

# **Green Solar Cities**

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## **Report on best practices and applicability of collaboration forms between public authorities, citizens and Energy Service Companies**

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**OTB Research Institute, Delft University of Technology**  
Merve Bedir, Evert Hasselaar

## Deliverable D1.12

### **Report on best practices and applicability of collaboration forms between public authorities, citizens and Energy Service Companies**

#### *Work Package 1*

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Co-ordinator: KUBEN

Work package 1 leader: OTB Research Institute for Housing, Urban and Mobility Studies of Delft University of Technology

#### Contractors:

Kuben Urban Renewal Denmark [Kuben]

Cenergia Energy Consultants [Cenergia]

City of Salzburg [Salzburg City]

Gswb – Gemeinnützige Salzburger Wohnungsgesellschaft mbH [Gswb]

Heimat Österreich [HÖ]

Salzburger Institut für Raumordnung & Wohnen [SIR]

Salzburg AG

Steinbeis GmbH & Co KG Technologietransfer [Steinbeis]

Die Salzburg gemeinnützige Wohn- und Siedlungsgenossenschaft [DS]

European Green Cities ApS [EGC]

DONG Energy

Green Valby

Valby City Council

Lund University

Delft University of Technology [TU Delft]

WE Consultants Sustainable Building [WE]

EMI Non profit company for Quality Control and Innovation in Building [EMI]

Prisma Commercial investor

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OTB Research Institute for Housing, Urban and Mobility Studies [[www.otb.tudelft.nl](http://www.otb.tudelft.nl)]

Delft University of Technology

P.O. Box 5030, 2600 GA Delft [the Netherlands]

Phone: + 31 15 278 7578 [M. Bedir] and + 31 15 278 7871 [E. Hasselaar]

Telefax: + 31 15 278 3450

[m.bedir@tudelft.nl](mailto:m.bedir@tudelft.nl)

[e.hasselaar@tudelft.nl](mailto:e.hasselaar@tudelft.nl)

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# 1. INTRODUCTION

## 1.1. Goals

The goal of Community Action Plans is to establish a sustainable community. In general, Concerto projects have the ambition to support communities in using tools and taking actions to overcome barriers in their demonstration policy, either from a financial, technical, legislative/ regulatory point of view, and increase the support from the community/district level Concerto projects help each other in achieving sustainable communities, by exchanging good practices, by giving advice on initiatives, facilitation and on implementation of practical policies and projects. Cooperation with social and private investors is promoted, including energy service companies and PV-cooperatives. Support from local citizens is important, which can be improved through information and participation.

The goal of Green Solar Cities project is to develop specified actions for each project area in the participating cities Copenhagen and Salzburg. We are aware that we should also work on the social integration with the surrounding areas.

## 1.2. Definitions

### *Definition of Community Action Plan [CAP]*

The project partners adopted the following definition of Community Action Plans (CAP): CAP is a mission statement about sustainable quality for the city, for the CONCERTO area and for demonstration projects, on how to reach the goals of the Concerto project, with support from relevant stakeholders.

In short: A Community Action Plan is an agreement on actions to reach the goals with support from relevant stakeholders.

In D1.10 the Sustainable Energy Community methodology was presented.

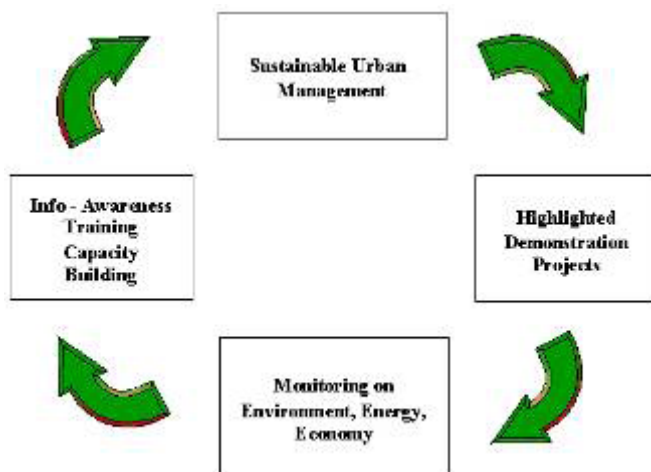


Figure 1 Community action plan implementation methodology

The sustainable Energy Community (SEC) approach involves four steps:

1. Highlight the demonstration projects as a way of improving the implementation of similar projects and gradually improve into SEC reality behaviours.

2. Monitor energy, environmental and economic effects into easy accessible results.
3. Provide information to citizens, companies, employees and managers within involved public and private departments/companies, politicians. Awareness is the first crucial step towards participation, learning, education, and training - which then produces capacity building and institutional strengthening for involved stakeholders.
4. Involved citizens, politicians, city administration departments etc. will use experiences from the demonstration projects to further adjust/develop SEC objectives, strategies, action plans, actual projects and guidelines for the local SEC area - and thus improve sustainable urban management into SEC reality.

The citizens have an important role to stimulate user friendliness, user oriented quality, empowerment through involvement and also a social process that can make a good foundation for community strength. The community forms the social capital, which in itself is a condition for a neighbourhood that is and behaves in a sustainable way. Asset Based Community Development begins with this social capital.

#### *Definition of Asset-Based Community Development [ABCD]*

ABCD creates a form of social sustainability: stable neighbourhoods that are strong enough to withstand social change and where property value development and local economies are healthy. The ABCD tactics typically involve capacity-building community development through interactions with community builders and by producing practical resources and tools to identify, nurture and mobilize neighbourhood assets. The work involves non-profit research, policy development and education organization pioneering in all aspects of recycling, waste water, sludge, composting, CO<sub>2</sub>-emission reduction through energy related measures and ecological housekeeping. It also advocates a new civic agenda to create communities that work for everyone and promotes the principles of collaborative problem-solving and consensus-based decision making. Communities are helped to design and implement innovative strategies that enhance the local economy as well as the local environment and quality of life. Support includes sustainable information.

#### *Definition of ESCO: Energy Service Company*

An energy service company [ESCO] is a professional business providing a broad range of comprehensive energy solutions including designs and implementation of energy savings projects, energy conservation, energy infrastructure outsourcing, power generation and energy supply, and risk management ([www.wikipedia.org](http://www.wikipedia.org)). The ESCO performs an in-depth analysis of the property, designs an energy efficient solution, installs the required elements, and maintains the system to ensure energy savings during the payback period. The savings in energy costs is often used to pay back the capital investment of the project over a five- to twenty-year period, or reinvested into the building to allow for capital upgrades that may otherwise be unfeasible. If the project does not provide returns on the investment, the ESCO is often responsible to pay the difference.

#### *Definition of PV Cooperatives*

A Photovoltaic's Cooperative is a business organization owned and operated by a group of individuals for their mutual benefit. The cooperative owns and manages pv-arrays and the risks and returns are for its members.

## 2. BEST PRACTICES IN COMMUNITY ACTION PLANNING

### 2.1. Case studies and site visits

The experiences from the Dutch partner Delft University of Technology were shared with partners Kuben en SIR, to create more understanding for the recommendations to organize participation procedures concerning planning activities in Valby and Salzburg, in order to have more support of future users and plans that are more user friendly and support energy efficient behaviour of occupants.

The eco-housing community at Culemborg includes an occupant led energy company (ESCO) and maintenance of the semi-public and public spaces under the responsibility of the occupant groups, which is the basis for a high level of social sustainability. This involvement of occupants supports eco-behaviour which also stimulates energy efficiency. One of the housing blocks is among the most energy efficient houses in the Netherlands, but with extra quality: the users are satisfied with the houses and the integrated technologies. This field visit highlighted the strategies and methods that can inspire more self-supporting activities by occupants and also social activities to involve more people in the planning and maintenance process.

The visit to exhibition at Den Bosch was to become acquainted with products for sustainable building as are being marketed in the Netherlands. Amongst partners, there is much discussion on the impact of different energy efficient ventilation systems. The best way to discuss the user aspects is to see a product, handle it and find out why certain problems that are known from post-occupancy evaluations can be avoided.

The visit to Tilburg gave the opportunity to meet tenants and discuss their experience with innovative technology for renovated apartment blocks: a climate façade with solar heated fresh air and extra heat provided on the basis of a direct air-heater. Some installations had just been replaced after 15 years of use, but a few tenants wanted to stick to the original provisions. There was a chance to see both solutions and meet some tenants. The old, original solution is much more energy efficient than the new installations, that provide more comfort, but at the expense of high investment and the energy consumption that is associated with the constant and poorly controllable basis energy consumption of state-of-art heat recovery ventilation a combined heater for space heating and domestic hot water use.

A visit to retrofits in Roosendaal, the Netherlands, showed two versions of passive house renovations for detached houses, and a passive house approach to a new development. The new exterior surfaces created the look of a new building, the interior was modern but with a lay-out that is traditional and well appreciated by the occupants. The major impression came from the presentations on the design, the execution and the extra cost involved in this passive house approach. A way to involve the occupants was to guarantee the energy effects and even accepting a financial correction, based on averages, when the calculated energy performance would be worse than the practical use on a yearly basis. The “total cost of living” guarantee has proven to give 20% better support for energy saving projects, according to evaluations by the Dutch National Tenant Association. More housing associations follow this approach now and it leads to more careful calculations of energy savings and to a stronger relationship between actual and planned performance.

The quality control method over the design and execution phase, as provided by the passive house labelling system, seems to be crucial for optimal performance of the executed projects. However, there is not yet an evaluation on the post occupancy phase, as the project was still in the pilot phase with few houses finished that were demonstration houses during the site visit.

## 2.2. Social, sustainable, financial arrangements

The best practices are selected from the experience of partners in the Concerto project, so they can support each other in the application process.

Activities and services that have proven to be successful in support of community organization and action toward sustainable communities are:

- support local participation in national campaigns that involve action taking by citizens;
- create an information point in the community that also stimulates and facilitates capacity building, transfer of knowledge, interaction between active citizens, local actions;
- investigate the active social network and bring people and organisations together;
- provide facilities for action taking and for investments in sustainable performance quality;
- monitor the effect of actions and stimulate creating new ideas on policies and actions: see next item: Idea Brewery.

### **Social sustainability**

OTB of TU Delft and VESTIA Housing Association of Rotterdam organized on February 11, 2010, an expert meeting on social sustainability. The list of best practices included the social effects of reconstruction projects, in which the planning process serves the process of community organization. Empowerment and new forms of collaboration in the field of maintenance and reconstruction and in the arena of public space are key words. New parks can become food producing areas, managed by the citizens and serving health goals, community action goals and empowerment to stimulate a healthy life style. Energy services can focus on the collective level instead of the individual consumers. Citizens help is needed to upkeep buildings and in reconstructing the neighbourhood. Social sustainability is defined as a performance quality, mainly based on social active people, that make a community interactive, alive and strong enough to withstand great changes in family compositions, external urban threats etc.

These activities provide insight in best practices that are part of action formats for community action plans, and finally for agreements for innovative collaboration forms. The idea is to move from communication to interaction and finally cooperation and delegated maintenance of the urban arena and also of the neighbourhood.

### **Arranging meetings with citizens**

Idea brewery is a workshop method for the creation and exchange of ideas and projects on a certain topic. The method is based on Delphi conference techniques, and promotes individual participation, horizontal level of communication and a lively workshop style interaction. The Idea Brewery has been successful in generating community based climate-related projects and projects that improve the social quality of neighbourhoods and city areas. The steps of the method articulate certain specifics:

- o Write down individual ideas
- o Present the ideas to others in a subgroup of 5-8 people
- o Support these ideas, ask questions to clarify improve the idea
- o Write down the finalised ideas in a short sentence easy to read at 4m. distance
- o Decide on priorities, discuss and decide on the best idea
- o For each best idea, chose a coach who will encourage people for action in the next 3 months of work time
- o Execution: facilitating, communication, co-production

## **Covenants**

Ambition agreements amongst local stakeholders are a well used tactic. The agreement can also have the form of a performance quality agreement, signed by all involved parties to ensure the special technical qualities are reached. Covenants are popular in the area of sustainability (energy and ecology) and concerning social aspects, role of the participants and rules for cooperation etc. Covenants aim at improvement of the ambition level. Monitoring the effects on a regular basis is essential to hold focus on sustainable effects rather than on green image.

## **Financial arrangements**

When sustainable technologies are new or not yet experienced as profitable or favourable, then three major incentives can be applied to help investments:

1. financial incentive
2. customer-oriented advice and knowledge
3. regulations or agreements on ambitions

One example of financial incentives at the national level is the Energy Credit Scheme. Many countries have Energy Credit Schemes, some are profitable for the users and have a great effect on the market, and other schemes cover a short time-period or have small budgets. The Dutch Energy Credit Scheme of 2003 for households shows positive effects.

The scheme includes:

- o energy tax was collected by Energy Companies and passed on to the Government
- o Energy Companies implement EE Programmes and deliver economic incentives [rebates] to household customers when they buy EE appliances or realise EE retrofits in their houses [wall insulation, low emissivity glazing etc.]

Effects of this scheme are:

- o Doubling of the market share of A-rated white goods within two years [2001: A label washing machines up to 88%; EU-average: 45%]
- o Side effects for the case of washing machines alone: + 1,9 Meuro/y profit tax on the economic activities generated; + 6,6 Meuro/y extra VAT;
- o jobs created: 152/y [excluding manufacturing of appliances mainly in other countries]; avoided unemployment benefits 2.3 M euro

Because the focus in community Actions Plans is on community action, not on the arrangements provided by national governments and (inter)national corporations, the financial incentives can come from either local authorities or from community based bottom-up actions. Example is cooperatives that gain profit for their member by enlarging the scale of investments or of consumption, with better results from negotiation on prices or tariffs etc.

## **Organisational arrangements**

### *WoonEnergie*

The Dutch organization WoonEnergie (eng. Home energy) is a collective, set up by social housing associations to buy and distribute energy. This cooperative worked on a national scale, but could also work on a regional or even local scale. The collective actions reduce the energy cost of their tenants. One bill for both transport and energy use is available. The price level is guaranteed: as low as the three lowest Energy companies in the market. The positive



effect of this initiative is the competition with the market: not the market parties are cheaper and WoonEnergie lost its preference position.

## 2.2. Energy Service Companies (ESCO)

Energy Service Companies (ESCO) are private initiatives to often produce services that are not covered by the traditional energy distribution companies. The ESCO's that produce sustainable energy projects have become very successful. Knowledge of both financial and technological arrangements, about how to collect the tariff from individual customers and how to manage the performance of the project on a daily basis is the keys to success. Local communities can take advantage of the innovative character that many companies have, both giving a boost to projects as well as support from the involved stakeholders including the involved citizens and occupants.

### "First-Out" and "Shared Savings" Contracts

With the first-out performance contract, the ESCO retains all of the energy savings until the project is paid for or until the end of the contract, whichever occurs first. Typically, the contract stipulates a maximum return to the ESCo on its investment. If the ESCo realizes this return before the contract expires, the contract terminates. If the ESCo does not realize this return before the contract expires, the contract terminates in any event, and payments to the ESCo cease. In estimating the full costs of a project, the ESCo must declare its investment up front, including all costs and mark-ups. Percentage margins allowed to the ESCo are fixed. As noted above, at the end of the contract or when the contract has been paid for, the department retains all subsequent energy savings. The Treasury Board requires that the length of time and the financial returns of the contract be justified by the usual cost-benefit analysis.

With a shared savings performance contract, the ESCo and the department or agency each receives an agreed-upon percentage of energy savings over the lifetime of the contract. Although departments or agencies realize financial savings earlier with a shared savings performance contract, this type of contract runs for a substantially longer period than a first-out performance contract. In all other respects, the contracts are similar.

The Shared Savings Structure is applied in many projects. Customers assume no risk, however it does limit long-term growth and competition of ESCO and financing industries.

The Guaranteed Savings Structure is difficult to use in introducing the ESCO concept in developing markets because it requires Customers to assume investment repayment risk. However, it fosters long-term growth of ESCO and financing industries.

Exceptions include Germany with its emphasis on contracting in federal buildings, combined with a programme for refurbishment of federal buildings; the Federal government of Belgium with its Fedesco agency that promotes third-party financing in federal buildings; and the UK with a revolving fund in the public sector etc. There are a number of actions in Austria to support contracting relating to federal and public properties.

The following steps characterize the nature of an ESCO and describe an ESCO's functions: [[www.energymanagertraining.com](http://www.energymanagertraining.com)] [where \*C- compulsory and \*O – optional]:

#### Compulsory:

1. Appraisal of the energy conservation potential in a client firm,
2. Preparation of a detailed project report [financial grade paper] and listing of recommendations to reduce energy consumption and costs.

- 2.1 Joint selection of measures from the list for implementation.
- 2.2 Establishment of clear PMV protocol for individual projects and overall facility impact
3. Detailed project engineering of selected measures by ESCO  
Implementation of selected measures by ESCO,
4. Joint monitoring and verification of impact and observation of reduction of energy costs over a specified agreed time period; Or 3rd party verification by an accredited organisation,
5. Payment of ESCO by client based on investment costs, interest, professional service fees, as well as performance based success fee,
6. Hand over of project to client after recovering of all costs, as well as other payments, or as per a termination settlement as per mutual agreement.

#### Optional

7. Financial closure through ESCO,
  - 1: Bank borrowing by the client with performance bank guarantee, support from ESCO
  - 2: Direct investment by the ESCO with payment security from client

ESCO's are set up by different stakeholders and have many forms.

An examples are the ESCO's constructed by social housing associations (Patrimones in the city of Veenendaal and WonenBrebrug in Breda and Tilburg, the Netherlands). The associations needed more influence of innovative energy solutions, including heat and cold storage in deep ground layers. The potential energy company partners were not interesting as loyal or financial reliable partners, so the association considered they could do better. Small steps relating to new ESCO creation are made in the GSC project. A good evaluation of pros and cons is difficult, because of problems in disclosing financial arrangements. The Dutch company Zonenergie created several ESCO's, with different partners and their business is booming. The conclusion from examples is that more can be done with this form of outsourcing and financing. A follow-up can be expected in short time.

## 2.3. Energy Cooperatives

### Cooperatives

The PV cooperative is a consumer oriented organisation to help decision making by home owners, housing associations and real estate managers about photovoltaic applications. A cooperative resulting from an Idea Brewery at Gouda worked during three years with volunteers on four projects: a. promotion of PV on commercial buildings, b. PV on individual dwellings, c. an education project involving schools and d. an design contest for a PV-powered public fountain, the “Water and Fire” project. See figure 2.



Figure 2. Poster for the design contest for a fountain powered by PV (left) and one of the five wind turbines owned by the wind cooperative “De Windvogel“(right)

The pendant of the PV-cooperative is the wind-cooperative, another example of private initiatives. The “Windvogel” union developed from a local into a national organisation and erected five wind turbines. See figure 2.

Co-operatives may have social objectives, they are first and foremost businesses that are created to earn a profit for their members—their investors. Co-operatives can be and often are pioneers in new fields. However, co-operatives cannot develop projects of any meaningful size by appealing to “green fringe” investors, those who are willing to invest without expectation of a return.

The co-operative can easily meet social and community objectives, as well as being one of the least expensive structures to launch. The co-operative would own the assets and earn a return from those assets. For PV applications it is easy to construct a financial model to determine whether a project is feasible.

## 2.4. Financial incentives

By valuing the energy performance in the net rent for rental dwellings, the rent level will allow investments in better energy performance. This approach can work each way: occupants in houses with poor energy quality which have high total cost of living (rent and energy costs) are more likely to support plans with a positive balance between rent increase and cost reduction. For owner-occupants the value increase can be made visible. Quality appraisal of dwellings [energy included in quality level = economical value] is a tool to make this change in property value visible.

Ambitious programmes that aim on millions of PV covered roofs need to overcome barriers: [Based on <http://www.iea-pvps.org/about/motiv.htm>, accessed July 27, 2009]:

1. Further lowering of PV array prices, while 2009 showed a 40% reduction of prices on the Berlin PV-stock exchange;

2. Wider acceptance of the benefits of PV;
3. Involving the energy utility sector, who until now show a sceptical attitude;
4. Infrastructure adequate for broad market acceptance - from standardized package to marketing, to installation and operation, etc.

A number of means of financing PV arrays have been assessed in terms of their relevance to the social housing sector. This analysis has identified a number of appropriate mechanisms, as follows:

- Feed-in tariff – a feed-in tariff that is set by government regulation is the most effective way of stimulating PV uptake, as it drastically reduces risk to a project developer.
- Solar stock exchange – It has been shown that the local green energy market can be used to provide funds for a feed-in tariff to encourage project developers to invest in PV. In this case the market demand for green energy limits the level of the tariff.
- Third party finance – this can be appropriate for social housing groups that do not have the access to capital to install PV systems. The social landlord can simply lease the roof space for the PV system or it could take a stake in the system or could lease the system from the finance provider.
- PV financed through service charges – there are some examples where the PV electricity is used to provide communal services to the tenants of the social housing block and is partly financed through increases in the tenant's service charges.

Table 1 presents different financial arrangements on the national level, in this case for PV-applications.

Market condition	Country operated	Summary
Feed-in tariff	Germany	Installed capacity in Germany would suggest that the feed-in tariff is the most successful instrument for stimulation of the PV market. It gives PV developers certainty of the value of the electricity they generate for a long period and makes attractive payback periods achievable. The only potential drawback is that the feed-in rate is fixed by the government and is decreasing, such that the value is lower than can be achieved in Zurich or Copenhagen within the Solar Stock Exchange
Net metering	Denmark Switzerland [at discretion of utility] Netherlands [small-scale only]	The value of PV electricity is high due to net metering [especially given the relatively high retail price in Denmark]. The lack of a requirement for supply companies to pay for net export per annum encourages developers to use PV electricity on site. This may also have the effect of limiting the size of installations as excess capacity [compared to demand] does not create revenue
Solar Stock Exchange	Zurich, Switzerland Copenhagen, Denmark	The high feed-in tariff that can be obtained within the solar stock exchange can make PV commercially viable. (not today offered in Copenhagen any more)
Retail electricity price higher than PV export	U.K. Netherlands Switzerland	A market which values PV export lower than the retail electricity price offers no incentive for investment in PV installation. Under these market conditions, PV uptake can only be stimulated through capital grants and/or other incentives such as

price	green certificates or tax exemptions. Such incentives have been employed in the Netherlands for a number of years and have recently been introduced into the UK market.
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Table 1. Financial arrangements to support photovoltaic energy applications

Other forms are:

- a. A joint venture between private investors [citizens] and businesses.
- b. Tax-exempt charity, organised to maximise tax savings and by collecting a subsidy from a charity, in return for a donation of [part of] the pv array] to the charity.

No other country has seen more solar PV development than Germany. Nearly two-thirds of German solar PV capacity has been installed by farmers, homeowners, and by limited partnerships known as Bürgerbeteiligung in German. These limited partnerships are not true co-operatives, they allow for individuals to invest in commercial solar projects. The advice taken from Germany was not to use the co-operative model for solar hot water. Commercial-scale solar hot water systems require a stable market for the distribution of hot water, which is user dependent and not easy to distribute as electrical power is.

Typically in Denmark, the price for PV electricity is the same as the retail price for purchase of electricity from the grid – there is a type of net-metering system. However, if the PV installation makes a net export of power over the year, the electricity company is not obliged to pay for that export, creating a situation where developers limit the size of systems to ensure that it is closely matched to on-site consumption. However owners of PV installations in Copenhagen are now being offered a feed-in tariff equivalent to €0.55/kWh for the electricity they export to the local system. This is funded by the customers of the local utility – Copenhagen Energy – who have been given the opportunity to support PV projects by paying a premium for a portion of their electricity [a tariff of 0.6 €/kWh for a percentage of their demand that they fix on a year long contract basis]. The high feed-in tariff encourages investment companies to invest in PV. These investment companies provide the initial capital and often form a co-operative to operate the systems. As soon as the system is operating, shares in the cooperative are sold to the public and a dividend is paid from the revenue generated by sale of electricity. But this favourable solution is not offered today.

After evaluation of PV arrays in the Solar Share project in Toronto, the price per kWh produced was higher when more building integration was achieved. The cheapest PV arrays can be found on flat roofs, with standard mounting fixtures [Cenergia, Denmark]

## 2.5. Citizen Participation Procedures

The key to CO<sub>2</sub> emission reduction is a) acceptance of technical measures, b). Adaptation of energy related behaviour and c). Motivation to get involved in planning, campaigns etc. to reach a user oriented quality. The Ladder of Citizen Participation shows several steps, from information to co-production of policies and projects. New media are applied, to communicate and to vote for proposals. Also, in communities and new sense of neighbourhood interaction is emerging, especially in the Netherlands. With small €3 budgets (per person) local initiatives are taken to bring streets and neighbourhoods together in a range of “getting-to-know each other” activities, such as street festivals, second hand-markets and dinners in the street. This new wave of activities is adopted by energy campaigns as well.

New energy saving strategies is emerging, for instance the Energybox, Beter Peter, the Climate Festival, the Climate Street Party.

### Climate festival

The Climate Festival developed from the Idea Brewery, a dynamic and open activity by a group of volunteers in the city of Gouda to make the city “even better”.



Figure 3. Idea generation during the Climate festival

Positive actions in the public arena are organized, based on idea generation in open creative workshops. One of these ideas was to organize a local climate conference, following the examples of Kyoto, Malta and Copenhagen, but now bottom up. This Climate Festival was held in April 2009, followed by more “idea breweries” and Festivals elsewhere. An idea brewery was organized in a neighbourhood with a major immigrant population, where it is perceived difficult to organize active participation from these immigrant groups. This brewery generated many ideas and stimulated a group of people to work on new initiatives to get more people involved. This experience gives a better clue as to why these initiatives work. Now these breweries and festivals are initiated in neighbourhoods where improvement of the energy performance is at stake.

A Climate festival starts with setting up an organizing committee with strong representation of the neighbourhood and including people who have access to larger networks of tenants, socially active groups, business clubs and youth organizations including local schools. The Climate Festival has open access to the public, but it is important to invite a good representation of positive and active participants in person. One way to have them involved relates to the first activity during a Climate festival: the Carrousel of positive examples. Successful energy saving projects, large or small, traditional or innovative, is presented very shortly with only a few images and words. This carrousel shows that much has been done and that all sorts of solutions are possible. Also, the people who are involved in these successes are present and can give first hand accounts.



Figure 4. Presentation of ideas from subgroups to plenary

The second activity during the meeting is idea generation in small groups. The experience is that his creative process is very successful, if the focus is on individual idea generation and

extensive discussion is discouraged at this stage. After collecting and presenting all ideas, the participants have an overview and can select priorities.



Figure 5. Priority selection and volunteering as coordinator

Now discussion starts, first about the ideas that are supported by most people. The discussion per idea ends with a preliminary action plan and participants that are enthusiastic to bring this project one step further. In a few weeks time, the coordinator asks for results on the next step. This coaching process is crucial. The coach can facilitate the process from idea to work plan and project in execution. The results are the basis for the Carrousel of positive examples during the next idea brewery.

### **Follow up of Climate Festival**

The Dutch National Tenant Association signed a covenant on the energy performance of the social rented sector and agreed to develop local covenants with similar goals, but agreed upon by local stakeholders. A local covenant shows the vacuum between bottom-up support and top-down ambitions and many activities were proposed to bridge this gap and create local agreements with a strong support from and participation by the neighbourhood groups (tenant organizations). The Climate Festival was transformed by the National Tenant Organisation into five regional meetings under the title: “Verbeter mee naar label B” (in English, join in on refurbishment to energy label B). The strategies developed in the framework of this covenant are the starting point for discussions with the local stakeholders at Copenhagen and Salzburg. The experiences have been compared to the actions in Valby, with fruitful exchange between Hasselaar and Marianne Kruse from Green Valby.

### **Beter Peter**

Occupants can learn about energy saving by reading newspapers and brochures etc. This will generate better understanding, but also tiredness of too much information that does not really help when an occupant wants to take measures. Offers from commercial parties are plenty and some may come at the right moment, solving problems for individual customers, but for others this load of information may discourage interest in energy matters. Websites provide much information, including tools that can be used for individual purposes to calculate the energy saving potential and sometimes even investment costs.



Figure 6. logo of the software program BeterPeter (Milieu-Centraal en WE-consultants)

An example of customer oriented software is Beter Peter, a program which requires membership, but in turn gives better feedback. The focus is on behaviour and the program helps to find out if certain activities have real effect. It means that the black box approach that most of these Internet based programs have is transformed into more reliable information.

### **Climate Street Festival**

The Climate Street Festival is a nationwide campaign to promote energy saving behaviour and to invest in technical measures. The campaign is a good example of how to connect bottom-up and top-down activities. A popular weather reporter visits one local street, where people form a group who compare energy consumption and compete with other streets for the best effects. The action is local, the competition and public relations are national. The second Climate Street Festival campaign is in process, learning from the best results of the first year.

### **Green neighbour**

Bottom-up projects have in common that often one person is enthusiastic and mobilises other people to participate. Sometimes this person becomes a real expert in sustainable housekeeping, including energy saving. This person has a crucial role in helping neighbours to take action.



Figure 7. Occupants who report good help from a green neighbour

A relation was found between social interaction and the perception of the technical performance of low energy houses (Hasselaar 2008). With more positive interaction the perceived user friendliness or comfort level of technologies was higher.

Ornetzeder et al (2001) found that user involvement in the design leads to more knowledge about the house, greater ability to use complex technologies and better acceptance of discrepancies of needs and what is delivered. This phenomenon presents a link between user oriented quality and participation: participation is one way of learning how to use building services.

### **Participative planning**

Cooperative preparation of plans



In a renovation project in Apeldoorn the housing association (de Woonmensen) cooperated in mutual trust with neighbourhood representatives. This cooperation resulted in an ambitious plan to renew the roof and climate installations.



Figure 8. Renovation 364 dwellings in Apeldoorn: 1 MW project

In the roof a large array of photovoltaic panels were integrated. The tenants showed great support for this project. Now, after completing the renovation, the occupants are especially proud of being both users and producers of electricity. The income from their roof gives a positive feedback and makes the occupants very content with the overall solution and process. The occupants have become “prosumers”. The basis for this success is the level way of communication, the willingness to discuss and solve problems and the transparency in the development of plans (based on interview with the housing association and a tenant representative, October 2009).

Participative planning is a means to investigate the diversity of occupants needs and to give voice to customers, and have them explain the user oriented qualities they need. Projects that are developed on the basis of participative planning, can have lower failure cost, first because proposals are not rejected at the end of the pipe line, but in early stages and second because occupants will point at risks that can be avoided. The side effect of participative planning processes is the improvement of communication and cooperation, which has many positive effects on self help, on reducing maintenance cost, on work satisfaction etc. The bottom line is that for projects to be legally feasible, 70% support from the households in social housing estates is needed for energy related measures.

Participative planning in the 1970's was based on advocacy planning. It started as a protest movement against the decision to tear down urban areas, but was later part of a movement toward better local democracy. Citizens were supported by their advocates in getting better access to information and experts, to draw alternative plans and to force the decision makers to follow a more transparent decision making process (Kalk 2002). This reflects a form of research which differs from mainstream housing surveys that focuses on individual needs. The practice matches Dewey's conception of learning from experience: "...a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview... It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities." A fundamental premise of community-based action research is that it commences with an interest in the community. Action research is not a 'method' for research but a series of commitments to observe and problematize through practice a series of principles for conducting social enquiry'. ([www.infed.org/research/b-actres.htm](http://www.infed.org/research/b-actres.htm))

<b>Design model based on user participation</b>		
<b>steps</b>	<b>involvement</b>	<b>methods</b>
1. collect information	Introduction of experts by neighbourhood representative	Checklist for problem identification
2. social map, housing needs	Face-to-face meeting	Semi-open questionnaire, focus groups
3. stakeholder agreement on procedure	Input into social contract: relocation rules, time schedule, representation, moderator support. Open access, invitation to come to meetings	Acknowledgement of conditions for user participation, negotiation, results communicated via web, journal, leaflet
4. design process	Steps: area plan, envelope, technical systems, lay out, details, decorations, rent level	Teamwork and accessible information. Select installations to be tested for user friendliness, perform pilot renovation
5. benchmarking	Evaluation, calculations	Benchmark tools, questionnaires, focus groups
6. final plan, rent increase, relocation options	Local community is independent controller of outcome, feedback on results is possible, go-no go by team	Apply rules of how input of occupants is rewarded and reviewed, double-check by independent experts. Results available via website and leaflet.
7. individual decisions per household: deals	Individual deals	House-to-house visits, fixed dates for execution, fixed plan, rent, subsidies, support in relocation
8. execution	Social support when moving out, personal tour at delivery	Direct communication between occupants and project leader
9. (re-)use	Do-it-yourself task,	Social team, green neighbour
10. post-occupancy evaluation	Independent evaluation, results open to all for feedback	Focus group meeting, brochure, party and ceremony

Table 2. Participative design model for high energy-performance plans

### 3. EVALUATION OF COMMUNITY ACTION PLANNING IN CONCERTO AREAS

Information about the activities that are undertaken to develop community action planning in Copenhagen and Salzburg can be found in D1.8, submitted January 2010. The task in D1.12 is to report on best practices and the applicability of collaboration forms between public authorities, citizens and Energy Service Companies. It means that the activities are evaluated from the point of view of collaboration forms. The best practices are connected to the ongoing Concerto practice in Copenhagen and Salzburg.

#### 3.1. Situation in Copenhagen

The National Energy Efficiency Action Plan [NEEAP] submitted by the Danish authorities was adopted in September 2005, prior to the adoption of Directive 2006/32/EC. The Plan covers the period 2005-2013. [http://ec.europa.eu/energy/efficiency/doc/sec\\_2009\\_0889.pdf](http://ec.europa.eu/energy/efficiency/doc/sec_2009_0889.pdf)

The Copenhagen Climate Plan [<http://www.kk.dk/climate>] aims to reduce CO<sub>2</sub> emissions by 20% between 2005 and 2015. Together with [1] integrating climate into energy supply, [2] greener transport, [3] low energy buildings, [4] climate in city development, and [5] adapting to the weather of the future; one of the most important points of the action plan is to create the so called 'climate citizens of the world'. In the plan, this is further explained as: "A large proportion of the city's CO<sub>2</sub> emissions are generated by Copenhageners themselves. If the city as a whole is to generate less CO<sub>2</sub>, we must all change our daily habits. We must change to energy saving light bulbs, cycle more, regulate our central heating and buy the right hardware."

##### *World Summit on Climate Policy*

In November 2009, Copenhagen hosted the global meeting on climate and sustainability. "We, the politicians of the world, have a responsibility to reach a truly global climate change agreement in Copenhagen in December 2009. But it is the business society that can deliver the tools to turn our vision into reality. Businesses can provide the clever solutions to make it possible to live in a both modern and sustainable society." By Connie Hedegaard, Minister of Climate and Energy, Denmark. Point 5 of the Copenhagen Call of May 2009 states: "Funds to make communities more resilient and able to adapt to the effects of climate change."

In the policy document Climate Copenhagen, 5-6 chapters are directly related with Green Solar Cities activities within Valby. The Valby community expressed their agreement with the plans of Climate Copenhagen and wants to be the first area to realise implementation.

#### **Local Agenda 21 in Copenhagen**

In 1987, the World Commission on Environment and Development [Brundtland Commission] called for the development of new ways to measure and assess progress toward sustainable development: the Agenda 21 of the 1992 World Summit. Activities range from local to global in scale. In response, significant efforts to assess performance have been made by corporations, non-government organizations, academics, communities, nations, and international organizations.

Assessment of progress toward sustainable development is based on:

- an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria
- a limited number of key issues for analysis
- a limited number of indicators or indicator combinations to provide a clearer signal of progress
- standardizing measurement wherever possible to permit comparison
- comparing indicator values to targets, reference values, ranges, thresholds, or direction of trends, as appropriate

And can also include:

- obtain broad representation of key grass-roots, professional, technical and social groups , including youth, women, and indigenous people - to ensure recognition of diverse and changing values
- ensure the participation of decision-makers to secure a firm link to adopted policies and resulting action

### *Green Valby*

In Copenhagen, the municipality initiated and finances Green Valby with 80% of their budget. There are 8 environmental centres in Copenhagen formed under Agenda 21 plan. Last year there were 5. The Green Valby is independent, but supports the common goals of the city. There are 'area based new generation projects' applied in Copenhagen and the municipality supports these projects for 1 million euro in 5 years. Besides, it is another issue to meet the interests of people who live in the Valby squatter neighbourhoods. These neighbourhoods are occupied mostly between April and October. Some of the houses have water; some have electricity; some of them both.

'Climate Copenhagen' [2025] and 'PV Plan' projects raise the requirement of local incentives and community interaction. Moreover, other stakeholders have become more interested in community action, to achieve the expectations of these projects. Many examples of activities, presented in D1.8, show these interactions and growing tendency of the community to get involved in climate related activities. Here lies the basis for collaboration forma between the local authorise, neighbourhood representatives and the general population including businesspeople.

The collaboration includes the Copenhagen housing associations. Communication is recognised as an essential process of management. The tenants have to approve detailed project plans. Meanwhile the national foundation helps the tenants with guiding and criticizing renovation plans including financial consequences. Social analysis, such as a survey to support social work, has been conducted about criminality in one of the areas. Different cultures come sometimes with conflicting lifestyles. For instance: young students' conflict with the elderly population, who tends to move out. Social sustainability processes are initiated. The aim is to bring social housing associations, tenants, and the municipality together to solve problems.

### *Conclusion:*

Promoting the social ownership of the area and the project is recognised as an important process toward a good quality neighbourhood, towards social sustainability and support for CO2 reduction plans.

### *PV cooperative in Copenhagen*

The ongoing Solar City Copenhagen initiative is aiming at high CO2 reductions in combination with use of energy savings and solar energy. [See also

[www.solarcitycopenhagen.dk](http://www.solarcitycopenhagen.dk) ]. In connection to this it has e.g. also been possible to realise the first PVCoop in the world, the Copenhagen PV-Coop, [see [www.solcellelauget.dk](http://www.solcellelauget.dk) ].

### 3.2. Situation in Salzburg

The National Energy Efficiency Action Plan [NEEAP] of Austria fulfils the major obligations of the EU Directive. It is an ambitious NEEAP. There is commitment to the 9% target for 2016 [and a 2% intermediate target in 2010]. The NEEAP is mainly based on already existing national, federal and local strategies and programmes. On the other hand, savings from measures, as well as the foreseen budget for implementing measures, are estimated only in a qualitative manner. [http://ec.europa.eu/energy/efficiency/doc/sec\\_2009\\_0889.pdf](http://ec.europa.eu/energy/efficiency/doc/sec_2009_0889.pdf)

#### European Energy Award

E5 is a continuous process and quality management system. It works for setting up and improving local structures and frameworks for effective energy policies. It is a certification, benchmark and labelling system as well as a network within the community and between communities.

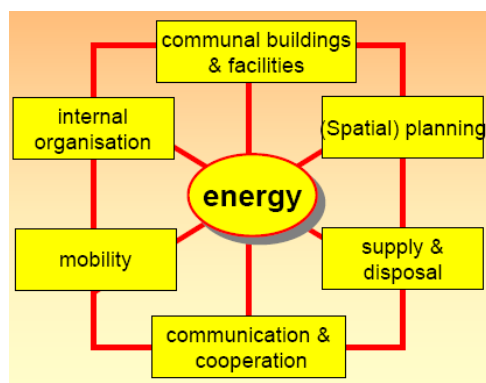


Figure 9. Framework of e5

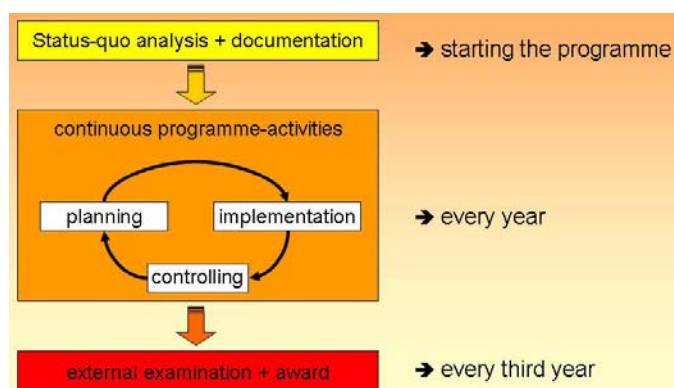


Figure 10. A continuous process of Evaluation of e5.

#### Local Agenda 21 Salzburg

Austria declared in 2003 to support Agenda 21 goals and actions. The Land and city authorities of Salzburg have been very active in promoting sustainable projects. Much high

quality new built housing quarters were realised, including the participation of the users. However, the bottom-up social processes toward a sustainable community seem behind in development, compared to Valby in Copenhagen. From this starting point, a close exchange of tools, processes and organisational principles have taken place. Starting in the area Stadtwerk:Lehen, new initiatives are taken, that involve the local citizens. From the point of stimulation and facilitations, it is possible that bottom-up initiatives and projects will come forward. They will be welcomed with facilities and expert support, when there is a need for it.

### **Community Action Plan**

In Salzburg, a steering group was formed to define the quality targets, to coordinate several projects and activities. Members of the steering committee are the city of Salzburg, the housing associations, commercial builders, the energy suppliers and SIR. Currently, there is an NGO established for community management. Head of the steering group is the secretary of the planning department and Concerto is the first programme to collect small projects together. In autumn 2009, the process started with representatives from community investors, neighbourhoods, social network, and potential future cultural users. This is a medium for new projects and ideas for public participation. Housing associations can't be part of this NGO but they work close and they support the NGO financially.

What is interesting for the Stadt:Werk:Lehen area is that the energy supplier company [ESCO] is also the owner of the ground, which includes 1600 m<sup>2</sup> ground floor commercial area. In this commercial area, there will be a social-cultural market, supported by the ESCO. They promised to pay for half of the costs of the market. Besides, there are other ideas for mobility management; such as to set an electrical base for PV powered city bikes. Socially important points are mentioned as the social acceptance of the area and if and how this project will relate to other projects in Salzburg. At the moment, decision-making processes are quite top-down. It can somehow become connected with bottom up.

The energy supply company cooperates very close with the housing associations. The Salzburg AG erects the solar plant with thermal collectors and PV and the micronet and runs it. SIR created a framework of QA, signed in February, 2008 and with a quality check in Summer 2009. This quality check was about the items in the quality agreement, before the construction begins. The technical aspects were easy to measure but for the social aspects, there were a lot of discussions, especially about the use of green areas: Not all the partners were honest in the beginning. For example the area for a kindergarten was taken from the general green areas, which are planned for the tenants.

The social identity of the new development in Stadtwerk:Lehen poses a challenge. There is a potential lack of perception of ownership for this new area. Information shops at the ground floors of buildings and the new city library was opened in January 2009, in the area. This stimulated a good image.

In the master planning phase people were asked what they expect, but it was not realistic.

There are some apartments owned by the city without elevators. SIR invited these people to move to the new area, but due to rent increase it was difficult to implement this.

A good mix of occupant groups, according to income, culture, job opportunities is aimed for. The recent actions such as positive news in media, meeting young and elderly [young help old to use 'facebook' and 'sms' and building up a new dictionary are the start of community involvement and bottom-up processes. A competition was held, to attract people to involve more people in planning. And a statement is made that this part of the city will be 'green' and

'sustainable'. The surrounding area is in focus for social dynamics processes now, to have the old and new parts interact more closely.

### **Participation**

A participation project for the use of f the green area as tenant-gardens is started for (Ign.-Harrer-Str./Roseggerstraße) interested inhabitants around the area.

Activities for "art in public space" are organised. First event: coordination of „Perfect Arrangement“ – Installation of Barbara Musil and Marlene Haderer at the Stadtwerkeareal (24.11.2009). An interesting register for use of the urban ground floor zone is set up.

A forum of "supporter" is set up, for those who want to support the project but are not formally in the association. All kinds of city networks are screened and contacted, to involve the Lehen area and its social active participants.

## **4. FORMAT FOR COMMUNITY ACTION PLANS**

For the Workshop Community Action Plans, to be held on July 1, 2010 in Copenhagen, a paper was written “Format for Community Action Plans. The discussion paper includes goals and definitions, principles and evaluation criteria for successful strategies and finally a checklist of possible activities that after selection and priority setting can result in a format for actions. The paper was prepared in collaboration with Marianne Kruse Kristensen from the Green Valby Centre and with a contribution by Inge Strassl from SIR in Salzburg. Also, a power point presentation was made with inspiring examples of activities that contribute to local action plans, based on recent successful actions in the city of Gouda, NL. The main focus is on management of processes that stimulate and facilitate citizen based initiatives and projects that support empowerment of local citizens and support improved sustainable performance of the city and neighbourhood environments.

This Format for Community Actions Plans is a shorthand tool for local actions in Green Solar Cities. Also, it is a step towards D1.14: Evaluation Report regarding socio-economic results of the innovative stakeholder collaboration forms in Concerto implementation – a comparison between Salzburg and Copenhagen. For the purpose of creating an overview document, we select the form of a Community Action Tool (CAT), which serves as a Format for Community Action Planning (CAP).

This CAT starts with the relevant definition, goals and principles for setting up actions. The principles lead to evaluation criteria or indicators of success. Then follows a format for actions based on a checklist of best practices in Copenhagen DK, Gouda NL and Salzburg AU. This format was discussed during the workshop of July 1 at Copenhagen. That discussion resulted in a plan with next steps for action in the coming years

### **4.1 Definition**

A Community Action Plan is a mission statement about Renewable energy and environmental sustainability quality of neighbourhoods as Solar Cities. The focus is on the CONCERTO areas and its demonstration projects, on how to reach the goals of the Concerto project, with support from relevant stakeholders. Because the ambitions are defined in the Green Solar Cities project plan, the focus is on actions to manage the process for more support and for speeding up the greening process.

### **4.2 Goals**

The goals are for the long life time of the project and are translated into short term goals, to be reached within the period of the demonstration.

Social sustainability is the long term perspective. Social sustainability is that quality of a neighbourhood that can maintain the social, environmental and economic quality without major repair and restructuring in the next 50 years.

For the short period of the Concerto project the goals are:



- 1) Creating commitment among the stakeholders, by evoking, stimulating and facilitating active involvement of the key actors in the project, specifically addressing the citizens, but also the public sector and the landlord(s).
- 2) Developing solutions to overcome barriers at the side of the end-users related to user friendliness, operability and behavioural aspects with regard to the technical solutions that are to be implemented in the projects, in order to maximise energy savings and minimize energy costs for the individual occupants.
- 3) Developing innovative collaboration forms between the landlords, the tenants and the ESCO, in order to take away barriers for implementation of energy efficiency measures and to improve renovation processes.
- 4) Establishing energy performance agreements and innovative financial constructions between the municipality, the ESCO and the dwelling owners (landlords and private owners), in order to improve the financial feasibility of energy efficiency in housing.

In short, this will lead to actions in four themes

- a. Develop **stakeholder support** for ambitious projects
- b. Guarantee **user friendly** solutions
- c. Stimulate adapted **behaviour in support of sustainable performance**
- d. Manage **innovative collaboration and financing** to accelerate greening of cities.

In doing so, the seed is planted for a social sustainable neighbourhood.

### 4.3 Principles of community action

Stakeholder support relates to the active involvement of citizens and of institutional and professional stakeholders. We seek to have different stakeholders involved in processes that improve the level of support and stimulate adapted behaviour. The financial issue is a matter of using existing financial instruments, but when this is not enough, we suggest to discuss new forms of cooperation between institutions that can provide financial services and the developers. User friendly solutions are a design task, but the performance quality of designs needs user orientation and for this reason user involvement. Much experience is available on user participation. Successful participation procedures require agreements on work plans and dedicated process management, for which professional coaching is indispensable. Cooperation and process management are the key elements. Because the ambitions are high, the management of processes requires change in routine and also social experimentation. These changes are possible, when the following principles are recognised and followed.

- a. Involve all stakeholders from an early stage in the decision making process and involve them in discussion on ambitions, goals and project objectives. Target groups are stakeholders from authorities, institutions and the local community
- b. Create a network of persons who like to be socially active and are motivated to support social sustainability. This network can safeguard the process of social sustainability. When professionals are involved, ask for commitment as a person and for freedom to come up with ideas. This means that members of this network do not represent others or a business interest, but form a community that is open and dynamic and in support of shared ambitions
- c. Organise events in which participants are of equal status and importance, with level input of ideas and cooperative decision-making. Discussion and communication methods are selected,

in which differences in creativity, in level of expertise and communicative skills will not limit the opportunities to participate. Mutual support of positive ideas is being generated.

d. Create opportunities to belong to a community, because people enjoy expanding their social network. One way for citizens is meeting their (future) neighbours and people in their streets or neighbourhood, they did not know beforehand.

e. Promote learning by doing, because people want to develop social and technical and behavioural skills and are at best in acquiring information when they experience the usefulness of learning. Teaching and learning are reciprocal in different members of a group.

f. A well managed process is a guarantee for success

The result of a process is the effect of what you put into it: stakeholders must be well informed and supported and the process must be well directed to reach results, even when these appear as the effect of spontaneous happenings. Social management with enthusiasm and belief that society can be moulded to suit everyone's' needs is one key to success.

f. Connect top-down and bottom-up processes

Top down policies are translated into processes that can result in bottom-up support, while ideas and project initiatives of citizens are communicated with higher authorities. In Community Actions a link is established between citizens and builders/housing institutions and the local authorities.

g. Agree on ambition

An ambition statement is a joint expression of making step-upon-step towards higher sustainable quality. The ambition statement includes the network of stakeholders that can reach these ambitions and is accompanied by an action plan for 3 –5 years with SMART (specific, measurable, active, reasonable, time restricted) goals and practical organisation of work to be done. The draft ambition statement is already included in the Green Solar Cities project description (renewed version of January 2010), with support of many partners, but not all partners involved. The local authorities, the users, some external project developers, the community development institutions in Salzburg and stakeholders that will be introduced in the future planning process are not included as partners. The ambition statement needs periodic re-establishment, especially to include new partners.

h. Monitor effects

SMART goals require evaluation. Evaluation needs monitoring. The monitoring topics are the energy performance, level of support for plans, user friendliness, behaviour adaptation, financial feasibility.

#### **4.4 Evaluation criteria**

Monitoring of effects requires well selected indicators and also instruments or agreements on how to collect data, analyse data and which is the reference or base line. The reference condition is the condition at the start of the project. The SMART goals are in the project description, but some criteria need further description of the ambition level. The evaluation of the results will be performed in the final stage of the Green Solar Cities project, between month 54 and 60.

Table 1. Presents an overview of indicators, to check do certain elements in the Green Solar Cities project need more expression.

stakeholders	Energy performance	Level of support	User friendliness	Behaviour adaptation	Financial feasibility
Local Authority		Speed up		Support campaign	Promote use of financial incentives
Housing Association	Calculation method	Expertise and design process	Requirements and pilot	Set up campaign	Use assets for quality and social sustainability
Direct User	Data collection	Participation	Testing pilot in practice	Support neighbours participating	Prioritize financial goals
Planner and Architect		Cooperate with users	Focus in design	Avoid need of user adaptation	Transparent priorities
Energy Company	Data available	Support innovative solutions	Transparent controls and billing	Support campaign	Billing not more than reference
Technical Consultancy	Analysis	Expertise over life cycle	Explore user needs		Expertise on cost
Contractor		Best quality performance	Access to project leader		Expertise on long term quality
Promoter and Evaluator	Feedback	Coaching of process	Accessible and present	Set up social activities	Financial transparency
Related citizen	Behaviour	Learning by doing	Active participating	Initiate social activities	Prioritize financial goals
Projects					
1					
2					
3					
etc					

Table 3: overview of evaluation criteria per stakeholder and project

New in this overview is the focus on behaviour. Behaviour can contribute much to reaching the energy ambitions. The need of behaviour adaptation should first be avoided through user friendly designs. However, changes in behaviour will be needed even in user friendly designs, think of the control features of new technical installations and orientation toward cooling of well insulated buildings. The second new topic is participation and searching for active involvement of users and other citizens. Also, financing models will need specific focus.

A number of evaluation criteria have been described in the Green Solar Cities project description, relating to for instance the following Tasks:

**Energy performance:**

A1.1 Agreement of calculation methods for building energy use and community energy balance calculations as well as for CO2 emission reduction scenarios and long term goals

A1.2 State of the art report for Copenhagen and Salzburg concerning ecobuilding design as basis of large scale integration of renewables. In connection to the establishment of energy balance calculations both for Concerto area and for the city as a whole

A1.3 Agreement in detail of reference buildings and ecobuilding quality of the Concerto project including whole life analysis together with demands for large scale integration of renewables

A1.4 Guidelines for measurement of energy consumption and environmental impact including influence from materials and technologies and socio-economic aspects. This should be related to ecobuilding, integration of renewables and the energy supply system

A1.7 Agreement on common policies in the two communities concerning implementation of increased low energy demands in relation to the demand from the EU-EPDB which needs revisions every 5 years (2006, 2011, 2016).

*This topic is well established and work is in progress.*

**Level of support**

A1.6 Identification of useful tools for promotion of best practice RUE and RES technologies like labelling systems (e.g. green diploma) and Solar City organisation in Copenhagen and Salzburg including visualisation of solar energy areas in the built environment

A1.8 Establishment of “Sustainable Cities” co-operation in both Copenhagen and Salzburg regions

Cooperation between Copenhagen and Salzburg is well established. Best practices have been evaluated to suggest useful tools for promotion, for informing stakeholders and for communication about projects, to have support by important stakeholders including users. This topic needs further attention and development. Here the learning by doing process is important. This format gives many suggestions for actions.

**User friendliness**

A1.5 Test of energy improvements and cost effective solutions in small scale tests on energy balance per housing unit, air tightness and cold bridges and low cost building integrated heat recovery ventilation systems.

*Requirements for user friendliness are at stake where occupants are confronted with new comfort parameters, new control features and demands, new billing and cost calculation systems. The passive house technology poses many questions relating to user friendliness, which have been evaluated and already successfully responded to in a number of respects: ventilation control, cooling, restricted maintenance level in the individual dwellings, acoustical comfort of ventilation systems.*

*A number of issues will need attention in each new built and refurbished project, because of the user impact:*

- low temperature heating*
- hot water fill for laundromats*
- the control of heat recovery ventilation*
- pre-cooling of fresh air during warm summer periods*
- energy cost calculation, especially the distribution of fixed and variable energy cost*
- changing impact of electricity consumption versus heat consumption*
- internal acoustic insulation in dwellings with very well insulated envelopes*
- low reaction speed of controls in low-energy buildings (for instance with floor heating)*

### **Behaviour adaptation**

*When energy performance goals are not reached, then one cannot say that users are to blame for non-energy conscious behaviour or wrong use of equipment. The actual behaviour will move to an optimum between effort and comfort, except when behaviour changes as a result of new insight, based on learning and training. For instance: wrong use of ventilation services can lead to poor indoor air quality, even moisture or mould problems. Behaviour change will not be effective as long as the ventilation system makes noise or has low capacity or is not easy to control. First comes a good design and user friendly control features.*

*Where the technical solutions are best available technology but do not solve the “natural” control needs, then behaviour is at stake. It is very hard to change behaviour, except when the wins are greater than the effort of trying other ways. Behaviour change requires a wide range of communication tools, of social control, of direct feedback from people in the near social environment, and also of strict rules that have to be maintained. This requires a campaign with a wide range of activities. Even then not all users will be reached or are willing to change behaviour. When behaviour adaptation will give positive wins, and when the adaptation process is associated with learning-by-doing, then a new part of the target group may become involved and will adapt their behaviour.*

### **Financial feasibility**

A1.5 Test of energy improvements and cost effective solutions in small scale tests on energy balance per housing unit, air tightness and cold bridges and low cost building integrated heat recovery ventilation systems

A1.9 Investigation on how to organise solar heating systems, Solar Stock Exchange and PV-Coop for Copenhagen and Salzburg.

*Cost effective solutions have a good deal of attention in construction projects. These solutions are also needed in the application of renewable energy, in micro nets and district heating with renewable input. The distribution of financial means to either collective energy services or to individual dwelling performance levels needs transparent information and discussion with many stakeholders involved, including users and citizens.*

## 4.5 Format for actions

This section includes available best practices and also ideas that can be applied to the Concerto areas. The checklist is meant to select options that will be transformed into real project initiatives in either Copenhagen or Salzburg.

### 4.5.1. Develop stakeholder support for ambitious projects

Actions

4.5.1.1. Community activities to involve many citizens, based on best practices:

- idea brewery workshops with different target groups in the Concerto action areas:
  - for future occupants
  - for future commercial users
  - for the area around the new development area

This is a true bottom up process, leading to more active citizens.

4.5.1.2. The Community in action can be a variety of actions, when these actions consider the Criteria for actions in section 3: on different scales, from street level to city-wide actions:

- climate related activities, such as:
  - promotion of membership of PV-cooperatives, of wind cooperatives,
  - participation in educational programs,
  - participation in art-contests,
  - setting up discussions at home: eco-teams,
  - green neighbour campaigns
  - the Climate festival in the neighbourhood presents best practices, organises idea generation and discussion on community activities to raise awareness on RES
  - a public Podium of presentation of successful projects and new proposals

The community in action includes both personal and internet based encounters.

4.5.1.3. Development of well guided citizen participation procedures in the concerto projects, including guarantees, such as transparent information, guidance in drawing alternative plans, right to be heard, clear decision moments, for new developments and refurbishment

4.5.1.4. Public discussion and development of Ambition Statement that includes the local authority, consumer organisations (or new initiatives), the developers, and stakeholders already involved in demonstration projects, for instance architects, suppliers of systems. This statement - The Ambition Statement - is meant to link the bottom-up processes with top-down processes.

4.5.1.5. Information centre for visitors, but with local activities, support for festivals, educational projects, etc. Including active transfer of information to the public, on local festivals, neighbourhood parties etc.

4.5.1.6. *to be added during discussion*

### 4.5.2 Guarantee user friendly solutions

Actions

4.5.2.1. Organise excursions to realised projects that include techniques that are in view.

4.5.2.2. User friendliness is a design criterium that is a key element in the brief, in evaluating the design quality and in testing the post occupancy performance quality

4.5.2.3. Evaluate the user oriented quality in realised projects, document the success factors

4.5.2.4. Apply a community Energy Management system

4.5.2.5. Train and support green neighbours who help the community in proper use of new technologies and in healthy housing

4.5.2.6. *to be added during discussion*

### **4.5.3. Stimulate adapted behaviour in support of sustainable performance**

Actions

4.5.3.1. Make the “Energiebuchhaltung” available for all Concerto projects

4.5.3.2. Create a green diploma for users, support the use and adaptation of behaviour with a campaign and point system

4.5.3.3. Evaluate the behaviour perception and adaptation in successful projects. Document success factors and translate these in required conditions for new projects.

4.5.3.4. See participation procedure (4.5.1.3.)

### **4.5.4. Manage innovative collaboration and financing to accelerate greening of cities.**

Actions: collaboration

4.5.4.1. Organise a discussion on ESCO service by Energy Production Company or Distribution Company or by RES installer, developed in cooperation with project developer and with the help of local authority

4.5.4.2. Discuss the social impacts, qualities and added values and drawbacks of different forms of Energy Services

4.5.4.3. Make an inventory of local trends in costs, prices and savings and document the effects both in CO2 emission reduction and financially.

4.5.4.4. Promote the total cost of living, the comfort aspects and the “green label” as the approach to energy performance (include Green diploma etc)

4.5.4.5. Apply Energy Savings Contract for refurbishment projects to make energy saving transparent and to guarantee the overall effect of the measures

Actions: financial feasibility

4.5.4.6. Green mortgage or green loans with special low interest rates

4.5.4.7. Create a revolving fund for investment in extra energy performance; provide loans at low interest rate, for short periods of time

## 4.6 Next steps

From section 5 we selected the most important topics in July 1 workshop, discussed them to make an action plan and the following was agreed:

Remaining work is concentrated on community actions to support sustainable communities in Salzburg, Valby and associated cities in Hungary and Netherlands.

Results will be gathered at the end of Concerto project in deliverable report D1.14 with a comparison between Salzburg and Copenhagen results.

During group work many supporting initiatives were discussed – and then given priority resulting in following first priorities:

1. Setting up recreative “Green Neighbourhoods” in Salzburg – like already established in Copenhagen for many of urban areas. (Inge)
2. More local info and activity centres in Salzburg – like 8 already established in Copenhagen (f. ex. Green Valby in local area Valby) and now 1 established in Stadtwerk Lehen area in Salzburg (Marianne provide more info)
3. Financial support opportunities for support actions being watched (Inge and Jens)
4. ESCO or other financial new methods primarily in Copenhagen like the energy point system in Salzburg (Jakob)
5. Smart box testing for metering (Inge)

## 5. CONCLUSION AND RECOMMENDATIONS

### 5.1 Conclusions

The Concerto projects in Copenhagen and Salzburg have different strong and weak points. The project partners can help each other. Issues are for instance cooperation with social and private investors, the ability of the social housing sector in Copenhagen to pursue and reach higher sustainable targets, which Salzburg can learn from. And Copenhagen can learn from the Energy Point system in Salzburg.

Concerto partners in Salzburg had all main demo projects approved at start of Concerto project. And builders were identified from beginning and included as partners. This increases the awareness and engagement in the project and also the ability to get construction projects going.

Opposite in Copenhagen not all relevant stakeholders are project partners because several of demo projects were not approved from beginning and thus builders were not identified but



will be included along with project development as Third Parties to Kuben. Though stakeholder analysis and development of new coalitions and cooperation are crucial for the realisation of construction projects with high sustainable quality

The concept of Quality Agreement [QA] cannot be copied to Copenhagen, but can be interpreted and adapted on a different scale in Copenhagen.

Many examples of general actions to reach the goal of sustainable communities with support from the community are found in Valby. The Valby community is active in Agenda 21 and has great citizen oriented activity with support from the local authorities.

General attentions are needed for the position of stakeholders in structuring community actions.

The position of the ESCO in Salzburg provides chances for integrative planning and high-end results in sustainable performance.

Community Action Planning needs concerted process management. Physical projects can be connected to social process, in order to improve the “social sustainability” of an area.

## **5.2. Recommendations**

### **Key Points and Future Actions**

- Create a better perception of “ownership” of the plans in the Concerto area
- Take action immediately to prepare for social process
- Extend the borders of community action across the demonstration projects
- Support the community centres with public money and expert knowledge
- Voice and choice connection (connection of top-down and bottom-up processes)

Cooperative housing product is missing in Salzburg: where people not just have the houses built together but also look after the house after the realisation. Inspiration can be given from Copenhagen.

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