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ENERGY EFFICIENT COMMUNITIES: CASE STUDIES AND STRATEGIC GUIDANCE FOR URBAN DECISION MAKERS

Annual Report 2010

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RÉSUMÉ

This project, who's aim is to promote Swiss advances in sustainable urban planning and design and associated modelling support tools, started on the 1st October 2009. During the past year of this four year project we have: (i) documented an existing 'sustainable community' case study project in Neuchâtel, (ii) contributed preliminary documentation concerning the case study cities of Lausanne and Zürich, (iii) begun the preparation of a section of the Annex Guidebook concerned with urban modelling.

Work in 2011 will build upon this progress by further completing the case study descriptions and the guidebook section on urban modelling.

Aims of the project

This project supports the Swiss participation in the new IEA Annex 51 “Energy efficient communities: case studies and strategic guidance for urban decision makers”. Our main aim in this is to disseminate the advances that have and are being made in Switzerland with respect to the planning, design and construction of relatively sustainable urban communities as well as planning and design tools to support these efforts.

In this IEA Annex there are four sub-tasks:

- A. Existing organisational models, implementation instruments and planning tools.
- B. Case studies on energy planning and implementation strategies for neighbourhoods, quarters and municipal areas.
- C. Case studies on the preparation of integrated energy and CO₂-abatement concepts for towns and cities and corresponding implementation strategies.
- D. Instruments for a successful community energy policy.

Our objective for 2009 was to establish more clearly the form of the Swiss participation in this IEA Annex as well as to advise the consortium on methodological issues relating in particular to the first task, based on previous work conducted by the PI and his group.

Work done and results acquired

This contract started officially on 1st October 2009. Following from a meeting held in Bad Aibling in Germany from 14th to 16th October 2009, our role with respect to each of the four sub-tasks was defined as follows:

- A. Advise on methodologies for documenting existing case studies. Contribute case study material based on an already completed project within Switzerland. Advise on existing urban energy models.
- B. Contribute case study material based on one of the towns being studied within the context of the project MEU.
- C. Contribute case study material based on the City of Zurich, as part of the SNSF project.
- D. The work on the Annex will culminate in the preparation of a book. Robinson is to lead the preparation of the section relating to urban energy modelling. Building on the outcomes of sub-task A this is expected to highlight the advances made in the development and application of the group's software CitySim.

In compliance with these objectives we have:

Sub-task A

- Completed a description of the Neuchâtel case study EcoParc and commented on the documentation of case studies of other case study cities.
- Contributed descriptions of existing urban energy modelling tools for the final report of Sub-task A.

Sub-task B

- Modified a prototype version of CitySim to support its application to evaluate entries to the city of Lausanne's urban design competition *Métamorphose: Plaines-du-loup*. This work relates to part of the OFEN-funded project MEU.
- Prepared preliminary documentation of this case study project and the evaluation of the competition returns.

Sub-task C

- Prepared preliminary of the City of Zürich case study project, focussing on the city's 2kW society initiative.

Sub-task D

- Prepared a contents list for the section of the guidebook dealing with urban modelling, which will be coordinated by the PI (Robinson).

We have also contributed towards discussions during meetings (Tokyo, November 2010) and in between them.

National collaboration

As part of the OFEN project MEU we have established collaborations both within EPFL (the Energy Centre and the Industrial Energy Laboratory) as well as with the HES-SO in Martigny. We have also established contacts with representatives of the Towns of Lausanne, Martigny, Neuchâtel and Chaux-de-Fonds.

Within the context of the SNSF project “An investigation of strategies leading to a 2000W city using a bottom-up model of urban energy metabolism” we are also collaborating with Institute for Transport Planning at ETHZ as well as with the City of Zurich.

Our collaborations with the cities of Neuchâtel, Lausanne and Zurich will be promoted in this IEA Annex.

Evaluation of the year 2009 and perspectives for 2010

The work that has already been conducted in 2009 matches well the established objectives, so that there are no significant discrepancies. Having said this, the work that has been agreed with the Annex Operating Agent (Dr. Reinhard Jank) to be conducted by the PI represents an increase with respect to that which was agreed within the contract on which this project is based. The PI accepts the responsibility to undertake this extra work using his own means, since he sees this as being in the best overall interests of promoting the advances that are being made both within and beyond his research group.

The work of sub-task A is now essentially complete. Progress during 2010 will concentrate on contributions to subtasks C and D and to a lesser extent B, due to the relatively long timescale of this case study project.

References

- [1] Robinson, D., Quiroga, C., Sustainable masterplanning in practice: evaluation and synthesis, Proc. CISBAT 2009, Lausanne, Switzerland.
- [2] Urs Wilke, Maria Papadopoulou and Darren Robinson, Towards a 2kW City – the case of Zürich, Proc. WREC 2011, Linköping, Sweden 2011.