Impact Objectives

- Support cities to meet the 20-20-20 targets by the integration of energy in urban management
- Organise interactive Smart Urban Labs where stakeholders can turn ambitions into tangible Implementation Plans
- Provide insight into the use of data

Transitioning to low carbon cities

Moving an entire city from a carbon-based economy to a sustainable one is not an easy task. In extracts from a series of blogs we share the ways in which TRANSFORM's Coordinator ***Ronald van Warmerdam*** *believes they have successfully set European cities on the low carbon pathway*

Can you offer some of your thoughts about what is at the heart of TRANSFORM and the changes being promoted through the project?

TRANSFORM is an international project that deals with the urban transformation of cities depending on carbon-based energy to cities independent of it. Sounds easy, right? Since Kyoto, dozens of cities all over Europe defined goals to reduce their carbon emissions. Big ambitions of 20 per cent carbon reduction and more are defined. It turned out that reaching the goals is much more difficult than setting them. Since, sometimes more than a decade ago, no real changes happened. The question is: Why? In all these cities there is a lot of political power at work, a huge amount of scientific research done, and business working on solar panels, building refits or energy production by wind, etc. Still big changes did not start and most probably hardly any city will reach their goals by 2020. There has to be something else at stake.

This is exactly what TRANSFORM is about. TRANSFORM is about finding the real barriers. Finding the bottlenecks and finding new solutions for change. Urban transformation is about changing an enormously complex system of energy production, energy distribution, consumption, related policy, economy and legal structures. But TRANSFORM is also about human behaviour, about changing old-school business, urban redevelopment and changing rusted systems.

What is the main driving force for a city setting out on a route of low carbon transformation?

To start transition we first need to visualise! Explaining and convincing politicians, civilians, partners and stakeholders is one of the first challenges of TRANSFORM. Vast amounts of data (big data) are collected and visualised on the map of the city giving the people insight in their energy world. The next step is the 'Decision Support Tool'. Accenture and AIT, two TRANSFORM partners, have built an energy simulation tool that is able to simulate and show transformation measures for urban energy development and redevelopment. Based on the outcomes, cities and all stakeholders can develop their transformation agenda and business case: a smart solution for cities that want to transform their energy systems. TRANSFORM is not building gadgets but offering real smart solutions with positive impact for cities. TRANSFORM aims to help cities to transform building low carbon energy infrastructure and smart urban planning. Solutions like energy mapping and the decision support environment will help cities in a positive way to solve real problems based on real data.

There are six cities involved in the TRANSFORM Project. What similarities do they share, and how can other cities learn from their experiences?

Our cities are all West European, we share the same kind of culture, we are all democratic-capitalist, our cities have the same kind of goals concerning energy transition and CO_2 reduction and our political atmosphere is moderate. But if you look closely, our cities are extremely different as well. Governmental traditions and administrative structures vary, our baselines are different, the political status quo is different, and the relation with citizens and with stakeholders in the energy infrastructure varies greatly. The energy mix is different and the path to change it for the better is therefore different in all our cities as well. We use the TRANSFORM methods each in our own way and we adapt them in the best way to our cities' specific situation or habitat. We pick the methods and tools that fit best to walk the path of transition. This could be a message to other cities: pick what you need and what fits your transition best. In this way we learn from cities and cities learn from us.

Smart solutions for smart cities

The TRANSFORM consortium see open access to big data as integral to providing proper information to support decision making for sustainable cities. The aim is to ultimately transform the way modern cities use energy and to set Europe firmly on its path to a low carbon future

In 2009 the EU set into legislation a package of targets to meet goals for Europe's smart, sustainable and inclusive growth. The targets are focused around changing the way Europe uses energy by 2020, including a 20 per cent cut in greenhouse gas emissions; 20 per cent of Europe's energy coming from renewables; and a 20 per cent improvement in energy efficiency. It is recognised that in order to achieve this Europe needs to change the way people think about and use energy. To support this, the European Commission-funded project TRANSFORM (TRANSFORMation Agenda for Low Carbon Cities) aims to aid cities with their energy transition to becoming low carbon cities, under the umbrella of the Smart Cities and Communities programme.

The project is hoping to provide long-term guidance on changing to low carbon strategies and to inspire cities all over Europe to move down this pathway. TRANSFORM Coordinator Ronald van Warmerdam comments on one of the project's blogs that whilst the project is about supporting energy transition in our cities and moving us away from carbon, it is more than that: 'It is not only data and ICT that will bring the solutions. Transformation is even more about governance, equity, citizens' involvement and democracy. The project is supported by 13 partners who are working closely with six cities (Amsterdam, Copenhagen, Genoa, Hamburg, Vienna and Lyon) to identify ways they can lower CO_2 emissions through policy development and implementation programmes.

TOOLS AND METHODS TO SUPPORT ENERGY TRANSITION

A number of tools and methods were designed and tested. This was done through six clearly defined work packages tasked with defining a Smart Energy City; specifying a Transformation Agenda where a couple of key projects are identified in each of the cities to reduce more CO_2 through more drastic steps; developing a prototype of a Decision Support Tool to show how the effects of decisions made on components like waste and water use impact on energy plans; organising Smart Urban Labs where stakeholders work to prepare practical Implementation Plans with projects and business cases; sharing Knowledge and Communication; and managing the project. A Memorandum of Understanding was signed between the six cities that participated, the EU and representative organisations from key industries, academic institutions and business. This revolved around how TRANSFORM would be implemented and the way in which work will continue when the project ends. Ultimately, the findings and results from the project will feed into the EU Smart City Agenda 2015+.

After defining a Smart Energy City, the next step was to prepare Transformation Agendas for the six cities. This can be a significant undertaking for a city as it is a complex and multifaceted task. The aim of the Transformation Agenda is to create a site where all of the different influences of the energy production and consumption chain are measured and integrated. Some of the key themes that are to be considered in this process are stakeholder management, retrofitting existing buildings, smart grid infrastructure, integrated planning, future heating and cooling solutions, and mobility of the population. Many of the techniques and templates prepared by the TRANSFORM team sit under the Transformation Agenda component and have been designed to assist cities in taking this major step.

One of the key tools developed by the programme is the Decision Support Environment (DSE), which is an online integrated urban energy planning tool. Its value is that it enables quantitative analysis on different measures. When data is inputted the DSE can calculate how different low carbon measures will change CO_2 emissions for a city. The DSE tool is capable of completing multiple scenario simulations and provides the necessary technical support for transparent planning decisions.

The Smart Energy City Handbook prepared by the team supports the process of a transformation agenda and outlines how an Implementation Plan can be put together. It essentially draws together much of the information produced by TRANSFORM. It outlines the lessons learnt during the Smart Urban Labs and provides KPI monitoring

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progress, as well as a number of financial models to support decision making.

LESSONS LEARNT BY PARTNER CITIES

The purpose of using six partner cities as case studies in the TRANSFORM initiative was to show how local stakeholders could work towards long-term CO_2 reductions through designing executable actions and projects that are locally relevant. This has worked very successfully, and enabled the team to recommend how other cities can best take these ideas forward. For example, the summary of the Transformation Agenda in Copenhagen concluded that the city is on track to achieve its set goals in terms of 20 per cent CO_2 reduction, but not on track for the ultimate goal of carbon neutrality in 2025. The Agenda provided the opportunity to identify gaps and then considered actions to resolve these in order to reach the goal, including allocating funding for periods longer than the standard annual budget negotiations, making current roles that are contracted into permanent ones to reduce the risk of loss from the administration, involving the end user more, and improving coordination with other departments.
The summary document outlines how the TRANSFORM process helped to ‘put “smart city” high on the agenda among executives’, thus fostering a place where other Smart City projects could be initiated.

A number of lessons have been learnt over the four years of the TRANSFORM programme and these provide clear direction to support other cities embarking on this transformation, as well as for the EC Smart Cities policies. For example, the Copenhagen case study recognised that access to data for solving problems is a big challenge. Van Warmerdam blogged about this, observing that whilst having data is one of the most critical components of this initiative, open access to data is even more important. He noted that the DSE simulation tool enables data ‘comes to life’ so that scenarios can be created and teams have access to the real-life impacts of policy decisions they are making: ‘If we would be able to free the data and start acting transparently we would be able to build the systems needed to move towards low carbon or non-carbon cities.’ Ultimately, if our cities want to be low, or even zero, carbon then having open access data to make informed decisions about city design decisions is crucial. It is this that TRANSFORM has so successfully managed to initiate and hopefully will foster more widely.

Project Insights

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Ronald van Warmerdam is the TRANSFORM Project Coordinator. He is a Senior Project Manager at the Project Management Bureau of the City of Amsterdam, which is a team supporting major spatial projects in the city with project planning and management services. He has an interest in sustainable real estate and city development which complements well his coordination role in TRANSFORM.

SEVENTH FRAMEWORK PROGRAMME

TRANSFORM