHT\_E is a multidisciplinary energy think tank which provides the European Commission and other energy stakeholders with advice on policy options and assesses their potential impact. The INSIGHT\_E consortium is formed by twelve complementary partners representing various sectors: academia, research centres, consultancies, one think tank, one stakeholder organisation and one of the Knowledge and Innovation Community of the European Institute of Technology. The consortium's partners are based in ten European Member States. This sectoral and geographical diversity is also reflected in the thematic scope of INSIGHT\_E, ranging from energy infrastructure, new energy technologies to economic analysis, geopolitics and trade, environmental and climate impact, and social and behavioral change.    The INSIGHT\_E project is is funded by the European Commission under the 7th Research porgramme for Research and Technological Developement.    For further information visit the project's website at the link below.      <http://www.insightenergy.org/> | |
| Energy Efficiency Obligation Schemes, Costs and Benefits ([source](http://www.buildup.eu/en/practices/publications/costs-and-benefits-energy-efficiency-obligation-schemes-0?gid=50716)) ([report](https://ec.europa.eu/energy/sites/ener/files/documents/final_report_on_study_on_costs_and_benefits_of_eeos_0.pdf)) | This report, elaborated by the[Regulatory Assistance Project (RAP)](https://www.raponline.org/), reviews the main characteristics of the leading Energy Efficiency Obligation Schemes (EEOs) in Europe and the United States, and answers basic questions as to scope and scale to inform European policymakers as they consider extending the Energy Efficiency Directive (EED) beyond 2020.    Drawing on data from five Member States—the United Kingdom, Denmark, France, Italy, and Austria—the report explores the full range of costs and benefits of EEOs that need to be considered in future impact assessments and presents our findings on the costs, bill impacts, and multiple benefits of EEOs under Article 7 of the EED. Data from the states of California and Vermont in the United States are included for comparison.    The analysis shows that, within a few years of adoption, the benefits from EEOs far outweigh the costs. From a long-term perspective, EEOs can substantially reduce energy consumption and bills, delivering benefits to consumers who would otherwise face more exposure to volatile energy prices. Evidence from countries with long-running EEOs also shows energy consumption decreasing over time, which corroborates our findings.    According to the report, EEOs also deliver a wide range of benefits in addition to reduced energy consumption and bill savings for participants—they deliver substantial, measurable savings across energy systems and to society as a whole. These include health benefits, increased comfort, economic stimulus, job creation, cost savings in transmission and distribution, avoided CO2 allowance costs, and air quality improvements.    However, the current practice of largely ignoring those multiple benefits in cost-benefit analyses underestimates the true value of efficiency and sends potentially misleading messages. Methods for carrying out impact assessments and evaluations need to be adjusted to ensure realistic and complete accounting for the multiple benefits, at both the EU and the national level.      To download the report, please visit the relevant RAP webpage at the link below.   * URL of the publication: [https://ec.europa.eu/energy/sites/ener/files/documents/final\_report\_on\_study\_on\_...](https://ec.europa.eu/energy/sites/ener/files/documents/final_report_on_study_on_costs_and_benefits_of_eeos_0.pdf) | |
| Energy Efficiency Obligation Schemes, toolkit ([source](http://www.buildup.eu/en/practices/publications/toolkit-energy-efficiency-obligations-0?gid=50716)) ([report](http://www.raponline.org/wp-content/uploads/2016/05/rap-leesbayer-eeotoolkit-2016-feb.pdf)) | Both in the European Union (EU) and globally, the use of energy efficiency obligation (EEO) schemes– policies that place an obligation on energy companies to deliver end-use energy savings targets over time– has been growing.    For EU Member States implementing an EEO under Article 7 of the Energy Efficiency Directive (EED), this toolkit, elaborated by the [Regulatory Assistance Project (RAP)](https://www.raponline.org/), provides a step-by-step guide through the design and implementation of EEOs. It covers how to establish the EEO’s objectives (including designating eligible sectors and savings targets), select appropriate design features, set up an effective compliance regime, and carry out evaluation and reporting. The toolkit is designed as a tool for policymakers and stakeholders, and aligns with the requirements for compliant implementation of Article 7 of the EED.    This toolkit provides definitions, explanations of the scope and importance of each design feature, and options to consider. The explanations in this toolkit aresupported by evidence from EEOs in Europe and elsewhere, and case studies are included throughout the text.    In this guide, it is assumed that the decision to undertake an EEO has already been made, and therefore not much time is dedicated to explaining the benefits of EEOs. Rather, the toolkit guides the reader step-by-step through each major component of an effective EEO. The toolkit can be used to support the creation of a new EEO or redesign or improvement of an existing EEO.    The toolkit does not cover each design aspect in detail. It is meant to provide the reader with a comprehensive list of each of the areas requiring attention in creating an EEO and the information needed to understand the “what,” “how,” “who,” and “why” of each area. The reader is, therefore, encouraged to use this toolkit as a first step and reference guide for designing an EEO. Wherever possible, the toolkit includes resources where more detailed information can be found.      To download the guide, please visit the relevant RAP webpage at the link below.  URL of the publication: [http://www.raponline.org/wp-content/uploads/2016/05/rap-leesbayer-eeotoolkit-201...](http://www.raponline.org/wp-content/uploads/2016/05/rap-leesbayer-eeotoolkit-2016-feb.pdf) | |
| Targeted loans for energy savings in residential buildings ([source](http://www.buildup.eu/en/practices/cases/saving-energy-europe-15-good-practice-case-studies-financing-and-delivery-energy?gid=50735)) | The EEB has compiled a great showcase of different good practice case studies that will hopefully inspire similar projects all over Europe. In order to achieve our energy saving goals and reap the benefits they offer we can no longer afford to see these good practice schemes as isolated cases, as the ‘select exemplary few’. These case studies should be replicated, expanded, developed and deepened so that these approaches become the norm, every day practice - not the alternative. This Good Practise Case Study demonstrates how energy saving incentives/schemes introduced at different levels (state, borough, city etc.) can result in reduced energy use.    **Aims and Objectives:**  KfW (Kreditanstalt für Wiederaufbau) is a promotional bank in the Federal Republic of Germany which supports change and encourages forward-looking ideas in Germany, Europe and throughout the world.  **Implementation Timeframe:**  KfW began promoting energy efficiency in housing in the early 90s and launched in 1993, along with the CO2 reduction programme, the first programme strictly focused on energy efficiency. The CO2 rehabilitation programme (today renamed to energy-efficient construction and rehabilitation) started in 2001 and is sponsored by the federal Government.  **How it Works:**  The KfW Financing Programmes for energy efficiency support a financial framework for investments targeted especially at residential buildings. The investors are given long term, low interest loans supported with professional, independent advice. The loans have fixed interest rates ranging over 10 years with repayment starting after two years. The loans can amount up to €75,000. In addition to the reduction in CO2 emissions, KfW’s financing schemes provides thousands of jobs, mainly in the construction industry. Once successful, the loan applicant has to inform KfW about the use of the funds according to the programme conditions. This programme has contributed significantly to help meet the climate goals of Germany.  **Results:**  The loans granted by KfW in 2008 to German entities for the financing of energy efficiency investments in residential buildings added up to €6,343 million. This initiated an annual reduction of greenhouse gas emissions amounting to 837,000 tonnes of CO2 emissions. In 2009 the loans given to finance energy efficiency investments in residential buildings amounted to €8,864 million and resulted in annual greenhouse gas emission savings of 1,175,000 tonnes of CO2 emissions. In 2010 the loans amounted to €8,746 million and resulted in annual greenhouse gas emission savings of 1,049,000 tonnes of CO2 emissions. Further effects were achieved by KfW financing measures for energy efficiency investments in firms and municipalities  **Key Benefits:**  Reduction in Greenhouse gas emissions   * 2008:  837,000 tonnes * 2009:  1,175,000 tonnes * 2010:   1,049,000 tonnes   Loans granted in   * 2008:  € 6,343 million * 2009:  € 8,864 million * 2010:  € 8,746 million   For further details and elaboration on any of the issues touched upon in this case study, please contact the European Environmental Bureau, by clicking[here](http://www.eeb.org/).  Contact information for KFW, [here.](http://www.kfw.de/)  [http://www.eeb.org/EEB/?LinkServID=30CC2E6A-D8B0-0495-BA4A5F7B9A45C403&showMeta=...](http://www.eeb.org/EEB/?LinkServID=30CC2E6A-D8B0-0495-BA4A5F7B9A45C403&showMeta=0) | |
| Experiences from Smart City Projects (metaproject) ([source](http://www.buildup.eu/en/explore/links/my-smart-city-district-0)) | Eight projects involving 27 districts belonging to 25 cities from 13 different countries have joined forces for greater leverage in sharing contents and promoting energy efficient renovation for cities and communities leading to large-scale replicability of sound energy efficiency solutions.    My Smart City District initiative provides a coherent and common communication outlet to disseminate the projects’ achievements and best practices towards other cities, stakeholders and the public at large. Join our events, social media networks and efforts towards greener and smarter cities.    Blending the expertise and technologies, and leveraging the experience of working across different districts, building types and legislations are some of the challenges for this European-wide initiative. The blend must be a savvy mix leading to large-scale replicability of sound energy efficiency solutions, rather than a simple mishmash of good practices without a coherent outlet. It is precisely this challenge that My Smart City District address whilst drawing on the combined forces of the eight EU projects involved:[EU-GUGLE](http://www.buildup.eu/en/node/51769), [R2CITIES](http://www.buildup.eu/en/node/38740),[ZenN](http://www.buildup.eu/en/node/43421), [CITyfiED](http://www.buildup.eu/en/node/42719), [Sinfonia](http://www.buildup.eu/en/node/43420), [CITY-ZEN](http://www.buildup.eu/en/node/51666),  [CELSIUS](http://www.buildup.eu/en/node/50633), and [READY](http://www.smartcity-ready.eu/).      <http://mysmartcitydistrict.eu/> | |
| Financial schemes for energy efficiency ([source](http://www.buildup.eu/en/practices/publications/increasing-capacities-cities-innovating-financing-energy-efficiency)) | This report is the first guidance material produced within the [CITYnvest project](http://www.buildup.eu/en/explore/links/citynvest). The document reviews twenty-four innovative financing and operational models for large-scale retrofits in eleven European countries and explains possible mechanisms and instruments that could be used by municipalities to carry out renovation works in buildings.    The report aims to review the characteristics of the most effective initiatives that are currently being developed and deployed, and to draw up a features and benefits matrix as well as risks and issues arising analysis, such that any local authority can appreciate which model may be most appropriate to their own circumstances and what are the steps to be considered to develop their own model.    The document features instruments such as Energy Performance Contracting (EPC), Third Party Financing (TPF), revolving funds and cooperative models. It includes a simple tool, which helps to develop a strategic plan and an action plan.    For further information please visit: <http://www.citynvest.eu/content/review-local-authority-innovative-large-scale-retrofit-financing-and-operational-models>   * URL of the publication: [http://www.citynvest.eu/sites/default/files/library-documents/20151202\_WP2%20Fin...](http://www.citynvest.eu/sites/default/files/library-documents/20151202_WP2%20Final%20Report-V1.3.pdf)[http://www.citynvest.eu/content/review-local-authority-innovative-large-scale-re...](http://www.citynvest.eu/content/review-local-authority-innovative-large-scale-retrofit-financing-and-operational-models) [http://www.citynvest.eu](http://www.citynvest.eu/) | |
| Citizen engagement in energy effectivity, PROJECT (source [1](http://www.buildup.eu/en/practices/publications/count-us-lessons-learnt-helping-households-control-their-energy-use-through), [2](http://www.housing.org.uk/resource-library/browse/count-us-in-lessons-learnt/)) | This report includes the main findings from the **Count Us In project**. It also sets out recommendations for housing associations wishing to deliver effective engagement activity at scale. It has been launched by the UK National Housing Federation alongside related research from Sustainable Homes and Cabinet Office.  The report follows research published in January 2013, which profiled different engagement and behaviour change techniques and examples of good practice from across the housing association sector.  Count Us In explored how housing associations can help their residents use energy more efficiently through simple changes in their behavior. As part of the project, the Federation worked with housing associations who ran pilots testing different ways of working with residents. The pilots have provided valuable learning on how to deliver engagement with tenants across a range of housing types in urban, rural and sheltered settings. A range of techniques were tested, including use of smart meters, social media technology, resident-led action, one-on-one training and group sessions.  Detailed reports on each Count Us In pilot are available. These include examples of the materials used to engage households. An executive summary presentation of the Lessons Learnt report is also available under Related documents heading:<http://www.housing.org.uk/policy/greener-neighbourhoods/count-us-in/>  The project was made possible with the support of the Oak Foundation.    URL of the publication: <http://www.housing.org.uk/policy/greener-neighbourhoods/count-us-in> [http://www.housing.org.uk](http://www.housing.org.uk/)  **The Federation has published the main findings from the Count Us In project.**  10 October 2014  The report also sets out recommendations for housing associations wishing to deliver effective engagement activity at scale. It has been launched alongside related research from [Sustainable Homes](http://www.sustainablehomes.co.uk/blog/bid/207141/A-study-of-the-effects-of-feedback-on-domestic-energy-use-Introduction) and [Cabinet Office](https://www.gov.uk/government/publications/working-with-volunteers-to-talk-about-energy)  The report follows [research we published in January 2013](http://s3-eu-west-1.amazonaws.com/doc.housing.org.uk/Editorial/NHF_CountUsIn_Review_October2012_(1).pdf), which profiled different engagement and behaviour change techniques and examples of good practice from across the housing association sector.   * [Count Us In: Lessons Learnt](http://s3-eu-west-1.amazonaws.com/pub.housing.org.uk/Count_Us_In_Lessons_Learnt__2014-updated.pdf) | |
| Decision support toolkit for owners of non-residential buildings ([source](http://www.buildup.eu/en/practices/publications/total-concept-project-presentation-0)) ([tool](http://totalconcept.info/)) | **A method presenting economic rationales for major reduction of energy use in non-residential buildings**     Total Concept, an Intelligent Energy Europe (IEE) project,  offers a method and a financial tool that can provide the information required by establishing an informed platform for decisions about investments in energy-saving measures.    Energy renovation of non-residential buildings – a wise investment In existing non-residential buildings energy savings can often be achieved by improving the building climate shield and the performance of HVAC systems and other energy consuming technical installations. In addition, changes in user behavior can be effective – without loss of comfort. Owners of existing non-residential properties need reliable information about what measures are cost effective, and what returns can be expected on energy related investments.    Major energy savings involving existing buildings are necessary if EU member states are to live up to the goals set for energy efficiency and CO2 reduction, and is a prerequisite conditions for the shift from fossil energy to the sustainable or regenerative production of energy. Total Concept helps to make this shift both cost-effective and a good business proposition.    **The method and the tool in brief**   The method applies a holistic approach to work with energy issues in the building with the aim to achieve maximum savings in a cost-efficient way.     * It includes economic realities a building owner has to take into account, while at the same time increasing the ambitions and making it possible to come much further with improving buildings’ energy performance than with traditional methods. * The method is based on an action plan comprising a package of measures that as a whole fulfils the property owner’s profitability requirements. * With the Total Concept tool the expected returns on investment of the various identified measures and for the action package can be determined, taking into account different economic lifetimes of the measures. * The Total Concept is divided into three steps in a systematic approach covering the entire building process.     **Action package**   For forming the action package both the single cost-efficient measures (“low hanging fruits”) and more costly measures are considered. What will be included to the action package will be determined in the profitability calculations based on the criterion that the internal rate of return for the whole package fulfils the investor’s demands on cost of capital. The most economically profitable measures will assist the less profitable measures while the complete action package will fulfil the profitability frames set by the building owner. This way of working has shown that total energy savings of more than 50 percent are possible.    **A process in three steps**   The work process of Total Concept has been structured into three main steps. Each step includes a number of tasks to be carried out and requires a certain involvement from the specified stakeholders and key actors of the method implementation.     For further information, please visit the project's website at the link below.   * URL of the publication: <http://totalconcept.info/> | |
| New Urban Agenda (UN HABITAT) ([source](http://www.buildup.eu/en/practices/publications/new-urban-agenda-0)) | The New Urban Agenda is an action-oriented document which sets global standards of achievement in sustainable urban development, rethinking the way we build, manage, and live in cities through drawing together cooperation with committed partners, relevant stakeholders, and urban actors at all levels of government as well as the private sector.    The New Urban Agenda, agreed upon at the [UN Habitat III Conference](https://habitat3.org/) in Quito, will guide the efforts around urbanisation of a wide range of actors —nation states, city and regional leaders, international development funders, UN programmes and civil society— for the next 20 years. Inevitably, this Agenda will also lay the groundwork for policies and approaches that will have long lasting impact.    The Agenda  seeks to create a mutually reinforcing relationship between urbanisation and development. Several core ideas form the ideological underpinnings of the new Agenda. Democratic development and respect for human rights feature prominently in the document, as does the relationship between the environment and urbanisation.    The new Agenda also places importance on establishing a global monitoring mechanism to track progress on meeting commitments. As an “agenda”, it will provide guidance to nation states, city and regional authorities, civil society, foundations, NGOs, academic researchers and UN agencies. However, this guidance is not binding. This arrangement is different from, for example, the December 2015 climate negotiations in Paris, which resulted in a legally binding agreement.     For further information or to download the document, please visit the relevant Habitat III webpages at the links below.   * URL of the publication: <https://www.habitat3.org/file/535859/view/588897> <https://habitat3.org/the-new-urban-agenda> | |
| Framework report ([source](http://www.buildup.eu/en/practices/publications/district-energy-cities-0)) ([report](http://districtenergyinitiative.org/report/DistrictEnergyReportBook.pdf)) | **District energy in cities - Unlocking the potential of energy efficiency and renewable energy**    This report by the [United Nations Environment Programme](http://www.buildup.eu/en/explore/links/unep-sbci-united-nations-environment-programme-sustainable-building-and-climate) (UNEP) prepared in collaboration with the [Copenhagen Centre on Energy Efficiency](http://www.energyefficiencycentre.org/) (C2E2), [ICLEI – Local Governments for Sustainability](http://www.iclei.org/) and [UN-Habitat](http://unhabitat.org/), provides an overview into what integration and systems thinking look like in practice when addressing challenges in the energy, transport, buildings and industry sectors and showcases the central role of cities in the energy transition. The document provides concrete policy, finance and technology best practice guidance on addressing the heating and cooling sectors in cities through energy efficiency improvements and the integration of renewables. It offers an in-depth review of 45 cities around the world, providing a platform for further global expansion of district energy approaches across cities worldwide. It aims to serve as guidance for accelerated implementation and expansion of district energy systems through a “cities -for- cities” thematic twinning process. The report highlights why and how cities are deploying district energy systems, including by demonstrating key policy best practices, new business models and emerging innovations. It also consolidates data on the multiple benefits that cities, regions and countries have achieved from a transition to modern district energy systems including greenhouse gas emissions reductions, air pollution reductions, energy-efficiency improvements, use of local and renewable resources, resilience and energy access and green economy.    Low-carbon cities worldwide have been surveyed to identify the key factors underlying their success in scaling up energy efficiency and renewable energy, as well as in attaining targets for zero or low greenhouse gas emissions. District energy systems (DES) emerged as a best practice approach for providing a local, affordable and sustainable energy supply, improve energy efficiency and support energy access efforts. They represented a significant opportunity for countries and cities around the world to move towards climate-resilient, resource-efficient and low-carbon pathways.    For more details please visit the link provided below to download the report.   * URL of the publication: [http://districtenergyinitiative.org//report/DistrictEnergyReportBook.pdf](http://districtenergyinitiative.org/report/DistrictEnergyReportBook.pdf)<http://www.districtenergyinitiative.org/> | |
| ZERO-PLUS project | *The ZERO-PLUS project: “Achieving near Zero and Positive Energy Settlements in Europe using Advanced Energy Technology”, funded under the EC H2020 program, aims at the development and implementation of a comprehensive, cost-effective system for Net Zero Energy (NZE) settlements. The system is composed of innovative solutions for the building envelope, for building energy generation and management, and for energy management at the settlement level. The developed solutions will be implemented in four different demonstration projects throughout the EU, with varying climates and building types. The results of their implementation will be monitored and analysed. More information can be found at:*[*http://www.zeroplus.org/*](http://www.zeroplus.org/)   * URL of the publication:  [http://www.zeroplus.org](http://www.zeroplus.org/) | |
| Lessons learned about co-creation in urban areas ([source](http://www.buildup.eu/en/practices/publications/suburbanlab-project-urban-living-labs-arenas-co-creation-urban-areas)) ([report](http://suburbanlab.eu/wp-content/uploads/2016/05/SubUrbanLab_booklet_screen.pdf)) | This booklet collects all main results and learnings of the project and it is meant to be easily distributed in printed format at events and seminars targeted to cities and municipalities as well as downloadable online. The benefits of Urban Living Labs and lessons learned are presented to encourage also other cities and municipalities to follow. The booklet emphasizes the added value and benefits to be gained through collaboration. The target groups of the booklet are: as an example; organizations who want to start and lead Urban Living Labs in connection to modernization and uplifting actions.   * URL of the publication: <http://suburbanlab.eu/wp-content/uploads/2016/05/SubUrbanLab_booklet_screen.pdf> | |
| Guidebook for data access in energy action plans ([source](http://www.buildup.eu/en/practices/publications/data-access-guidebook-sustainable-energy-action-plans-0)) ([report](http://www.fedarene.org/wp-content/uploads/2017/01/576-Data-Access-Guidebook-rx15.pdf)) | This guidebook, released within the framework of the [Data4Action project](http://data4action.eu/) is intended for public authorities, energy planning facilitators and energy data providers and aims to facilitate access to key energy data in regions, and inform sustainable energy policies, plans and strategies. More specifically, the guide can help to:     * Identify and access reliable and accurate energy data in regions or territories. * Develop and implement win-win collaboration models in energy data sharing. * Establish a Regional Energy Data Centre providing data services to public authorities for sustainable energy planning. * Develop policies supporting energy data sharing for sustainable energy planning by public authorities. * Develop and monitor an informed Sustainable Climate and Energy Action Plan, with energy planning tools that reflect the needs of municipalities and communities in regions. * Engage with regional and local stakeholders during the preparation and monitoring phases of plans in order to get their buy-in and support, thereby ensuring measurable, long-term benefits for territories.   This document has been prepared by Data4Action. Data4Action is co-funded by the Intelligent Energy Europe Programme of the European Union (Grant agreement no. IEE/13/368/SI2.675578).    To download the guidebook, please use the link below.   * URL of the publication: [http://www.fedarene.org/wp-content/uploads/2017/01/576-Data-Access-Guidebook-rx1...](http://www.fedarene.org/wp-content/uploads/2017/01/576-Data-Access-Guidebook-rx15.pdf)[http://data4action.eu/the-data-access-guidebook-for-sustainable-energy-action-pl...](http://data4action.eu/the-data-access-guidebook-for-sustainable-energy-action-plans-has-been-released/) <http://data4action.eu/> | |
| Brochure about district-scale solutions for energy efficiency ([source](http://www.buildup.eu/en/node/51022)) ([brochure](http://e2b.ectp.org/fileadmin/user_upload/documents/E2B/0_EeB_PPP_Promising_Techno_Brochures/Urban_District_Scale_Solutions.pdf)) | The Energy Efficient Buildings Committee of the ECTP is pleased to present the 5 Technologies brochures published in the framework of the EeB-CA2 CSA.    This technology brochure deals with **Urban & District Scale solutions** and highlights the **highly promising innovations** from selected co-funded European projects under the 7th Framework Program (FP7).    **Contents**  Methodology for Building Evaluation and Results Comparison: Standardised comparison of energy performances of complex buildings Interactive Monitoring Platform for Complex Energy-Efficient Buildings DEMS District Energy Management System Decision Support Tool for Retrofitting a District: Towards the District as a Service    The brochure is available on the ECTP Energy Efficient Buildings Committee website at the following link: <http://e2b.ectp.org/resources/publications/>    Please contact the ECTP if you wish to have printed copies. | |
| Decision support tool for retroffitting a district, URB-GRADE PROJECT ([source](http://e2b.ectp.org/fileadmin/user_upload/documents/E2B/0_EeB_PPP_Promising_Techno_Brochures/Urban_District_Scale_Solutions.pdf)) | <https://urb-grade.eu/download/> | |
| Towards an Energy union Legislative tick-list ([source](http://www.buildup.eu/en/practices/publications/eu-energy-union-legislative-package-e3g-briefing-paper-0)) | [[http://www.buildup.eu/sites/default/files/styles/page_main/public/illustrations/energy_union_legislative_package_ticklist_750_530_0.jpg?itok=1vuvvGjW](http://www.buildup.eu/sites/default/files/illustrations/energy_union_legislative_package_ticklist_750_530_0.jpg)](http://www.buildup.eu/sites/default/files/illustrations/energy_union_legislative_package_ticklist_750_530_0.jpg)  [Energy Union Legislative Package Tick-list by E3G](http://www.buildup.eu/sites/default/files/illustrations/energy_union_legislative_package_ticklist_750_530_0.jpg)  On 30 November 2016, the European Commission will launch a legislative package on energy. This represents a ‘once-in-a-decade’ set of reforms to the design of electricity markets, to renewables and energy efficiency targets and policies, and to the governance rules for planning and reporting on climate and energy. The “jumbo” package of at least 8 legislative initiatives is likely to run to over 1,000 pages.    This briefing note by [E3G — Third Generation Environmentalism](https://www.e3g.org/)offers a guide for navigating the package and evaluating its success. It lists the core principles by which the EU should abide, describes the legislatives and provides a check list of expected results and targets.    According to this E3G paper, the EU legislative package needs to:     * Provide a clear statement of intent that Europe will complete its energy transition. * Set the frame for the next 15-20 years. * Enable a return to growth for clean investment. * Strengthen the rights of active consumers. * Put energy efficiency at the heart of the package. * Ensure the EU energy system is compatible with the aims of the Paris Agreement on climate change.     For further information or to download the guide, please visit the relevant E3G webpages at the links below.     * URL of the publication: <https://www.e3g.org/docs/Winter_package_briefing_paper_November_2016.pdf>[https://www.e3g.org/library/the-eu-energy-union-legislative-package-benchmarks-f...](https://www.e3g.org/library/the-eu-energy-union-legislative-package-benchmarks-for-success) | |
| SETIS – Strategic Energy Technologies Information System | | |
| Experiences from smart grid projects (2012) ([source](https://setis.ec.europa.eu/sites/default/files/reports/smart_grid_projects_in_europe_-_lessons_learned_and_current_developments.pdf)) | Challenges and success strategies  Two points most frequently referred to as critical are (i) lack of trust by consumers and (ii) uncertainties regarding the use of different motivational factors.  5.2.1 Motivational factors  Understanding the values that influence consumer choice is of crucial importance in segmenting consumers on the basis of non-traditional factors, like attitudes and motivation as regards energy usage. These factors play a fundamental role in actually triggering behavioural change and are increasingly being used by energy providers as motivational incentives to stimulate consumer involvement and promote smart grid projects. Our inventory shows that the motivational factors commonly used by smart grid projects in Europe are: (i) environmental concerns, (ii) reduction of/control over electricity bills and (iii) better comfort (Figure 44). Most of the projects use more than one factor, usually combining environmental concerns with cost reduction. This indicates that electricity providers are not yet targeting specific customer segments, but dealing with consumers en masse, trying to appeal to them with a combination of motivational factors. Environmental concerns From our inventory, it emerges that environmental concerns are the motivational factor used most in the projects. Several studies have highlighted that environmental considerations are becoming an important variable in consumers’ choices. A consumer survey by IBM, for example, found that 70% of consumers surveyed cited environmental considerations as an important factor in their choice of energy and other products [Valocchi et al., 2009]. Another recent survey confirms that, while consumers consider reliability of supply and tariffs important, they place equally high value on broader environmental and social issues [Ngar-yin Mah et al., 2012]. Nevertheless, some studies emphasise that environmental concerns alone are not enough to get untargeted consumers involved. A recent survey by Accenture [Accenture, 2010b] reveals that, 74 when deciding to adopt an electricity management programme, the average consumer ascribes relatively less importance to environmental impact as compared with other motivational incentives. These studies are not specific to the European market and the extent to which their conclusions can be applied to European customers is unclear. Our inventory shows that electricity providers leading consumer involvement projects in Europe consider environmental concerns to be an appealing motivational factor very often used in combination with reduction of/control over electricity bills, indicating a certain lack of confidence in its effectiveness when used alone in untargeted initiatives. Reduction of/control over electricity bills ‘Reduction of/control over electricity bills’ is the second most commonly used motivational factor. However, a number of project coordinators have pointed out a difficulty due to uncertainty as to whether consumers will actually be able to experience those benefits. The danger here is that consumers who do not make the savings expected from their behavioural change might consider the whole experience disappointing and frustrating [Hargreaves et al., 2010]. This reaction would constitute a major blow to the consumer involvement process and could severely damage any sort of trust that may have already been established. Better comfort The motivational factor least referred to by our projects was ‘better comfort’, i.e. the provision of technological solutions allowing enhanced comfort and more control over one’s own energy use. The consumer segment which this factor could most appeal to is that of technology enthusiasts, i.e. consumers who have an interest in the technology itself, either for professional reasons or because it represents ‘another gadget’ ].  5.2.2 Successful strategies  Consumer response and consumption patterns The observation of consumer responses to newly introduced mechanisms and technical solutions is essential to exploring their viability and their impact on the energy system. Some of the projects in our inventory explore consumers’ responses to dynamic pricing and other incentive programmes. EcoGrid EU: consumers participate with flexible demand response to real-time price signals. The participants are equipped with residential demand-response devices/appliances using gateways and smart controllers. Consumers can see real-time prices and pre-programme their automatic demand-response preferences, e.g. through different electricity contracts. Automation and customer choice are key elements in the project. Address: two recruitment and involvement strategies were used to involve consumers in an active demand programme: 1. fixed incentives to participate (20% bill reduction for the 75 duration of the field test); 2. variable incentives based on consumers’ participation during the field test. The results show that the second strategy was far more effective in involving the consumer as an active player in the active demand programme. Mini Berlin: the project involves 50 EVs (Mini E) on the street with public access to charging points. It tests the interaction of electric vehicles in everyday conditions and explores the performance of EVs not only from the technical point of view but also by observing users’ patterns of behaviour and preferences. Consumer involvement strategies The installation of the enabling infrastructure (smart meters, in-home displays) and provision of detailed information alone will not be sufficient to involve consumers. Project developers in our catalogue have started to develop diversified strategies to find the best way of presenting information to consumers, and possibly different consumer segments, fine-tuning the strategies in the light of the reactions. Ewz-Studie Smart Metering, Zurich aims simultaneously to assess the response of consumers to different ways of involving them, including in-home displays, expert advice, social competition and social comparison. Individual surveys are conducted before, during and after the trial to assess consumer response and satisfaction. The Consumer to Grid project aims to test and measure behavioural change induced by different feedback means, monthly bills, a smart-phone-optimised website, in-home displays and an adhoc feedback gadget. Behavioural change is assessed by means of data verification (smart meters), questionnaires and interviews. Many projects focus on one feedback solution only, typically in-home displays, but investigate the importance of using complementary means to involve the consumer. In the ESB Smart Meter project, in-home displays are coupled with visual recalls such as stickers, magnets and energy consumption indicators, which proved to be effective involvement tools. For example, results showed that fridge magnets and stickers achieved 80% recall, with 75% of users finding the magnet useful and 63% the sticker. Other projects investigate the role of games in promoting awareness and involving consumers. The BeAware — Boosting Energy AWAREness project involves energy consumers as active players by means of the EnergyLife system, which uses wireless sensors and a smart phone. The system is based on awareness tips and consumption feedback. The former aims to increase consumers’ knowledge of the consequences of their electricity consumption, while the latter displays actual energy consumption in terms of the distance to the selected savings target. In 76 order to involve the consumer, the system operates like a game: awareness and consumption are expressed in scores, goals are divided into sub-goals and consumption is expressed in scores linked to different levels of the game, so that achieving a goal on one level gives access to a higher level; higher levels have a greater degree of difficulty and richer functionalities. Lastly, knowledge is tested through quizzes and improved through tips, thus further enhancing awareness [Jacucci et al., 2009]. Energy-saving activity can be discussed with others participating in the same programme. Comparative feedback may lead to a sense of competition, social comparison and social pressure that may be especially effective when relevant others are used as a reference group [Abrahamse et al., 2005]. The Ecoffices project is based on an ‘Energy challenge within offices’, encouraging employees in a fun and interactive way to use energy more intelligently. Employees are challenged to participate in a collective effort to ‘green’ their company through a competition based on realtime energy usage data. There is a reward for the winning team. Employees are regularly informed of their ecological behaviour and how to improve. One of the conclusions is that it would be beneficial to add a ‘push information’ system, such as a weekly e-mail to the participants summarising the main information from the web interface. How to gain trust Many project coordinators reported a high level of consumer's scepticism. Customers tend to seek relationships with more mutual trust and commitment and are less sceptical when trusted organisations or figures, perceived as neutral, are involved in the project. Some projects have started making direct and personal contact with the consumer, using a combination of means ranging from information letters to one-on-one scheduled appointments; other projects have started approaching customers with an organisation or person of trust (‘door opener’) and this has proved to be a successful strategy. Examples from our inventory include the involvement of representatives of housing associations (Pilot Project Märkisches Viertel), consumer associations (EcoGrid EU) and local authorities (Address, eTelligence). This approach has also been shown to be successful in other projects outside Europe. The Smart Grid Consumer Collaborative study highlights that very positive results were achieved by those projects that partnered trusted community groups and persons able to promote messages and programmes to large networks [SmartGrid Consumer Collaborative, 2011]. 77  5.3 Social implications of smart grids  The development of smart grids presents uncertainty as well as risk, particularly in relation to social and cultural factors. For the future smart grids to be successful, social and cultural views and viewpoints need to be incorporated as critical requirements at an early stage. The 2011 JRC inventory found a lack of specific attention to the social implications of smart grids. However, the report, which was based on a thorough literature review, highlighted several social aspects that were relevant to smart grids’ success (jobs, internal mobility, ageing workforce and shortage of new skills and competencies, privacy, vulnerable consumers, safety). These aspects were included in the 2012 questionnaire, section 6 – Social impact. Some projects reported participants' concerns on health effects of wireless emissions from the sensors / meters installed for the project (ECOFFICE). Some other projects reported to have addressed transparency and openness providing information and presentations to the local residents involved in the project (PREMIO, Electric mobility pilot region of Berlin-Potsdam, ‘BeMobility 2.0’). However, we have to acknowledge a low rate of response on this specific section. This confirms that there is still insufficient consideration given to social and cultural implications in smart grid projects in Europe | |
| **Energy Cities** | | |
| Proposed actions | **Proposals**  **Empowering local players**  [1.1 Take local control of energy supply](http://www.energy-cities.eu/cities/proposal_detail.php?id=1)  [1.2 Unite all stakeholders in a local energy alliance](http://www.energy-cities.eu/cities/proposal_detail.php?id=2)  [1.3 Ensure public budgets integrate positive and negative energy externalities](http://www.energy-cities.eu/cities/proposal_detail.php?id=3)  [1.4 Co-create a long-term vision to shape all policies](http://www.energy-cities.eu/cities/proposal_detail.php?id=4)  [1.5 Eradicate local fuel poverty](http://www.energy-cities.eu/cities/proposal_detail.php?id=5)  [1.6 Lead by example by transforming municipal energy management](http://www.energy-cities.eu/cities/proposal_detail.php?id=6)  [1.7 Prepare an Energy Transition Action Plan](http://www.energy-cities.eu/cities/proposal_detail.php?id=7)  [1.8 Be part of regional, national and European networks to gain exposure to others’ experience](http://www.energy-cities.eu/cities/proposal_detail.php?id=8)  **Knowing our territories’ resources and flows**  [2.1 Know the territory’s metabolism so as to optimise local potential and reduce the impact of human activities on the ecosystem](http://www.energy-cities.eu/cities/proposal_detail.php?id=9)  [2.2 Identify local energy potential in order to live within our means](http://www.energy-cities.eu/cities/proposal_detail.php?id=10)  [2.3 Prepare a local heat plan to match need and available resource](http://www.energy-cities.eu/cities/proposal_detail.php?id=11)  [2.4 Create and implement a territorial bio-waste action plan](http://www.energy-cities.eu/cities/proposal_detail.php?id=12)  [2.5 Make the best use of energy and material flows by encouraging synergies between players](http://www.energy-cities.eu/cities/proposal_detail.php?id=13)  [2.6 Make better use and share what already exists instead of always buying more](http://www.energy-cities.eu/cities/proposal_detail.php?id=14)  [2.7 Encourage the development of a more endogenous economy to increase territories’ resilience](http://www.energy-cities.eu/cities/proposal_detail.php?id=15)  **Rethink financing solutions**  [3.1 Keep money spent on energy near to home](http://www.energy-cities.eu/cities/proposal_detail.php?id=16)  [3.2 Collect local savings and invest them in sustainable local energy projects](http://www.energy-cities.eu/cities/proposal_detail.php?id=17)  [3.3 Integrate future energy prices in the economic calculations made prior to investment decisions](http://www.energy-cities.eu/cities/proposal_detail.php?id=18)  [3.4 Dedicate human capacities in financial engineering](http://www.energy-cities.eu/cities/proposal_detail.php?id=19)  [3.5 Set up financial structures dedicated to the energy transition](http://www.energy-cities.eu/cities/proposal_detail.php?id=20)  [3.6 Channel spending towards local economies by means of a local currency](http://www.energy-cities.eu/cities/proposal_detail.php?id=21)  **Inventing new local governance**  [4.1 Create interface capacities between public authorities and the civil society](http://www.energy-cities.eu/cities/proposal_detail.php?id=22)  [4.2 Establish cross departmental links to avoid silo mentality](http://www.energy-cities.eu/cities/proposal_detail.php?id=23)  [4.3 Prove that it works and create a snowball effect](http://www.energy-cities.eu/cities/proposal_detail.php?id=24)  [4.4 Give public visibility to motivated players and citizens](http://www.energy-cities.eu/cities/proposal_detail.php?id=25)  [4.5 Raise opportunities for experimenting new practices to encourage their dissemination](http://www.energy-cities.eu/cities/proposal_detail.php?id=26)  [4.6 Make arts and culture part of the energy transition process](http://www.energy-cities.eu/cities/proposal_detail.php?id=27)  [4.7 Use town twinning as a springboard for energy transition](http://www.energy-cities.eu/cities/proposal_detail.php?id=28)  **Urban planning as a way of reducing energy use**  [5.1 Make planning system drive territory’s energy transition](http://www.energy-cities.eu/cities/proposal_detail.php?id=29)  [5.2 Prepare an energy retrofitting plan for the whole building stock](http://www.energy-cities.eu/cities/proposal_detail.php?id=30)  [5.3 Ensure that new neighbourhoods are “100%” renewable](http://www.energy-cities.eu/cities/proposal_detail.php?id=31)  [5.4 Plan modal shift to sustainable transport](http://www.energy-cities.eu/cities/proposal_detail.php?id=32)  [5.5 Transform railway stations into territorial structuring hubs](http://www.energy-cities.eu/cities/proposal_detail.php?id=33)  [5.6 Design a street code to favour walking and cycling](http://www.energy-cities.eu/cities/proposal_detail.php?id=34)  [5.7 Implement goods delivery schemes](http://www.energy-cities.eu/cities/proposal_detail.php?id=35)  [5.8 Think commercial urban planning differently to improve quality of life](http://www.energy-cities.eu/cities/proposal_detail.php?id=36) | |
| Public control of energy resources ([source](http://www.energy-cities.eu/Pamplona-How-does-the-city-take-back-control-of-their-energy-services)) | **Why is Pamplona City Council pursuing a strategy towards remunicipalisation of the energy supply?** I believe that people and communities should have the right to control their energy future. Our main objective is to strengthen energy democracy through more transparency, more social justice, and empowering people to be more than just passive consumers. Electricity supply should become a public service again, 100% based on renewables, directly connected to local private and public renewable production and contributing to tackling energy poverty.  **What is the first step towards locally-managed energy? What measures did Pamplona City Council take after adopting the local strategy?** The first step is to make sure the project is viable. Therefore, it is necessary to launch a feasibility study covering the national energy market regulations and conditions, mapping electricity consumption in the city, estimating investments and operating costs, obtaining economic feedback, laying down the conditions for opening it up to private clients, etc. When the study conclusions are available, it is important to build synergies and collaboration within the City Council to create the local energy supply entity. It is also recommended to carry out an external assessment with energy supply experts. In the case of Pamplona, we engaged in a direct collaboration with green electricity cooperatives to support the development of the locally-owned company.  http://www.energy-cities.eu/local/cache-vignettes/L350xH112/pamplona_prise-30c28.jpg?1486996550   | **Re-municipalisation: Everything under (public) control?** | | --- |   Over the last 15 years, 235 cities in 37 countries have brought water services back under public control benefiting 100 million people. Paris, Naples, Berlin, Budapest... the list of European cities running their own water system is getting longer and longer. This may be a model for other services: how about energy, an equally precious natural resource and essential service? Who owns it and who benefits from it most? The movement towards public ownership of urban services is a growing political trend, which reflects the desire to strengthen energy democracy and resilience.  However, establishing a municipal energy company is, in many countries, a pioneering step along a road full of challenges and controversies.  **Definition** The concept of (re)municipalisation is broadly used to cover:   * the change from private to whollypublic ownership of assets or companies; * the change from outsourcing (or contracting-out) of services to direct provision by a public authority; * and the replacement of concessions or lease contracts by public management.   **Why roll back privatisation?** There can be both ideological and practical reasons for municipalities and citizens to end private management of urban services: from a general refusal of corporate power to the desire for an entirely new, more local approach to generating and using energy. Many city councils are looking into municipal energy supply as they are frustrated with the downsides of publicprivate partnerships. Profit-oriented, not always transparent management by a private company, poor investments despite high tariffs for customers, priority given to fossil fuels and little or no benefit-sharing with the local community are amongst the reasons why cities want to control the entire energy supply chain.  **Decentralised energy, the “new normal” in Europe?** In several European countries (e.g. France, Germany, Switzerland, and Scandinavian countries) a range of municipal companies are operating. In Germany, according to [a report by PSIRU in 2013](http://www.world-psi.org/sites/default/files/en_psiru_ppp_final_lux.pdf), “*between 2007 and mid-2012, over 60 new local public utilities (Stadtwerke) were set up and more than 190 concessions for energy distribution networks – the great majority of them electricity distribution networks - were returned into public hands. About two thirds of all German municipalities are considering buying back both electricity generators and the distribution networks, including private shareholdings in some of the 850 Stadtwerke*.”  The country’s federal structure is certainly an advantage in this endeavour.  In the UK, there is a trend for breaking up the “Big Six”- the six major international utilities operating in the country. | |
| Proposed financial solutions ([source](http://www.energy-cities.eu/100-RES-Recommendation-3-Funding-renewable-energy-production-and-energy)) | **For cities and metropolitan areas, embarking on a 100% renewable energy path involves changing scale and supporting the development of renewable energy production in their own and surrounding areas. This support requires new tools. Capital contributions to renewable energy production projects enable the local authority to improve project viability by increasing the amount of equity, depending on the investment resources available to it.**  It also means that the local authority is involved in project governance and can ensure that the territory will benefit from the profits made. Opening capital up to citizen investment contributes to improving project acceptance. This is possible in the case of energy efficiency projects, like public lighting for instance.  Part of the revenues generated by renewable energy production projects may also be used to finance measures aimed at reducing energy use (supporting households with a home renovation project, improving public lighting energy efficiency, retrofitting public buildings, etc.), thus creating a virtuous circle towards achieving 100% renewable energy.  SEM (*Société d’Économie Mixte*), SPL (*Société Publique Locale*), SA or SAS, cooperative... are possible options for french cities wanting to invest in renewable energy production projects.   | **Grenoble** | | --- |   http://www.energy-cities.eu/local/cache-vignettes/L39xH150/grenoble_matthieu_riegler_cc_by_3.0_via_wikimedia_commons_150-3c779.jpg?1486996483 In line with its Air, Energy and Climate Plan objectives and taking advantage of the opportunities offered by the new French Energy Transition Act, the Grenoble Metropolitan Council decided to invest in local and community renewable energy production projects. In June 2016, it agreed to invest in [**SAS Energ’y Citoyennes**](http://solairedici.org/author/energycitoyennes/), a joint-stock company with local democratic governance whose aim is to promote and develop decentralised electricity production from renewable sources.   | **Lorient** | | --- |   http://www.energy-cities.eu/local/cache-vignettes/L46xH150/groupe_scolaire_de_kermelo-317c4-d4d6e.jpg?1486996626In order to reach 50% of renewable energy in its building stock by 2020, **the City of Lorient also relies on the production of electricity for its own use via PV panels installed on its buildings** (schools, city hall, etc.).  The PV panels are bought by the [OnCIMè collective](https://energie-partagee.org/projets/oncime/) and the city council rents them from it. As the city councillor in charge of energy transition says: “*The objective is to produce for our own use rather than for sale. Producing our own energy is cheaper, makes us more independent and frees us from market prices*”.   | **Métropole de Lyon** | | --- |   http://www.energy-cities.eu/local/cache-vignettes/L91xH102/toits_en_transition-4f5c2.jpg?1486996486The “[Toits en transition](http://toitsentransition.weebly.com/)” (Roofs in transition) association was created to promote the development of community PV solar production units on public and private buildings in the Greater Lyon and surrounding areas with the support of Greater Lyon and in partnership with Énergie Partagée and Enercoop.   | **SEML Vendée Énergie** | | --- |   http://www.energy-cities.eu/local/cache-vignettes/L67xH100/logo_vendee_energie_150-d7dc9.jpg?1486996711Since the early 2000s, local governments in the Vendée department (West-Central France) have been setting an example by becoming local renewable electricity producers. A publicly-owned company was created in 2002 and transformed into [Vendée Énergie, a local SEM](http://www.sydev-vendee.fr/pages/vendee-energie.php). **Vendée Énergie now owns 25% of the assets producing wind and PV generated electricity in Vendée**, enough to cover the needs of 40,000 households. | |
| Local currencies as financial solution for local sustainability ([source](http://www.energy-cities.eu/Local-currencies-a-necessary)) | **Local currencies, a necessary energy transition tool**  **Used as an alternative to the euro in a given locality, a city or a region, complementary local currencies help strengthen, enrich and preserve exchanges and social bonds, create jobs and reduce the environmental footprint. They also stimulate the local economy and boost local consumption and production.**  In Europe, a number of initiatives have been developed and local currencies are gaining ground: Sel, Wir, Bristol pound, SoNantes, Res, Chiemgauer-Scheine, Abeille, Dam, Eusko … names which all place the economy back at the heart of the local territory. To be successful, these initiatives must involve all stakeholders from all sectors:   * The consumption, production and distribution sectors, thus forming a first local community which will demonstrate the benefits of creating a local currency. * The local authority to provide these community-based initiatives with technical or financial support, give them credibility and reassure potential users. * A local bank to consolidate trust.   **Successful experiments in Europe**  One of the best-known examples is **Bristol** (UK) and its Bristol Pound, which has been taken up by many citizens and companies as this map of shops and businesses accepting the local currency shows, like [Bristol Energy Co-operative](http://www.bristolenergy.coop/) or [Good Energy Limited](http://www.goodenergy.co.uk/), to remain in the energy sector. [http://www.energy-cities.eu/local/cache-vignettes/L300xH260/carte_bristol-fd59a.jpg?1486996697](http://bristolpound.org/directory?keyword=Enter+keyword&tradercatid=)  http://www.energy-cities.eu/local/cache-vignettes/L100xH65/eusko-dbea4.jpg?1486996667In France, the entire northern part of the **Basque Country** has been won over by the Eusko. Launched in January 2013, this complementary local currency is used in over 80 towns and cities for all types of daily purchases: food, health, clothing, etc.  http://www.energy-cities.eu/local/cache-vignettes/L100xH55/chiemgauer-7955b.jpg?1486996736Many initiatives in Europe have been inspired by the [Chiemgauer](http://www.chiemgauer.info/) in circulation in **Bavaria** (Germany). Launched in 2003 by students to finance a project, the Chiemgauer is now accepted by almost 600 shops and businesses and is used by over 3,000 people. Bavaria can now offer its inhabitants green prices for the electricity produced locally by Priener, a company producing hydraulic and solar energy. | |
| Case studies on stakeholder engagement ([source](http://www.energy-cities.eu/New-dialogues-between-cities-local)) ([report](http://www.energy-cities.eu/IMG/pdf/new_dialogues_cities_stakeholders_energy_cities_may2016_en.pdf)) | **New dialogues between cities & local stakeholders**  **Energy Cities has carried out a new exploratory study for cities and diverse project leaders desiring to start a sustainable energy transition in collaboration with all stakeholders in their territory.**  http://www.energy-cities.eu/local/cache-vignettes/L150xH214/dialogues-afc65.jpg?1486996522Local authorities have a key role to play in climate and energy policies and in the energy transition towards a low carbon, energy efficient and sustainable society. However, they cannot act alone.  They often control only a small percentage of the emissions of local greenhouse gases directly, and this percentage rarely exceeds a quarter.  It is therefore necessary to rely on the involvement of local stakeholders, which in turn will provide an opportunity for these stakeholders to be ambitious through innovative actions.  **How to stimulate stakeholders’ involvement ?**  In the past several years, a number of citizens’, economic actors’ or other local actors’ initiatives have contributed to the energy transition of territories. These initiatives are based on empowerment. For instance, stakeholders can get access and the power to act on innovative tools and approaches, such as social economy, stakeholders’ participation, crowdfunding, renewable energy citizen cooperatives and fablabs.  **Two primary questions to explore**   * As coordinators and pilots of local strategies for energy transition, how can local authorities foster, identify, support and replicate local energy transition initiatives ? * What dialogue should local authorities and leaders of local initiatives engage in ? How can they drive new modes of governance, where stakeholders share responsibility to co-develop public policies, manage their city, and encourage the energy transition at the local level ?   These topics will be debated during our Annual Conference in Bornova, from 1 to 3 June 2016. [More info](http://bornova2016.energy-cities.eu/)   |  | | --- | | [http://www.energy-cities.eu/local/cache-vignettes/L262xH350/content_study_dialogues_small-916e4.jpg?1486996482](http://www.energy-cities.eu/IMG/jpg/content_study_dialogues.jpg)**Energy Cities has selected more than ten European energy transition initiatives, as diverse as they are innovative, anticipating new forms of governance and new ways to act and collaborate.** *Click on the image on the right to see more on the selected examples.*  The exploratory study does not only describe their process but it also analyses the synergies between the different stakeholders and the role the municipality plays in these initiatives. It identifies the key factors of their success and replication. | | |
| Democracy as a transitional tool to smart cities ([source](http://www.energy-cities.eu/Democracy-Making-the-city-an-open)) | **#Democracy - Making the city "an open transformation platform"**  **Interview of Carlos Moreno, a Franco-Colombian university professor. This humanist-scientist is renowned for his expertise of the "human smart city" concept.**  http://www.energy-cities.eu/local/cache-vignettes/L150xH208/portraitcmoreno_small-935c8.jpg?1486996608  **Energy Cities is promoting a transition that is not only technological, but primarily societal. What is your perception of energy democracy in a “smart” city?**  Considering that a smart city could be created by developing highly technological solutions and that these solutions would be able to solve complex problems, without involving citizens, would lead us to a dead-end. Especially since today’s citizens have the technical resources to be kept informed and involved on a daily basis. Through social media, it is possible to organise flash mobs of hundreds of thousands of people in just a few hours. This is how citizens can put strong pressure on elected representatives and, more generally, on national governments.  You have to understand that these **technologies are changing the relationship between citizens and governments and that governance and our approach to politics are changing too. There has clearly been a shift in traditional representative democracy.** Giving meaning to the city in the era of energy transition, decentralised energy sources, new forms of mobility and short supply chains is, above all, a social fact. Without this integration effort - which is today’s true priority – we run the risk of losing the support of citizens, which is indispensable for bringing about a fundamental change, because the essence of value lies in the uses, in the creation of social value, and not in the technology itself.  **What main challenges will the mayors have to meet to achieve such a transition?**  Around the globe, these urban areas must now deal with five main challenges if they want to meet the needs and expectations of their inhabitants. These are the environmental, economic, social and cultural challenges and that of resilience. It is vital that a smart city project is built over the long term, longer than the mayor’s term of office. It is this continuity that will reinforce the shared project, the involvement of citizens and partners and the city’s identity. Another central element is **the capacity to change our governance models.** To move away from technical, mono-functional vertical models so that urban developments are devised in an integrated, global way. To make room for community initiatives, always bearing in mind that the mayor is there to provide a vision, put limits on development and encourage the expression of life in the city, in its multiple forms, thus shaping the concept of an open, living and creative city.  **To achieve their transition, cities must be able to rely on dynamic ecosystems. It is crucial that all stakeholders, along the entire value chain, converge to ensure construction over the long term.** This is not just a fad: it is by extending them over time that we will be able to see the transformation potential of community contributions and that the city and all urban areas will become an open transformation platform.  [www.liveinalivingcity.com](http://www.liveinalivingcity.com/) | |
| Intelligent mobility, case of Stuttgart ([source](http://www.energy-cities.eu/European-Commission-s-Low-emission-mobility-strategy-highlights-best-transport)) | **Finally, the Commission lists Stuttgart as a pioneer in terms of local intelligent transport systems**, which result in smoother and more efficient traffic. Stuttgart has e.g. implemented dynamic speed limits to reduce air pollution. | |
| Business models ([source](http://www.energy-cities.eu/On-the-way-to-energy-democracy)) | **On the way to energy democracy**  **“Adopt a panel” in Helsinki**  [Finland’s largest solar power plant](https://www.helen.fi/en/news/2016/finlands-largest-solar-power-plant-is-near-completion) hosted on the roof of the Kivikko ski hall is owned by the city of Helsinki. As part of this project, the city utility, Helen Ltd, had the brilliant idea of inviting local residents to order their own designated panels, meaning they can benefit from solar energy without having to make large initial investments. The panels are rented for €4.40 per month and the electricity generated from them is then deducted from the customer’s bill.  http://www.energy-cities.eu/local/cache-vignettes/L150xH100/helsinki_150-922ec.jpg?1486996587First tested out in one district of the capital, where the utility had built another solar plant, the panels were sold out within just a few days! Operational since April 2016, the plant has almost 3,000 solar panels, of which half have been ordered by citizens. Annual production is expected to reach about 700 megawatt-hours, equivalent to the yearly electricity consumption of about 350 one-bedroom apartments.  When asked why they decided to rent the PV panels instead of introducing a net metering system, the city utility project manager Atte Kallio replied: "We asked our customers what they wanted and their answer was designated panels. […] We have promised to build more solar plants for as long as there is a demand for them.[…] This way, our customers have a concrete impact on how electricity is generated in our country”, she added. | |
| **Newcastle: From passive consumers to community buyers!**  As civic energy is also about making the right consumer choices, the British city of Newcastle has launched a [scheme to help its citizens become active energy players](http://www.newcastle.gov.uk/news-story/scheme-launched-save-money-energy-bills) and at the same time benefit from cheaper and more efficient services. The local council has thus teamed up with the online switching service “iChoosr”, which helps provide a more competitive deal to citizens through collective buying. The scheme, which is called “Big Community Switch”, has helped hundreds of residents save an average £200 (ca. €260) every year on their gas and electricity bills. Central to this endeavour is also a wish to tackle the very worrying problem of fuel poverty in the city. Coupled with ambitious energy efficiency programmes, this initiative looks set to have promising results! | |
| **Mulhouse: Five citizens take action to fight energy poverty!**  http://www.energy-cities.eu/local/cache-vignettes/L150xH153/mulhouse_100-29ac6.jpg?1486996681In Mulhouse, France, five friends decided to create an association to tackle the dire situation of fuel poverty in their city, through more efficient use of resources and the concept of “homemade energy”! After finding out that a 20% variation in energy costs in the country could push 2.5 million households in or out of fuel poverty, they decided it was time to take action. With the support of the municipality, they thus started flexing their ‘citizen muscles’ to relocate energy and founded the association [“Mulhouse 100%”](http://www.sud-alsace-transition.org/wp/mulhouse-100/): 100% for prosperity, with 100% of people having affordable access to energy. Mulhouse 100% was then renamed “Citizen energy”, a very fitting name!  More examples in the latest edition of [**EC INFO**](http://www.energy-cities.eu/-Publications,62-) | |
| Blockchain as business model ([source](http://www.energy-cities.eu/Blockchain-and-energy-a-paradigm-shift-4559)) | **Blockchain and energy: a paradigm shift ?**  **On 26 October, the conference office on studies of**[Tecsol](http://www.tecsol.fr/)["Photovoltaic self-consumption and Blockchain" was held in Paris](http://tecsol.blogs.com/mon_weblog/2016/09/colloque-tecsol-le-26-octobre-%C3%A0-paris-autoconsommation-photovolta%C3%AFque-et-blockchain-tout-sur-la-digi.html)**. At this symposium, the Tecsol design office engineers unveiled the mysteries of self-consumption and the use of blockchain for the service distribution network. This article will provide you with an insight into the Blockchain concept and its applications in the energy field.**  **What is the Blockchain when applied to the field of energy?**  According to [Wikipedia](https://en.wikipedia.org/wiki/Blockchain_(database)), it is an ICT technology for information storage and information transmission, which is transparent, secure, and operates without a central control body.  Indeed, it is thanks to these features that the Blockchain is the technology behind [electronic currencies](https://en.wikipedia.org/wiki/Cryptocurrency) such as the [Bitcoin](https://en.wikipedia.org/wiki/Bitcoin). It has been existing for 8 years and now appears to be applicable to many other fields: insurance, banking, notarial and... energy!  A revolutionary technology? Not in itself, because it is technically based on existing elements. However, what is fully revolutionary is the fact that it works without a central control body. In the field of energy, applying such technology to our exchange networks could eventually mean a potential shift of power from energy companies to producers and consumers.  Indeed, with this technology, producers and consumers of energy, close to each other, could sell and purchase energy without going through an energy company. We’re talking about a potential paradigm shift for all players in the energy sector. We can just see here the very beginning of a possible upcoming upheaval.  **What uses for photovoltaics?**  Practically, let’s talk about the projects that were presented during the symposium. All these initiatives are bound to photovoltaics which is the core business of Tecsol, the conference organiser. However, each of them is truly innovative as they may be applied by local governments which gives them a real interest for the Energy Cities members.  **Collective self-consumption from a real estate**  The [French Département of Pyrénées-Orientales](https://en.wikipedia.org/wiki/Pyr%C3%A9n%C3%A9es-Orientales) presented a project of photovoltaic systems installed on its own buildings. The institution selected 12 buildings with the best conditions to install photovoltaic power plants and energy production: roof surfaces, orientations, exhibitions, landscape integration, etc.  Through Blockchain, the electricity produced on these 12 sites will be consumed in the 21 buildings owned by the organisation. Both producing and consuming buildings will exchange information on electricity supply and demand, and will primarily consume the energy produced by the organisation. Photovoltaic power plants and buildings of the institution will exchange energy using the existing electrical grid without going through energy companies.  **Individual self-consumption for collective housing**  [Fuel poverty](https://en.wikipedia.org/wiki/Fuel_poverty) is increasing at a tremendous rate in Europe. [In France, by 2020, the electricity price could be multiplied by 2 compared to 2012](http://www.lemonde.fr/economie/article/2012/07/19/la-facture-d-electricite-des-francais-doublera-d-ici-a-2020_1735483_3234.html) which will exacerbate the problem, hence the importance of finding solutions for social housing.  Tecsol patented a system based on the Blockchain that would be applicable to social housing. Indeed, thanks to this technology, the electricity generated by a photovoltaic plant installed on the roof could be self-consumed by the tenants of the dwelling itself.  Several social organisations which support parts of the rents of the households affected by fuel poverty have already shown a strong interest in the system that would enable to invest in the [energy transition](https://en.wikipedia.org/wiki/Energy_transition) while reducing electricity bills for tenants.  **Consumption in roaming - electric mobility**  The Blockchain will also have an impact on our mobility. A pilot project is the work of the [French City of Perpignan](https://en.wikipedia.org/wiki/Perpignan) including the Tecsol design office and the [Sunchain](http://sunchain.fr/) start-up. 100 vehicles are expected to be concerned by the project.  The City of Perpignan wishes to set up a fleet of autonomous electric vehicles to revitalise the city centre. These autonomous vehicles could be [Google self-driving cars](https://en.wikipedia.org/wiki/Google_self-driving_car) or [Renault Zoe](https://en.wikipedia.org/wiki/Renault_Zoe). At this stage, the choice hasn’t been made yet.  This is the first project of its kind in France. In a first step, 50 vehicles will be recharged by solar energy on dedicated [charging stations](https://en.wikipedia.org/wiki/Charging_station). The Blockchain allows for ensuring that the power will come from solar energy. The fleet will consume solar electricity produced by photovoltaic power plants nearby.  In practice, the user will order the car from an application on their smartphone. The car will come and pick up the person at home. Autonomous car will drop the passenger, for example in the city center. It will then automatically go to park or pick up someone else.  The project is expected to create ten jobs for the company operating the vehicle fleet.  These are a few ongoing projects in France which show the first applications of the Blockchain the field of energy. Many others are also being developed in France and in Europe. We are only dealing with pilot projects at this stage. It seems that this is a topic to follow closely in the months and years ahead as local governments will certainly be at the front of these major organisational changes.  **If you are involved in, or know about similar projects including the Blockchain as a key item, please let us know. We would be very keen on sharing them in the**[Energy Cities Newsletter](http://energy-cities.eu/-Energie-Cites-NEWS,473-)**and in the**[Energy Cities Blog](http://energy-cities.eu/-BLOG,267-)**.** | |
| Guidance and solutions ([source](http://www.energy-cities.eu/Cities-heading-towards-100-renewable-energy)) ([report](http://www.energy-cities.eu/IMG/pdf/publi_100pourcent_final-web_en.pdf)) | **Cities heading towards 100% renewable energy**  **CLER, Energy Cities and Réseau Action Climat collaborated to prepare this publication. The aim is to provide guidance and solutions to French cities and metropolitan areas anxious to embark on a 100% renewable energy path. This report is based on the knowledge and experience of the authors’ networks, as well as on around 30 interviews of councillors and city employees from about fifteen French local governments.**  **Five European champions are showing the way forward**, all signatories to the Covenant of Mayors for Climate and Energy, these five cities and regions aim to develop a coherent energy system based on energy efficiency and the optimum use of renewable and interconnected energy.  In France, cities are also on the way forward 100% RES, the report is composed of five theme-specific factsheets illustrating the path towards 100% renewable energy with French examples of completed or on-going projects.   |  |  | | --- | --- | | [Cities heading towards 100% renewable energy - Food for thought and action](http://www.energy-cities.eu/IMG/pdf/publi_100pourcent_final-web_en.pdf) | **[Cities heading towards 100% renewable energy - Food for thought and action](http://www.energy-cities.eu/IMG/pdf/publi_100pourcent_final-web_en.pdf)**  [This report provides guidance and solutions to cities and metropolitan areas anxious to embark on a 100% renewable energy path. It is based on the knowledge and experience of the authors’ networks, as well as on around 30 interviews of councillors and city employees from about fifteen French local governments. It also features 5 European pioneers: Barcelona, Frankfurt, Frederikshavn, Geneva and Malmö.](http://www.energy-cities.eu/IMG/pdf/publi_100pourcent_final-web_en.pdf)  Download: [PDF - 7.8 Mb](http://www.energy-cities.eu/IMG/pdf/publi_100pourcent_final-web_en.pdf) | | |
| Roadmap for the post carbon cities of tomorrow (source) ([report](http://pocacito.eu/sites/default/files/D7_3_EU%202050%20Roadmap%20for%20post-carbon%20cities_0.pdf)) | **An EU Roadmap 2050 (and other results) from the "Post-carbon cities of tomorrow" project**  As one of the major results of the POCACITO 7FP project (2014-2016), an EU Roadmap 2050 was published in December 2016 and calls for cities to be better involved in policy making, notably the EU Energy Union strategy and legislative package. It is the result of a two-year consultation process with EU stakeholders in Brussels and from targeted cities.  According to [the roadmap](http://pocacito.eu/result/eu-roadmap/pocacito-roadmap), representatives of cities should be formally appointed to influence UN, EU and national decisions. In light with the subsidiarity principle, the EU should also support the process of allocating the relevant competences to cities to best address the challenges facing them. More specifically, a recommendation encourages the EU institutions to strengthen the Energy Efficiency Directive with stronger measures and clearer guidelines, and refine the strategy for a circular economy. [Read more on the project website](http://pocacito.eu/blog/2017-01-09/press-release-report-uncovers-regulatory-roadblocks-%E2%80%9Cpost-carbon-cities-tomorrow%E2%80%9D)  The POCACITO roadmap is also accompagnied by a series of [6 Policy Briefs](http://pocacito.eu/results/policy) targeting EU, national and local political decision-makers and an online marketplace of ideas presents [60 factsheets](http://pocacito.eu/marketplace) from EU and non-EU cities in all the fields of the transition to a local post-carbon economy in a global context.  Case studies cities involved in the project included [Barcelona](http://pocacito.eu/case-studies/barcelona), [Copenhagen, Malmö](http://pocacito.eu/case-studies/copenhagen-malmo), [Istanbul](http://pocacito.eu/case-studies/istanbul), [Litoměřice](http://pocacito.eu/case-studies/litomerice), [Milan, Turin](http://pocacito.eu/case-studies/milan-turin), [Rostock](http://pocacito.eu/case-studies/rostock) and [Zagreb](http://pocacito.eu/case-studies/zagreb). A series of local workshops consisting in visionning and backcasting exercices took place in these cities and led to the publication of local strategy papers. | |
| Lessons and good practices on post-carbon transitions, POCACYTO project ([source](http://pocacito.eu/result/policy-briefs/policy-brief-no-6-drawing-lessons-good-city-practices-promoting-post-carbon)) ([report](http://pocacito.eu/sites/default/files/POCACITO_PolicyBrief_No-6_Lessons_from_good_city_practice_1612.pdf)) | **POLICY BRIEF NO. 6 - DRAWING LESSONS FROM GOOD CITY PRACTICES: PROMOTING POST-CARBON TRANSITIONS**  **http://pocacito.eu/sites/default/files/styles/medium/public/pb6.PNG?itok=oxZlbYMK** | |
| Urban indicators and the smart city agenda, POCACITO ([source](http://pocacito.eu/result/policy-briefs/policy-brief-no-5-urban-indicators-and-smart-city-agenda)) ([report](http://pocacito.eu/sites/default/files/POCACITO_PolicyBrief_No-5_Urban_Indicators_1612.pdf)) | **POLICY BRIEF NO. 5 - URBAN INDICATORS AND THE SMART CITY AGENDA**  **http://pocacito.eu/sites/default/files/styles/medium/public/pb5.PNG?itok=EVAy0P-R**  Recently, initiatives involving key performance indicators (KPIs) have been influenced by the smart city agenda and the digital revolution, in terms of content, data collection, analysis and dissemination processes. ICT, big data, open data, real-time information, data analytics, dashboards and operation centres are some of the main components of this movement. Taking into account the different KPI initiatives and their evolution, the POCACITO project defined a set of urban indicators oriented to assessing cities’ performance and to analysing their transition towards a post-carbon future, comprising economic, environmental and social dimensions. However, several methodological and policy limitations can be observed when urban indicators are used, notably in the development of benchmarking exercises among cities of different countries. Finally, this Policy Brief looks at ways to support trends towards standardisation, openness, interoperability, innovation and collaboration, which can inform data-driven policy-making at local/regional, national and European levels.  *This policy brief was prepared and written by Catarina Selada, Carla Silva and Ana Luísa Almeida, INTELI – Inteligência em Inovação, Centro de Inovação* | |
| Visions, how they are useful and how to create them ([source](http://pocacito.eu/result/policy-briefs/policy-brief-no-2-visions-post-carbon-urban-futures-why-they-are-useful-and-how)) ([report](http://pocacito.eu/sites/default/files/POCACITO_PolicyBrief_No-2_Visions_for_low_carbon_cities.pdf)) | **POLICY BRIEF NO. 2 - VISIONS FOR POST-CARBON URBAN FUTURES: WHY THEY ARE USEFUL AND HOW TO CREATE THEM**  **http://pocacito.eu/sites/default/files/styles/medium/public/Capture-2.jpg?itok=St9oDcE2**  Utilising urban policies to facilitate transition towards a post-carbon future requires a drastic change of direction in current policies. Yet the uncertainty associated with change can often stifle action. Creating visions of a post-carbon urban future can help generate a positive image of the transformed city in which urban life quality, economic and social vibrancy improve for citizens, while carbon emissions decrease. Creating a roadmap based on such visions and scenarios translates the envisaged and necessary transformations into feasible small-scale actions. Developing a policy programme based on post-carbon visions and roadmaps can transform the ambitious goal of achieving a post-carbon society into manageable and measureable steps of change, without losing sight of the long-term goal. Visions are thus a useful instrument to foster the necessary foresight and consensus to support post-carbon policy changes. The types of policy changes and the sectors to be addressed depend on the specific situation of the city, including the necessity and feasibility of actions. | |
| WEBINARS (review from home, adobe connect!) | <https://energy-cities.adobeconnect.com/p8g7k1wa06d/?proto=true>  <https://energy-cities.adobeconnect.com/p2xcyrlfnwr/?proto=true> | |
| SMASRTSPACES – PROJECT. ([source](http://www.energy-cities.eu/Smart-Spaces)) | **SMARTSPACES – Saving Energy in Europe’s Public Buildings Using ICT**  On 11 January 2012 the [project](http://www.smartspaces.eu/) was officially launched at Bristol’s Create Centre.  This project is co-funded by the European Commission within the [CIP ICT Policy Support Programme](http://ec.europa.eu/information_society/activities/ict_psp/about/index_en.htm) and aims to improve energy monitoring of public buildings, develop and operate online services communicating the energy consumption of the building to all building users.  http://www.energy-cities.eu/local/cache-vignettes/L180xH180/Create_Centre-ede7a.jpg?1486996596SMARTSPACES will support the professional building managers in optimizing the operation of the building’s energy systems and create an energy awareness. Project services will help to increase the energy efficiency of public building, change individual behavior towards more efficient energy use at work or in public buildings visited but also at home and thereby help to achieve considerable energy and energy cost savings.  The energy efficiency services will be implemented and operated in public buildings in eight countries (United Kingdom, France, Germany, Italy, Spain, The Netherlands, Turkey and Serbia) and in 11 local authorities across Europe. | |
| Calculate and measure energy savings, TOOL, ([source](http://eemeasure.smartspaces.eu/)) | eeMeasure enables ICT PSP projects to calculate and record energy saving results using a consistent methodology. In turn this enables the European Commission and other interested parties to produce a better quantitative analysis of the energy savings potential of ICT based solutions in residential and non-residential buildings.  The eeMeasure software contains a Public Area and a [Restricted Area](http://eemeasure.smartspaces.eu/projectManager/index).  The Public Area contains:   * [Published Results:](http://eemeasure.smartspaces.eu/generalUser/search) energy savings data and project information. * [Methodologies:](http://eemeasure.smartspaces.eu/generalUser/methodology) An overview of the measurement and verification methodologies with links to the latest documents. * [ICT PSP Information:](http://eemeasure.smartspaces.eu/generalUser/public_area) introduction to ICT PSP and projects.   The Restricted Area is used by ICT PSP project teams to upload and model project data, then calculate and publish results that can ultimately be accessed in the Public Area. | |
| Good practice toolbox ([source](http://publenef-project.eu/?page_id=1635)) | **GP 1: BIOMASS DISTRICT HEATING - TRALEE**  **GP 2: NEWLIGHT: A POTENTIAL SOLUTION FOR UP-SCALING INVESTMENTS IN ENERGY EFFICIENCY AND RENEWABLES**  **GP 4: JOINT PROCUREMENT PROCESS FOR PURCHASING BULK ENERGY IN THE ZLÍN REGION**  **GP 5: AGIR (ACTION GLOBALE INNOVANTE POUR LA RÉGION – INNOVATIVE GLOBAL ACTION FOR THE REGION)**  **GP 6: THE NIGHT HAWKS PROJECT - NIGHT WALKS: OFF PRODUCTION HOURS SITE INSPECTIONS I.E. ENERGY CHECKS**  **GP 7: CROWDFUNDING PLATFORM PROJECT FOR ENERGY EFFICIENCY**  **GP 12: TRAINING WORKSHOP**  **GP 13: SUSTAINABLE ENERGY ACTION PLANS**  **GP 14: AN ENERGY CLOCK INTEGRATED IN A PUBLIC BUILDING**  **GP 18: THE SUSTAINABLE CONSTRUCTION PROGRAMME IN ANDALUSIA (PICSA)**  **GP 19: CLIMATLANTIC PROJECT**  **GP 20: OPERATIONAL PROGRAMME “DEVELOPMENT OF THE COMPETITIVENESS OF THE BULGARIAN ECONOMY”**  **GP 21: FACILITATION OF ENERGY PROJECT INVESTMENT IN LOCAL AUTHORITIES**  **GP 22: PUBLIC SECTOR ENERGY PROGRAMME**  **GP 27: PROJECT REGIONAL NETWORKS FOR THE DEVELOPMENT OF A SUSTAINABLE MARKET FOR BIOENERGY IN EUROPE (BIOREGIONS)**  **GP 28: PASSIVE HOUSE REGIONS WITH RENEWABLE ENERGIES (PASSREG)**  **GP 29: IURBAN PROJECT**  **GP 30: RES HEATING PLAN IN RHODOPE REGION TО 2030**  **GP 40: PUBLIC SECTOR ISO50001 SUPPORT PROGRAMME**  **GP 54: DEVELOPING ALBA IULIA SUSTAINABLE ENERGY ACTION PLAN (SEAP)**  **GP 55: MARATHON 2020 – COMMUNITY OF BUCHAREST DISTRICT 1 TO BE THE FIRST ENERGY EFFICIENT COMMUNITY IN ROMANIA BY 2020** | |
| ProgRESsHEAT (PROJECT) ([source](http://www.progressheat.eu/Project.html)) | **Project**  **The progRESsHEAT project aims at assisting local, regional, national and EU political leaders in developing policy and strategies to ensure a quick and efficient deployment of renewables in heating and cooling networks.**  The project’s aim is in line with the objectives of the Renewable Energy Directive and the Energy Performance of Buildings Directive that require Member States to develop ambitious policies as regards the use of renewable energy sources and energy efficiency in heating and cooling networks.  progRESsHEAT is intended to support the **market uptake** of existing and emerging renewable electricity, heating and cooling technologies. More specifically, the project helps policy makers develop integrated, effective and efficient policy strategies aimed at achieving a fast and strong penetration of renewable and efficient heating and cooling systems. This includes the analysis of cross-sectoral effects between renewables and energy efficiency measures in industrial heat and cold, waste heat, heating and cooling in buildings and district heating.  Together with six local authorities in **six target countries** across Europe (Austria, Germany, Czech Republic, Denmark, Portugal, Romania), heating and cooling strategies will be developed through a profound analysis of (1) heating and cooling demand and future developments, (2) long-term potential of renewable energies and waste heat in the regions, (3) barriers & drivers and (4) a model-based assessment of policy intervention in scenarios up to 2050. The established local energy advisory tool EnergyPRO will be used for the local studies and further developed to appropriately reflect district heating and cooling. The final versions for the investigated regions will be handed over to the authorities.  In the target countries, progRESsHEAT will support the implementation of **national heating and cooling plans** which have to be released by member states by the end of 2015. The plans will include a policy outlook on how the potentials identified by the comprehensive assessment will be achieved. progRESsHEAT will assist national policy makers in implementing suitable policies with a model-based quantitative impact assessment of local, regional and national policies up to 2050.  **Policy makers** and other stakeholders are strongly considered in the process. They will be offered the opportunity to learn from the experience of other players and gain deep understanding of the impact of policy instruments and their specific design. They are involved in the project via policy group meetings, workshops, interviews and webinars dedicated to policy development assistance, capacity-building and dissemination. | |
| **ACE-Retrofitting: Accelerating Condominium Energy Retrofitting**  (PROJECT) ([source](http://www.nweurope.eu/projects/project-search/accelerating-condominium-energy-retrofitting-ace-retrofitting/)) | **ACE-Retrofitting: Accelerating Condominium Energy Retrofitting**  To facilitate the implementation of low-carbon, energy and climate protection strategies to reduce GHG emissions in NWE  Project Summary  Although local authorities are tackling climate change, a majority of buildings in North-West Europe are still energy-inefficient and in need of deep renovation. If action is not taken it will lock local authorities into a high carbon-footprint future. By targeting condominiums, the greatest number of private owners can benefit while creating significant financial and 50-70% carbon savings.  Energy Cities, guided by a strategic energy transition vision and its capacity to ensure widespread success in its network, along with 6 local authorities from 5 different countries in NWE will introduce and promote **a governance arrangement that overcomes the legal, human and financial barriers of retrofitting condominiums**.  **CoachCopro**, a free collaborative tool developed by the Paris Climate Agency (Agence Parisienne du Climat), is central to this strategy and will be improved and adapted for use in other areas. In France, this web-based platform has already successfully assisted condominium owners (demand) and building professionals (supply) through an iterative process which cultivates trust relationships and generates direct and indirect jobs (potentially 19 net jobs created per €1M investment).  **Main outputs:**   * An owners and condominium managing structures toolkit to empower this target group, overcome their barriers and increase and accelerate the energy retrofitting of condominiums * An operational coaching framework to improve the building professionals’ capacity to renovate condominiums * A governance arrangement facilitated by local authorities linking the demand and supply sides as well as a NWE transferable ICT tool for information and project management based on CoachCopro * A European campaign led by Energy Cities that will involve hundreds of additional local authorities and ensure that thousands of deep retrofits are achieved 10 years after the project. * The project will result in **15,000 households with improved energy classification per year.** | |
| Smart City Actions | Top of Form   |  |  | | --- | --- | | **Besançon** | France | 116 100 inhabitants | | | [**Besançon, an intelligent and collaborative city** *Cooperation, participation, networking - Public private partnerships - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/besan-on-an-intelligent-and-collaborative-city-besan-on~1721) ([report](http://www.energy-cities.eu/db/smart_city_Besancon_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/besan-on-an-intelligent-and-collaborative-city-besan-on~1721) | | **Grand Nancy Métropole** | France | 105 468 inhabitants | | | [**Grand Nancy Area - Digital Humanism** *Cooperation, participation, networking - Public private partnerships - Smart city - Soft mode of transport*](http://www.energy-cities.eu/resources/cities-actions/grand-nancy-area-digital-humanism-grand-nancy-m-tropole~1723) ([report](http://www.energy-cities.eu/db/smart_city_Grand+Nancy_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/grand-nancy-area-digital-humanism-grand-nancy-m-tropole~1723) | | **Grenoble** | France | 157 900 inhabitants | | | [**Grenoble and its metropolis: working on transition** *.Local energy ressources - New built : low energy / NZEB / passive - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/grenoble-and-its-metropolis-working-on-transition-grenoble~1724) (report N/A) | [English, French](http://www.energy-cities.eu/resources/cities-actions/grenoble-and-its-metropolis-working-on-transition-grenoble~1724) | | **Lyon Métropole** | France | 1 217 583 inhabitants | | | [**Well-being born of a smart city Well-being born oF a smart city Well-being born of a smart city** *Cooperation, participation, networking - Information, education - Public private partnerships - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/well-being-born-of-a-smart-city-well-being-born-of-a-smart-city-well-being-born-of-a-smart-city-lyon-m-tropole~1725) ([report](http://www.energy-cities.eu/db/smart_city_Lyon+metro_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/well-being-born-of-a-smart-city-well-being-born-of-a-smart-city-well-being-born-of-a-smart-city-lyon-m-tropole~1725) | | **Marseille** | France | 826 700 inhabitants | | | [**Marseille puts LIVING BETTER TOGETHER at the heart of the smart city initiative** *.Mobility - Cooperation, participation, networking - Information, education - Smart city*](http://www.energy-cities.eu/resources/cities-actions/marseille-puts-living-better-together-at-the-heart-of-the-smart-city-initiative-marseille~1726) ([report](http://www.energy-cities.eu/db/smart_city_Marseille_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/marseille-puts-living-better-together-at-the-heart-of-the-smart-city-initiative-marseille~1726) | | **Metz** | France | 124 500 inhabitants | | | [**A more humanist vision of the city** *.Local governance and capacity building - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/a-more-humanist-vision-of-the-city-metz~1522) (report N/A) |  | | **Montpellier** | France | 276 054 inhabitants | | | [**Montpellier smart city: a global and sustainable approach** *Information, education - Public transport - Smart city*](http://www.energy-cities.eu/resources/cities-actions/montpellier-smart-city-a-global-and-sustainable-approach-montpellier~1728) ([report](http://www.energy-cities.eu/db/smart_city_Montpellier_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/montpellier-smart-city-a-global-and-sustainable-approach-montpellier~1728) | | **Nantes** | France | 281 000 inhabitants | | | [**Nantes' version of the smart city** *Cooperation, participation, networking - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/nantes-version-of-the-smart-city-nantes~1729) ([report](http://www.energy-cities.eu/db/smart_city_Nantes_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/nantes-version-of-the-smart-city-nantes~1729) | | **Nice Côte d'Azur Métropole** | France | 525 000 inhabitants | | | [**Nice Côte d'Azur - Innovation is a daily experience** *Cooperation, participation, networking - Information, education - Smart city*](http://www.energy-cities.eu/resources/cities-actions/nice-c-te-d-azur-innovation-is-a-daily-experience-nice-c-te-d-azur-m-tropole~1730) ([report](http://www.energy-cities.eu/db/smart_city_Nice+metro_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/nice-c-te-d-azur-innovation-is-a-daily-experience-nice-c-te-d-azur-m-tropole~1730) | | **Paris** | France | 2 265 886 inhabitants | | | [**Smart and sustainable Paris: urban intelligence for climate change** *Cooperation, participation, networking - Information, education - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/smart-and-sustainable-paris-urban-intelligence-for-climate-change-paris~1731) ([report](http://www.energy-cities.eu/resources/cities-actions/smart-and-sustainable-paris-urban-intelligence-for-climate-change-paris~1731)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/smart-and-sustainable-paris-urban-intelligence-for-climate-change-paris~1731) | | **Plaine Commune - EPT** | France | 308 310 inhabitants | | | [**A territory of culture, creation and innovation at the heart of digital knowledge** *Information, education - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/a-territory-of-culture-creation-and-innovation-at-the-heart-of-digital-knowledge-plaine-commune-ept~1732) ([report](http://www.energy-cities.eu/db/smart_city_Plaine+commune_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/a-territory-of-culture-creation-and-innovation-at-the-heart-of-digital-knowledge-plaine-commune-ept~1732) | | **Rennes Métropole** | France | 403 943 inhabitants | | | [**Rennes: European smart city** *.Mobility - Cooperation, participation, networking - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/rennes-european-smart-city-rennes-m-tropole~1733) ([report](http://www.energy-cities.eu/db/smart_city_Rennes+metro_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/rennes-european-smart-city-rennes-m-tropole~1733) | | **Toulouse Métropole** | France | 714 332 inhabitants | | | [**Toulouse, the open metropolis** *Clean and energy efficient vehicles - Cooperation, participation, networking - Smart city - Vision / foresight*](http://www.energy-cities.eu/resources/cities-actions/toulouse-the-open-metropolis-toulouse-m-tropole~1734) ([report](http://www.energy-cities.eu/db/smart_city_Toulouse_France_Urbaine_en.pdf)) | [English, French](http://www.energy-cities.eu/resources/cities-actions/toulouse-the-open-metropolis-toulouse-m-tropole~1734) |   Bottom of Form | |
| **European Technology Platform on Renewable Heating and Cooling** | | |
| Roadmap on implementation ([source](http://www.rhc-platform.org/publications/)) ([report](http://www.rhc-platform.org/fileadmin/Publications/RHC_Common_Roadmap.pdf)) | 1. INTRODUCTION: FROM VISION TO IMPLEMENTATION ............................................................................................... 1  1.1 The Renewable Heating and Cooling Platform (RHC-Platform) ............................................................................. 2  1.2 The four RHC Technology Roadmaps: the pillars of the RHC Common Implementation Roadmap ............................................................................................................... 3  1.3 The previous achievements ....................................................................................................................................................... 3  2. 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| Good practices 2014 (source) ([report](http://www.managenergy.net/lib/documents/1264/original_original_ManagEnergy_Goodpractices-2014.pdf)) | Notable: | |
| Good practices 2013 ([report](http://www.managenergy.net/lib/documents/803/original_ME-BROCHURE-2013-FINAL-low-def-web.pdf)) | Notable: | |
| Good practices 2012 ([report](http://www.managenergy.net/lib/documents/420/original_2012ManagEnergyGoodPracticeBrochure.pdf)) | Notable (using ZEB schools as knowledge dissemination platforms for the users) | |
| Good practices 2011 ([report](http://www.managenergy.net/lib/documents/421/original_2011_managenergy_good_practice.pdf)) |  | |
| Intelligent Energy Europe good practices 2013 ([report](http://www.managenergy.net/lib/documents/801/original_Joint_publication_IEE_INTERACT_web.pdf)) | Peer learning – 5  Integration of sustainable energy aspects into spatial planning – p13  Leadership for energy action and planning – 16  Urban planners with renewable energy skills – 19  Compact cities – 20  Multi-level governance -21  Financing instruments – 29 | |
| Best practice case studies 2014 ([source](http://www.managenergy.net/article/124#.WMqPPfkrKUl)) | [The winner!](http://www.managenergy.net/sm_the_commune_of_kisielice.html)  [The Commune of Kisielice](http://www.managenergy.net/sm_the_commune_of_kisielice.html)  [Promoting energy self-sufficiency in Poland’s rural communities](http://www.managenergy.net/sm_the_commune_of_kisielice.html)  The energy self-sufficiency project of the Commune of Kisielice in Poland is designed to increase energy independence, make the best use of local capacity and reduce CO₂ emissions in a small rural commune. The commune has set itself the goal of abandoning dependence on coal – reducing emissions, improving air quality and making maximum use of local agricultural production capacity.  The runners-up   |  | | --- | | [Warm and Well](http://www.managenergy.net/sm_warm_and_well.html)  Severn Wye Energy Agency's community-scale delivery model for home energy improvements  Warm and Well is a programme for home energy advice and retrofit improvements that aims to improve energy efficiency, cut energy bills and carbon emissions, and reduce the risk of energy poverty. The health benefits of energy efficiency are also a key part of the project. | | [Andalucía A+](http://www.managenergy.net/sm_andalucia_a_plus.html)  Working with suppliers and citizens to improve energy efficiency  The ENERGY SAVING AT HOME programme is an Andalusian regional energy agency initiative that has reached more than 300,000 citizens. |   Other finalists   |  | | --- | | [Sustainable Järva](http://www.managenergy.net/sm_sustainable_jarva.html)  Retrofitting 1960s homes in Sweden for an eco-efficient future  Sustainable Järva is a regeneration project for a suburb of Stockholm, Sweden, designed to refurbish and make the old housing stock from the mid-sixties energy-efficient. | | [Smart City–‘A’ Labelled Municipalities](http://www.managenergy.net/sm_smart_city_a_labelled_municipalities.html)  Joining forces to become ‘A’ labelled municipalities  Small municipalities in Sardinia are receiving technical and financial support to develop sustainable energy action plans for their cities. | |  | | |
| Case studies 2013 ([source](http://www.managenergy.net/2013_me_award_nominees.html#.WMqQ2vkrKUk)) | A record 82 projects were submitted for the 2013 [ManagEnergy Local Energy Action Award](http://www.managenergy.net/casestudies_actionaward.html). Listed below are the ten finalists for the award that were evaluated by a high-level jury composed of key representatives from public authorities, energy agencies, city networks, and industry and citizens associations from across Europe. The rigorous evaluation procedure considered the projects’ impact, sustainability and replication potential. The winner was announced during a special ceremony in Brussels on June 24, and each of the top three projects were presented the following day at the ManagEnergy Annual Conference.  THE WINNER:  **Setting new standards in sustainability**  *Changing attitudes to green construction in Croatia.*  **Project title:** The Bold New Face of Koprivnica  **Location:** Koprivnica, Croatia  [**More >>**](http://www.managenergy.net/koprivnica_2013_me_award_winner.html)  THE RUNNERS-UP:  **Improving energy efficiency in Europe’s capital**  *Energy management in the EU’s capital.*  **Project title:** The Brussels Local Action Plans for Energy Management (PLAGE)  **Location:** Brussels, Belgium  [**More >>**](http://www.managenergy.net/plage_2013_me_runner_up.html)  **Going beyond the 2020 emission reduction targets**  *An Italian province goes beyond 2020 emission targets.*  **Project title:** Chieti towards 2020  **Location:** Cheti, Italy  [**More >>**](http://www.managenergy.net/cheti_2013_me_runner_up.html)  http://www.managenergy.net/lib/images/604/original_white%20space.JPG  OTHER FINALISTS:  **Innovative ice challenge becomes a hot topic**  *Face-to-face with energy efficiency.*  **Project title:** Mobilizing citizens in the field of RUE and RES through special awareness raising campaign and Energy Days  **Location:** Maribor, Slovenia  [**More >>>**](http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=8409&catId=1&pageNum=0&index=2)  http://www.managenergy.net/lib/images/604/original_white%20space.JPG  **Producing green fuel from natural processes**  *New liquefied biogas plant produces green fuel—and fertilizer.*  **Project title:** Lidköping Biogas  **Location:** Lidköping, Sweden  [**More >>>**](http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=8437&catId=3&pageNum=0&index=3)  http://www.managenergy.net/lib/images/604/original_white%20space.JPG  **Building sustainable communities**  *A Swedish neighborhood* *to halve its energy consumption.*  **Project title:** Sustainable Ålidhem  **Country:** Ålidhem, Sweden  [**More >>>**](http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=8551&catId=5&pageNum=0&index=5)  http://www.managenergy.net/lib/images/604/original_white%20space.JPG  **Tapping into the energy-saving potential of schools**  *Tapping into the energy-saving potential of schools.*  **Project title:** EURONET 50/50  **Location:** Barcelona, Spain  [**More >>**](http://www.managenergy.net/resources/1502)  http://www.managenergy.net/lib/images/604/original_white%20space.JPG  **Reducing regional transport emissions to almost nothing**  *City harnesses the power of gas.*  **Project title:** Environmentally-friendly gas-fuelled buses, Skåne  **Location:** Skåne, Sweden  [**More >>**](http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=8895&catId=3&pageNum=0&index=4)  http://www.managenergy.net/lib/images/604/original_white%20space.JPGhttp://www.managenergy.net/lib/images/604/original_white%20space.JPG  **Setting new standards in sustainability**  *Island hybrid hydro-wind electricity generation system.*  **Project title:** El Hierro, 100% Renewable Energy  **Location:** El Hierro, Spain  [**More >>**](http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=9005&catId=6&pageNum=0&index=1)  http://www.managenergy.net/lib/images/604/original_white%20space.JPG  **Freeing up street space for cyclists and pedestrians**  *A German city’s effort to remove 6000 cars from its streets.*  **Project title:** Car-Sharing, Bremen  **Location:** Bremen, Germany  [**More >>**](http://www.eusew.eu/component/see_projectview/?view=see_projectdetail&projectid=9190&catId=3&pageNum=0&index=5) | |
| Case studies 2012 ([source](http://www.managenergy.net/case_studies_2012.html#.WMqSP_krKUk)) | More than 60 case studies were submitted for the 2012 ManagEnergy Local Energy Action Award. Listed below are the ten finalists for the award that were evaluated by a high-level jury composed of key representatives from public authorities, energy agencies, city networks, and industry and citizens associations from across Europe. The rigorous evaluation procedure considered the projects’ impact, sustainability and replication potential.  2012 Award Winner   * [Samsø 2.0 - Energy Education](http://www.managenergy.net/resources/1438) (Samsø Energy Academy, Denmark)   2012 Runners-up   * [Community Power Cornwall](http://www.managenergy.net/resources/1439)(Community Energy Plus, United Kingdom) * [Energy Efficiency Measures in Multi-Residential Buildings](http://www.managenergy.net/resources/1440) (Zemgale Regional Energy Agency, Latvia)   Other 2012 Case Studies   * [A Helping Hand for my Solar Water Heater](http://www.managenergy.net/resources/1441) (ARER - Réunion Island Regional Energy Agency, France) * [Community Energy](http://www.managenergy.net/resources/1444) (South East Wales Energy Agency, UK) * [The Educational Programme of the Cyprus Energy Agency](http://www.managenergy.net/resources/1442) (Cyprus Energy Agency, Cyprus) * [Energy Management in North Tipperary Local Authorities](http://www.managenergy.net/resources/1446) (Tipperary Energy Agency, Ireland) * [Fossil Fuel Free district heating in Kristianstad](http://www.managenergy.net/resources/1445) (Kristianstads kommun, Sweden) * [Green Vehicles](http://www.managenergy.net/resources/1447) (Department of Environment and Transport, Reykjavik City, Iceland) * [Low Energy Emission on the Curriculum](http://www.managenergy.net/resources/1443) (EUC Nordvest, Denmark) | |
| Case studies 2011 ([source](http://www.managenergy.net/casestudies_2011.html)) | Tens of cases studies were submitted to ManagEnergy in the framework of our annual call for success stories.  The submissions were evaluated by a committee of experts and a high-level jury. Six of them were nominated for the 2011 ManagEnergy Local Energy Action Award and two of them were presented the award by European Commissioner for Energy Günther Oettinger during the [2011 ManagEnergy Award ceremony](http://www.managenergy.net/casestudies_actionaward_2011.html).  Discover below some of the most outstanding projects presented to ManagEnergy:  2011 Award Winners   * [I can have solar collectors too!](http://www.managenergy.net/resources/1423) (REGEA – North-West Croatia Regional Energy Agency, Croatia) * [RE:FIT](http://www.managenergy.net/resources/1424) (London Development Agency, United Kingdom)   2011 Nominees   * [Smart-metering domestic energy saving](http://www.managenergy.net/resources/1416) (Sabadell Local Energy Office, Spain) * [Energy efficiency in Abbey St. Ottilien](http://www.managenergy.net/resources/1420) (Research Center for Energy Economics, Germany) * [Hvidovre Offshore Wind Turbine Co-operative](http://www.managenergy.net/resources/1421) (Hvidovre Vindmøllelaug, Denmark) * [Switch Off Campaign](http://www.managenergy.net/resources/1422) (Codema, Ireland)   Other 2011 Case Studies   * [Heat pumps and renewables ensure carbon-free football](http://www.managenergy.net/resources/1437) (Lechwerke AG, Germany) * [PV purchasing groups for citizens](http://www.managenergy.net/resources/1427) (Energy and Sustainable Development Agency of Modena, Italy) * [Biogas Väst - the world's first regional project for biogas as fuel](http://www.managenergy.net/resources/1428) (Business Region Göteborg AB, Sweden) * [Educational activities of Cyprus Energy Agency](http://www.managenergy.net/resources/1425) (Cyprus Energy Agency, Cyprus) * [Zagreb Energy Week](http://www.managenergy.net/resources/1429) (North-West Croatia Regional Energy Agency, Croatia) * [Re-Charge](http://www.managenergy.net/resources/1430) (Kirklees Council Environment Unit, United Kingdom) * [Scrapping Bonus for Cooling Appliances](http://www.managenergy.net/resources/1426) (Klimaschutzagentur Mannheim gGmbH, Germany) * [RE:NEW (Home energy efficiency for tomorrow)](http://www.managenergy.net/resources/1431) (London Development Agency, United Kingdom) * [The Cinderella story in the history of energy-system-changes in transportation](http://www.managenergy.net/resources/1432) (Metan Ltd, Iceland) * [Milton Keynes Carbon Offset Fund](http://www.managenergy.net/resources/1433) (Milton Keynes Council, United Kingdom) * [Young Energy People!](http://www.managenergy.net/resources/1434) (Severn Wye Energy Agency, United Kingdom) * [Energy Efficiency in North Tipperary County Council](http://www.managenergy.net/resources/1435) (Tipperary Energy Agency Limited, Ireland) * [Bringing Own House in Order](http://www.managenergy.net/resources/1436) (UNDP Croatia, Energy efficiency project, Croatia) | |
| Financing solutions ([source](http://www.managenergy.net/financing/instruments#.WMqUC_nyuUk)) | FINANCING SOLUTIONS  Explore ManagEnergy's new series of pages dedicated to financing solutions. Find information, analysis, case studies, events, and more.  [ENERGY PERFORMANCE CONTRACTING (EPC)](http://www.managenergy.net/instruments/2)  [Energy Performance Contracting is a form of ‘creative financing’ for capital improvement which allows funding energy upgrades from cost reductions. Under an EPC arrangement an external organisation (ESCO) implements a project to deliver energ...](http://www.managenergy.net/instruments/2)  [EUROPEAN STRUCTURAL AND INVESTMENT FUNDS (ESI)](http://www.managenergy.net/instruments/3)  [The European Structural and Investment Funds (ESI)--formally known as the Structural Funds and the Cohesion Fund--are financial tools set up to implement the regional policy of the European Union. They aim to reduce regional disparities in terms o...](http://www.managenergy.net/instruments/3)  [COMMUNITY FUNDING](http://www.managenergy.net/instruments/4)  [Community finance means money raised from the local community: including individuals and households, businesses and customers (e.g. of a cooperative venture). Community finance may be coordinated with leadership from the local authority or com...](http://www.managenergy.net/instruments/4)  [REVOLVING LOAN FUNDS FOR SUSTAINABLE ENERGY](http://www.managenergy.net/instruments/5)  [A revolving loan fund is a source of money from which loans are made for multiple sustainable energy projects. Revolving funds can provide loans for projects that do not have access to other types of loans from financial institutions, or can p...](http://www.managenergy.net/instruments/5)  [GREEN MUNICIPAL BONDS](http://www.managenergy.net/instruments/6)  [A municipal bond is a bond issued by a local government, or their agencies. Potential issuers of municipal bonds include states, cities, counties, redevelopment agencies, special-purpose districts, school districts, public utility districts, pub...](http://www.managenergy.net/instruments/6)  [PROJECT DEVELOPMENT ASSISTANCE (PDA)](http://www.managenergy.net/instruments/7)  [The European Commission has set up a series of facilities funding Project Development Assistance (PDA) to support ambitious public authorities - regions, cities, municipalities or groupings of those - and public bodies in developing bankable s...](http://www.managenergy.net/instruments/7) | |
| Governance and Finance solution: ESCO ([source](http://managenergy.net/article/225#.WMqUBPnyuUl)) | **LOCAL AUTHORITIES AGGREGATING ESCO PROJECTS: TRUST AND AMBITION**  http://managenergy.net/lib/images/1731/original_shutterstock_293920409.jpgAccording to Lieven Vanstraelen, Co-CEO, Inerginvest, Belgium, who will be speaking at [ESCO Europe 2015](http://www.esco-europe.com/), one of the most distinct trends in the European ESCO market today is that of aggregation.  A growing number of projects are coming out, such as [Gre-Liège](http://www.gre-liege.be/), where aggregation is being used to kickstart the markets. This trend, which began two years ago, is even more accentuated today.  Buildings can be pooled together, especially in the case of EPC, into one project and one tender. Aggregating several pools into a bigger energy performance programme is made possible by framework tendering programs that – in the public sector – often use innovative aspects of public tendering law. Pooling of buildings of several local authorities requires a very good coordination of decision processes and extra work around facilitating common project goals, explains Vanstraelen.  “Aggregation … requires a dedicated organisation (the aggregator) that centralises expertise and delivers that to individual local authorities.”  He adds that aggregators need to get help from specialised and experienced consultants, of which very few exist today.  “Working with different local authorities can provide important economies of scale and can also help in aggregating financing solutions. This is often key to get EU funding or attract certain private investors, for whom individual local authorities' projects are sometimes too small. Pooling and aggregation also allows faster market growth and is a key to attract ESCOs and new facilitators to the market.”  **Trusted facilitators**  Independent public agencies are entities that can help to develop the market in two ways : by facilitating energy efficiency projects – especially EPCs, and by aggregating projects . While the agencies can aggregate, they may need help with the facilitation. The crucial role of facilitators in accompanying energy efficiency projects and programmes, and especially energy performance contracting (EPC) through the various project phases is almost universally recognised now by the relevant players in Europe.  Public actors, like agencies of dedicated facilitators, are generally more trusted than private players, says Vanstraelen. However, expertise is very important and unless public actors have pioneered facilitation, as is the key for example in Germany (e.g. Berlin Energy Agency), Austria (Graz Energy Agency) or Belgium (Fedesco), they may call on private experts.  He says that most markets, where the ESCO-model and energy performance contracting (EPC) projects have been successful, have seen the emergence of public and/or private facilitators who can offer the following:   * The necessary multi-disciplinary (technical, operational, financial and legal) expertise to customers to outsource energy performance projects in buildings * Provide key resources that are often lacking * Help identify and lift external and internal barriers * Help the decision process * Create trust between customers and energy services providers such as ESCOs * Have developed tools that are used in projects * Play a crucial role in finding, structuring and engineering necessary finance * Anticipation and solving problems * Standardisation of contracts, methodologies, processes and tools, thereby reducing transaction costs significantly   **Increasing ambitions**  In terms of a changing market, another trend is towards an increasing number of projects of which the ambition level in terms of energy saving is higher : “up from 25–30% in initial ESCO projects to 40 to 50% percent energy savings aimed at, by including the building envelope itselfˮ.  Vanstraelen is looking forward to meeting new facilitators and aggregators at the annual ESCO Europe conference in early November, and hearing about the latest case studies as well as discovering more about the “**increased** financing options available to customersˮ.  While [ELENA](http://ec.europa.eu/environment/ecoap/about-eco-innovation/policies-matters/eu/535_en.htm) offers grants for technical assistance, which includes facilitation, there are three main ways of financing for the end user: privately; through a financial institution; or via third party financing whereby the ESCO enables this by making a savings guarantee to the bank / financial institution. It is in this last category that there has been a marked increase in options available as private institutions and indeed public authorities favour commercial financing in order to keep the debt off the balance sheet.  Commercial products such as insurance to guarantee the savings are also emerging on the market.  **Learn more:**  [Energy Performance Contracting – case studies from public authorities](http://www.managenergy.net/instruments/2?corner=financial#.Vi312pVOd1s)  [ESCO Europe / European Utility Week 2015](http://www.esco-europe.com/Pages/Detail/16060) | |
| **European Smart Grid Technology Platform** | | |
| Norwegian smartgrid centre, [website](http://smartgrids.no/fou/), list of R&I projects | <http://smartgrids.no/> | |
| Recommendations based on smart grid use cases ([source](http://www.smartgrids.eu/documents/ETP%20SG%20Digital%20Energy%20System%204.0%202016.pdf)) | Main recommendations on Digital roadmap  In this chapter we list our choice of the top 10 recommendations we extracted from the various practical use cases given in the main body of this document. For all the stakeholders in the Digital Transformation these recommendations may shape its own roadmap. Note that the recommendations below are not necessarily ranked.  DON’T MISS THE NON-REVERSIBLE DIGITAL TRANSFORMATION REALITY TODAY Digitalization for grid operations is ongoing. Currently, the DSO’s are investigating which technologies to roll out for a smarter operation of their grid, allowing a higher penetration of distributed generation, a massive integration of storage, smart metering and Network big data at minimum costs and high flexibility. Currently innovative smart grid management projects are usually performed by larger DSO’s… Some smaller DSO’s (e.g. more than 800 DSO’s exist in Germany) may not be able to adopt these technologies without a clear articulation of the value proposition, time to market, industrialization, shared platforms and accelerated deployment. However, a smart operation of the grid is an important enabler of renewable energy penetration and features such as reactive power injection, curtailment and onload tap are expected to be cost-efficient now or at least in the near future, depending on the case. A crucial aspect is that smaller DSO’s who do not have the financial resources to perform innovation projects should join the smart grid operation community of practices and join the electronic marketplaces connecting distributors and retailers.  SMART GRID MANAGEMENT IS NOT (YET) A PLUG AND PLAY STORY BUT DIGITAL SMARTGRID IS! The contributions in this document that discussed digitalization of the grid, either at MV or LV level, put a considerable effort in setting up communication infrastructure and coupling with the data platform. There is not yet an end-to-end solution on the market that provides SCADA and ICT services which are fully interoperable and easy to implement. However, the emergence of the IT/OT integrated or convergent platforms running on Big Data with real time predictive analytics services can play a role in making implementations more efficient.  EMPOWER ICT INFRASTRUCTURES USING DIGITAL SIMULATION MODELS We observed that increasing monitoring and control at MV level is generally prioritized over LV level, due to the cost of communication and the radial structure of the LV grid, leaving fewer possibilities for smart switching operations. As a DSO, simulation models can be a great tool to identify weak spots in the grid and the most cost-effective way to operate the grid. With the availability of sensor data, a combination with grid analysis tools can effectively increase the vision of the operator on the flows in the grid, reducing the amount of locations where hardware implementations are needed.  OPEN ELECTRONIC MARKET PLACES BOOST DIGITAL ENERGY In most EU member states that proceed with a smart meter rollout, the DSO is responsible for the collection and the management of the data. In UK, Retailers play an active role in Smart Metering data collection. DSOs and Retailers should be connected through electronic marketplaces and exchange B2B or B2C digital services (example H2020 project “Flexiciency”). The access to these marketplaces should be open as well to Technology and Energy Service Providers. Data shared like smart metering to third parties should be done in a secured way, compliant with the personal data protection regulation. Local energy markets, improving self-consumption by optimizing multicommodity energy flows are the next step, already attracting considerable research attention. The DSO’s, Retailers and third Party Technology and Services Providers are recommended to hire big data, Data Scientists and IoT experts for predictive and forecasting analytics, market exchange and will be at the core of these marketplaces.  WELL-GUIDED DATA CONFIDENTIALITY ACCELERATES THE DIGITAL TRANSFORMATION Traditionally, grid operators have a rather strict policy on data confidentiality with regards to their grid topologies and other grid-related data. However, with the digital transformation and the increased possibilities for smart network control, cooperation with third parties like research institutes in large innovation projects is much more efficient if actual field data can be used. Such well-guided collaboration with third parties has been experienced positively by almost all grid operators involved in innovation projects, accelerating their knowhow and competences at a faster rate.  SMART MANAGEMENT CAN SUCCESSFULLY INTEGRATE MORE RENEWABLES As one of the contributions to this document is showing, increased forecasting possibilities, in combination with measures like reactive power control and curtailment are effectively able to increase the hosting capacity of the grid and connecting renewables at an overall lower cost for the society. This requires a regulatory framework to support these new technologies, where DSO’s and producers can work out contracts to connect the generation units to the grid without costly grid upgrades.  LEVERAGING DIGITAL TECHNOLOGIES ENABLES OPEN AND TRANSPARENT FLEX MARKETS Several initiatives are ongoing to integrate flexibility in the market and create a simple cross-border system for flex trading. However in some European member states industrial flexibility is already integrated in the market, the challenge is to increase the share of flexible demand in the system and develop a transparent market model which can take into account the needs of all actors. This requires leveraging on digital technologies like data handling and IoT in memory and predictive analytics platforms. The relationship between retailers, aggregators and consumers should be studied correctly and the business model for both relationships defined correctly in order to facilitate the market integration of flexible demand while ensuring safe operation of the grid.  AUTOMATED TECHNOLOGIES CAN SHIFT RESIDENTIAL CONSUMPTION Demand response is already active in several member states in Europe and flexible consumption should be integrated in the market of the remaining countries as soon as possible, by working out appropriate market products. At residential level, smart houses are currently not yet linked to the energy market. Ongoing initiatives show that flexible household consumption can be shifted in time, when this happens in an automated way. Therefore, when dynamic prices are adopted, an incentive can be provided for consumers to shift their consumption, as well as for technology providers to develop appliance controllers etc.  KEEP INVESTING IN DISRUPTIVE DIGITAL TECHNOLOGIES Even with the planned reduction of greenhouse gases, global warming is still a problem that presents enormous challenges to the power sector. Large uncertainties still exist towards the generation mix, grid operation and role of the consumer in the energy system in 2050. Therefore, long-term research and investment in so-called ‘disruptive’ technologies is still required. | |
| **The European Construction Technology Platform** | | |
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