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Co_2olBricks

Climate Change, Cultural Heritage & Energy Efficient Monuments

Merge of relevant results of several similar projects and networks

About this paper:

The conservation of historical buildings is a common goal in the Baltic Sea Region (BSR). Due to the common identity in the BSR it is very important to protect the historical buildings in order to preserve the individual characteristics and therewith the attractiveness and competitiveness of the cities around the Baltic Sea. But today's collision with the climate protection goals leads to unsatisfying solutions as the result of polarised decisions: No/bad climate protection or no/bad heritage conservation. **Co_2olBricks** aims to find common solutions to combine the needs of climate protection with technical, administrative and historically adequate approaches to fulfill the necessary CO_2-reduction aims – without polarising between these elements.

The aim of this paper is to give a brief overview about other projects and networks dealing with similar issues. Although the main focus of these projects is different from Co_2olBricks there are some results useful for the work of the project partners but also interesting for stakeholders working in the field of heritage preservation and climate protection.

Therefore the following projects were identified. A short description, a reference to the Co_2olBricks relevant outputs and links to further information of each project is given.

Content:

1. UrbEnergy - Energy Efficient and Integrated Urban Development Action

1.1 About the Project

In view of the increasing significance of energy efficiency in the field of urban development, the transnational cooperation project **UrbEnergy** was launched in January 2009. The aim of the project was to combine measures of energy efficient refurbishment of the housing stock with the overall improvement of residential neighbourhoods. The project was co-funded by the territorial cooperation programme "Baltic Sea Region Programme 2007-2013" as well as by the German federal programme "Transnational Cooperation". 15 partners from Estonia, Germany, Latvia, Lithuania, Poland and Belarus took part in the project and represented key actors in national activities for energy efficient settlement structures.

UrbEnergy's key objective was the development and implementation of integrated concepts and strategies for the comprehensive energy efficient renewal of residential areas in the Baltic Sea Region. The partners worked together to develop Integrated Urban Development Concepts (IUDC) to combine energy efficient housing refurbishment with the renewal of the energy supply infrastructure, the upgrading of the residential environment, the improvement of the social and economic infrastructure and the participation and mobilisation of residents.

1.2 Relevant Results for Co_2olBricks Issues

The UrbEnergy **manual on holistic strategies for energy efficient refurbishment of the housing stock** (link to the document see below) includes general recommendations to develop energy efficient concepts as well as good practice examples. Particularly the following recommendations are helpful in the case of the refurbishment of historic buildings:

- Integration of energy and climate concepts in integrated urban development plans is a success factor.
- Analyse the energy supply, energy consumption and energy efficiency potentials, because energy and climate concepts need a solid analytic base.
- Develop differentiated measures for neighbourhoods with heterogeneous and homogenous building structure.
- Secure the quality of the energy efficiency refurbishment works.

Further on a number of very interesting case studies are shown, four of which dealing (partially) with historic buildings. The presented examples concern the following issues:

- Internal insulation, insulation of rear facades
- Windows, roof, cellar
- Ventilation
- Improvement of the heating system
- District heating, cogeneration, renewable energy

1.3 Further Information

Projects website: http://www.urbenergy.eu/

Manual on holistic strategies:
(http://www.urbenergy.eu/fileadmin/urb.energy/medias/partners_section/Partner_Outputs/main_results/Energy_Efficient_Refurbishment_WP4_manual.pdf)

2. AlpHouse - Alpine Building Culture and Energy Efficiency

2.1 About the Project

The Alpine area produced a wide range of characteristic building types, which emerged from a long-term adaption to climatic and geographic conditions. To preserve this cultural value and the traditional knowhow it was the aim of the AlpHouse project to try to understand the principles of traditional alpine architecture, integrate them in present-day construction, and develop them further.

For this purpose nine project partners from Austria, Italy, Germany and France joined together to develop quality criteria with two central aims:

- **Preservation and development of the cultural heritage** of the Alpine Space, as represented by vernacular architecture, traditional settlement structures, regional materials and crafts techniques.
- **Optimisation of energy efficiency and overall lifecycle costs** of buildings and settlements, achieved by applying state-of-the-art technologies and detailed knowledge on ecology and specific local conditions.

The project explored and collected knowledge and skills in the various regions and passes them on to craftsmen, architects, planners, and decision makers – so that they can develop individual local solutions oriented towards a common understanding of quality.

AlpHouse ended in 2012 and was funded by Alpine Space Programme of the European Union (EU) in the framework of the European Territorial Cooperation 2007-2013. The project is being continued by the follow-up project AlpBC, which is focused on regional planning and consulting strategies.

2.2 Relevant results for Co_2olBricks issues

One of the main projects outputs are the **AlpHouse Qualification Modules**. They contain a wide range of relevant topics concerning energy refurbishment of traditional buildings from “Renovation strategies” up to “Optimization of windows”, “Moisture in the building” and “Facades - Construction and insulation”.

An overview about the Training modules is available on the AlpHouse website. Further material and information is being delivered via the **AlpHouse Information Platform**.

Further on the **final publication** of the AlpHouse project gives a good overview about the projects activities and outputs.

2.3 Further information

Projects website: http://www.alphouse.eu/

AlpHouse Qualification Modules: http://www.alphouse.eu/Training-Modules-en.html

AlpHouse Information Platform: http://ispacevm14.researchstudio.at/alphouse/

Final Publication: http://www.alphouse.eu/medien/medienpool/Final-Publication-AlpHouse-low-resolution.pdf

3. Longlife- Sustainable, energy efficient and resource saving residential buildings

3.1 About the project

Longlife (Longlife - Sustainable, energy efficient residential buildings in regard to European requirements and innovative technologies in the Baltic Sea Region) was a transnational project in the Baltic SeaRegion. The duration of the project was from January 2009 until January 2012. It was funded through the EU programme Baltic Sea Region 2007-2013. In the Longlife project partners from Denmark, Lithuania, Poland, Russia and Germany worked together.

Longlife aimed to optimize methods and construction, to adapt and implement new technologies for buildings and to harmonize building procedures between participating countries. Therefore Longlife developed practices, innovative technologies, unified procedures and guidelines for and subsequently the design of a prototype of a sustainable, energy efficient and resource saving residential building in the Baltic Sea Region. The Longlife guidelines and unified procedures for energy efficiency, sustainability, resource saving buildings and low lifecycle costs shall lead to a reduction of energy consumption during a buildings lifecycle.

3.2 Relevant results for Co_2olBricks issues

Although the projects focus is on new buildings, the Longlife Prototype Catalogue can be a basis to plan the refurbishment with elements of it and to ensure an energy efficient and sustainable building that can also be certified by the Longlife Performance Pass. This certification indicates low energy demand of the building, ecological impacts such as CO2 emissions and financial information in terms of initial, maintaining and operational costs.

The Longlife pilot projects give an impression of this approach.

3.3 Further information

Projects website: http://www.longlife-world.eu

Pilot projects: http://www.longlife-world.eu/res/dnl/en/Longlife%20Report%203.3.223.pdf

4. Build with care – Energy saving buildings

4.1 About the project

Build with CaRe (Carbon Reduction) aimed to mobilise all forces in order to make energy-efficient building design the mainstream. Local and regional authorities, universities and institutes from 10 regions in 5 countries in the North Sea Region were active in the Build with CaRe partnership. The project, which started in 2008 and concludes in 2011, was partly financed by the Interreg IV B North Sea Programme.

4.2 Relevant results for Co_2olBricks issues

Starting with the focus on newly built constructions in passive house standard, during the projects runtime, the selected projects focused more on refurbishments on existing buildings with components in passive house quality and on the renovation of historic buildings.

Demonstration buildings have been

- the 105 year old Marischal College, being converted into the new Aberdeen City Council corporate headquarters,
- the medieval monastery Prittlewell Priory at Southend-On-Sea turning into a “Green Museum” and
- the renovation of 246 houses at the 1930s residential area De Koningsvrouwen van Landlust of Eigen Haard housing association in Amsterdam.

4.3 Further information

Projects website: http://www.buildwithcare.eu/

5. Climate for Culture

5.1 About the project

The CLIMATE FOR CULTURE project is funded by the European Commission from 2009 until 2014 and consists of 30 partners from all over Europe and Egypt making multidisciplinary contributions. The research teams will assess the damage potential of climate change on our cultural heritage, its socio-economic impact and possible mitigation strategies. Collections in historic buildings in different parts of Europe will be included for in situ investigation of present problems and for the prediction of future issues. For this purpose and for the first time ever, high resolution climate evolution scenarios will be coupled with whole building simulation models to identify the most urgent risks for specific regions with the aim of developing mitigation strategies. The risks thus identified and the economic consequences, for European cultural heritage will be communicated to policy makers together with possible mitigation strategies to be included in future IPCC Reports.

5.2 Relevant (interim) results for Co_2olBricks issues

Even the Climate for Culture project deals mainly with monuments in the sense of castles, palaces, manor houses, churches and museums there are several topics that are interesting for other historic buildings too, e.g. about

- standards
- the impact of temperature changes on the indoor climate of historic buildings.
- Developments in climate control of historic buildings

5.3 Further information

For more information: http://www.climateforcult ure.eu/

For reports see: http://www.climateforculture.eu/index.php?inhalt=dissemination.publications

6. 3ENCULT - efficient energy for EU cultural heritage

6.1 About the project

3ENCULT was a project co-funded by the European Commission under FP7 (EeB.ENV.2010.3.2.4-1). Start date: 1st October 2010. Duration: 3.5 years – until 31st March 2013. The project 3ENCULT aimed at bridging the gap between conservation of historic buildings and climate protection. It demonstrated the feasibility of 10" reduction in energy demand, depending on the case and the heritage value.

The main objectives were:

- The development of passive and active solutions for conservation and energy efficient retrofit including available products as well as new developments by involved SMEs,
- The definition of diagnosis and monitoring instruments, the long term monitoring (also for IEQ controlling) and
- The development of planning and evaluation tools and concepts supporting the implementation,
- The quality assurance and control of success of the energy retrofit measures.

The joint task of conservation and energy efficient retrofit is highly interdisciplinary. The 3ENCULT consortium consisted of scientists and stakeholders, especially on the level of SMEs, from the fields of diagnostics, conservation, building physics, sustainability, architecture and lighting, thus guaranteeing both, the development of sustainable solutions and the impact on European economy. Eight case studies demonstrated and verified solutions that are applicable to the majority of European built heritage in urban areas. Building owners and local historic preservation agencies are integrated in local case study teams.

6.2 Relevant (interim) results for Co_2olBricks issues

The following reports are directly connected to the issues of Co_2olBricks:

- Report on demand analysis and historic building classification.
- Relation historic buildings, EPBD and EPBD CEN Standards.
- Assessment of energy efficiency measures regarding their compatibility with conservation issues.
- Report on Energy Efficiency Solutions for Historic Buildings.

6.3 Further information

For more information: http://www.3encult.eu/en/project/welcome/default.html

7. EFFESUS - energy efficiency of European historic urban districts

7.1 About the project

EFFESUS is a research project investigating the energy efficiency of European historic urban districts and developing technologies and systems for its improvement. The term "historic urban district" in the context of EFFESUS, is defined as a significant grouping of "old" buildings built before 1945 and representative of the period of their construction or history, not necessarily protected by heritage legislation. EFFESUS is funded by the European Commission under its Seventh Framework Programme. The projects lifetime is from 2012 until 2016.

7.2 Relevant (interim) results for Co_2olBricks issues

EFFESUS will produce the Decision Support System, a **software tool** to help make informed decisions about improvement measures suitable for historic urban districts. The decision making will be supported by a multiscale spatial data model, a categorisation of historic buildings and urban districts and a repository of energy efficiency retrofit solutions, for which EFFESUS will collect data on:

- • existing building stock and its energy use and heritage significance
- • local climatic conditions including regional climatic change predictions
- • economic, lifecycle and technical assessments of improvement measures

EFFESUS will demonstrate in seven real **case studies** the applicability of its technological developments and the suitability of its software tool. The case studies will be located in historic urban districts of seven European cities of very different building traditions, climatic conditions and cultural contexts, e.g.

- Demonstration of new thermal insulating mortars for use as plaster and render.
- Demonstration of window upgrade measures and integration of intelligent indoor climate solutions.
- Demonstration of aerogel insulation products for use in cavities behind existing wall finishes.
- Demonstration of radiant reflective coatings for exterior application.

7.3 Further information

For more information: http://www.effesus.eu/

8. CLUE - Climate Neutral Urban Districts in Europe

8.1 About the project

The objective of the CLUE project is to increase the local and regional capacity in policy development which aims to facilitate the implementation and assessment of new solutions and technologies for a low carbon economy in urban areas. The consortium brings together local and regional authorities as well as universities from nine European countries, which are developing climate neutral urban districts.

Partners in the project are besides the City of Stockholm (Lead partner) and the Free and Hanseatic City of Hamburg municipalities and universities from the UK, Italy, Spain, Austria, Greece, Poland and the Netherlands.

CLUE is funded by the European Regional Development Fund through the INTERREG IVC programme.

8.2 Relevant (interim) results for Co_2olBricks issues

CLUE explores best practices in planning and implementation of systems, solutions and technologies for climate neutral urban districts as well as methods for measuring, monitoring, reporting, verifying and assessing climate mitigating efforts.

The project activities result in **best practice guides** and **policy recommendations** on the integration of climate aspects in the urban development process. In addition, CLUE partners develop **guidelines for measuring, reporting, verifying and assessing climate neutral technology** as well as implementation plans for all participating regions.

As the project is currently in progress (2012-2014) the results will be available within until 2014.

8.3 Further information

For more information: http://www.clue-project.eu

9. HELTH - Healthy and Energy-efficient Living in Traditional Rural Houses

9.1 About the project

The main aim of the project was to make rural buildings more energy efficient and to improve the indoor conditions, the renovation of their heating and ventilation systems as well a modern approach to renewable energies as a potential alternative.

For this reason the following five partners from Sweden, Finland and Estonia started a project co-financed by the Central Balstic Interreg IVA programme 2007-2013: Estonian Open Air Museum (Lead Partner), Gotland University, Tallinn University of Technology, Aalto University and Harju County Museum.

The projects duration was from May 2010 until August 2013and the final conference took place in Tallinn on May 15th 2013.

9.2 Relevant (interim) results for Co_2olBricks issues

Even the research and results do not deal exclusively with bricks, there are a lot of aspects that concern all types of historic buildings when dealing with energy efficiency measures. That

- A Technical survey of Estonian houses
- A Technical survey of Finnish houses
- A publication about "Biodegradation of structures and materials"
- A publication about "The Values in an Old Rural House"

9.3 Further information

For more information: http://helthproject.eu/

10. URBACT – Connecting cities buildings successes

10.1 About the project

URBACT is a European exchange and learning programme promoting integrated sustainable urban development. It enables cities to work together to develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal changes. URBACT helps cities to develop pragmatic solutions that are new and sustainable, and that integrate economic, social and environmental dimensions. It enables cities to share good practices and lessons learned with all professionals involved in urban policy throughout Europe. URBACT II comprises 400 different-sized cities and their Local Support Groups, 52 projects, 29 countries, and 7,000 active stakeholders coming equally from Convergence and Competitiveness areas.

URBACT is jointly financed by the ERDF and the Member States.

10.2 Relevant (interim) results for Co_2olBricks issues

Besides others URBACT is dealing with Building Energy Efficiency in European Cities. The current study (released in June 2013) covers for example the followings relevant issues:

- Building energy efficiency and policy integration.
- Financing energy retrofitting.
- The European built heritage and energy efficiency.

10.3 Further information

Report about Building Energy Efficiency in European Cities:
http://www.eukn.org/E_library/Urban_Environment/Environmental_Sustainability/Energy_Efficiency/Building_Energy_Efficiency_in_European_Cities_URBACT_2013

URBACT-Website: http://urbact.eu/