

COST

Domain Committee Transport and Urban Development

COST Action 23

Strategies for a Low Carbon Urban Built Environment

MONITORING PROGRESS REPORT

Period: 10th May 2005 to 8th December 2006

This Report is presented to the relevant Domain Committee and contains two parts:

- I. Management Report prepared by the COST Office*
- II. Scientific Report prepared by the Chair of the Management Committee of the Action*

The report is a “cumulative” report, i.e. it is updated annually and covers the entire period of the Action.

Confidentiality: the documents will be made available to the public via the COST Action web page except for chapter *II.C. Self evaluation*.

Based on the monitoring results, the COST Office will decide on the following year's budget allocation.

I. Management Report prepared by the COST Office



I.A. COST Action Fact Sheet

- **COST Action 23 – Strategies for a Low Carbon Urban Built Environment**
- **Domain** *Transport and Urban Development*

• **Action details:**

CSO Approval: *(day/month/year)* **End date:** *(day/month/year)*
Entry into force: *(day/month/year)* **Extension:** *(day/month/year)*

- **Objectives** *(from DB as in About COST)*
- **Signatories:** *list of countries and date of signature*

Austria <i>(date)</i>	Greece <i>(date)</i>	Poland <i>(date)</i>
Belgium <i>(date)</i>	Hungary <i>(date)</i>	Portugal <i>(date)</i>
Bulgaria <i>(date)</i>	Iceland <i>(date)</i>	Romania <i>(date)</i>
Croatia <i>(date)</i>	Ireland <i>(date)</i>	Republic of Serbia <i>(date)</i>
Cyprus <i>(date)</i>	Israel <i>(date)</i>	Slovakia <i>(date)</i>
Czech Rep. <i>(date)</i>	Italy <i>(date)</i>	Slovenia <i>(date)</i>
Denmark <i>(date)</i>	Latvia <i>(date)</i>	Spain <i>(date)</i>
Estonia <i>(date)</i>	Lithuania <i>(date)</i>	Sweden <i>(date)</i>
Finland <i>(date)</i>	Luxembourg <i>(date)</i>	Switzerland <i>(date)</i>
FYR of Macedonia <i>(date)</i>	Malta <i>(date)</i>	Turkey <i>(date)</i>
France <i>(date)</i>	Netherlands <i>(date)</i>	United Kingdom <i>(date)</i>
Germany <i>(date)</i>	Norway <i>(date)</i>	

- **Intentions to sign:** *list of countries and date*
- **Participating Institutes of non-COST countries:** *(Institutes Name, Country, Town)*

Chair: *(name, institution, address, phone, e-mail)* **DC Rapporteur:** *(name, institution, address, phone, e-mail)*

Science Officer: *(name, e-mail)* **Administrative Officer:** *(name, e-mail)*

- **Action Web site:** *http://www.*
- **Working Groups** *(list of WGs and name)*



I.B. Management Committee member list

Name	Country	E-mail



I.C. Overview activities and expenditures

2006 Budget

Total Action Budget:

Remaining Action Commitment:

Meetings

Meeting Type	Date	Place							Cost	Total
										0

STSM

Beneficiary	Date	Place							Cost	Total
										0

Workshops

Title	Date		Place						Cost	Total
	From	To	From	To						
										0

General Support Grants

Beneficiary	Date								Cost	Total
										0

Schools

Title	Date	Place							Cost	Total
										0

Others

Action Total : 0

II. Scientific Report prepared by the Chair of the Management Committee of the Action

II.A. Results achieved during the period 10th May 2005 to 8th December 2006

Describe in no more than 2 pages the main results achieved, indicating the key scientific and technical outcomes of the Action compared to the international state-of-the-art, and with an assessment of the results obtained compared to the objectives. Describe briefly the progress with respect to timetable and possible scientific problems encountered. Additional documentation such as extended scientific reports, proceedings of workshops, seminars or conferences may be provided separately as an annex to the annual progress report, and should be referenced in the report. Describe the efforts made and success achieved in involving younger scientists.

C23 kicked off in May 2005. Phil Jones is the Chair of the Action with three working groups:

- WG1 New and existing buildings (Chair Chris Tweed)
- WG2 Urban Infrastructure (Chair Paulo Pinho)
- WG3 Dissemination (Chair Phil Jones)

Chris Tweed and Paulo Pinho act as Vice Chairs of the Action. Since May 2005 four Management Committee meetings have been held:

Cardiff, UK	13 th -14 th October, 2005
Porto, Portugal	12 th -13 th January 2006
Trondheim, Norway	19 th - 20 th June 2006
Trento, Italy	4 th – 5 th December 2006

At each of these meetings WG meetings were also held. A WG3 meeting was also held in London on 14th September to discuss plans for the Conference to be held in April 2007.

The main objective of this Action is to investigate how carbon reductions can be achieved through appropriate design and management of the urban built environment. This involves:

- minimising energy use and associated emissions from buildings,
- examining the indirect energy impacts of infrastructure developments.

Working group 1 progress

WG1 considers carbon reductions in the design and construction of new buildings and in the improvement of the existing building stock. WG1 has embarked on two main tasks.

Task 1.1 collect information about how each member state in the EU is implementing the requirements of the Energy Performance Building Directive (EPBD). This will allow comparisons across the member states to be made and to elaborate the legal, economic and social frameworks as a context for new carbon legislation.

Progress information about the implementation of EPBD in 9 member states with further information being prepared for more is being collected and work is progressing. A template for reporting responses to the EPBD has been circulated following the meeting in Trondheim but the UK exemplar had been delayed. This is not an issue as not all participant countries had fully implemented the Directive. It was agreed that this work should remain ongoing.

Task 1.2 identify cases that will illustrate interesting aspects of developing and implementing low carbon strategies in new and existing buildings.

Progress 18 case studies collected are within the remit of this Working Group. At least four case studies have been worked up in more detail. Consistent information on costs, performance and decision making is not always available.

The relationship between case studies and guidelines is illustrated in Figure 1 below. The figure also lists, on the left side, the headings to be used to collect information about the design and construction of new and existing buildings and to analyse this material. The overall aim of the working group, therefore, is to identify and study examples of interactions between people and the conceptual structures loosely labeled as ontologies.

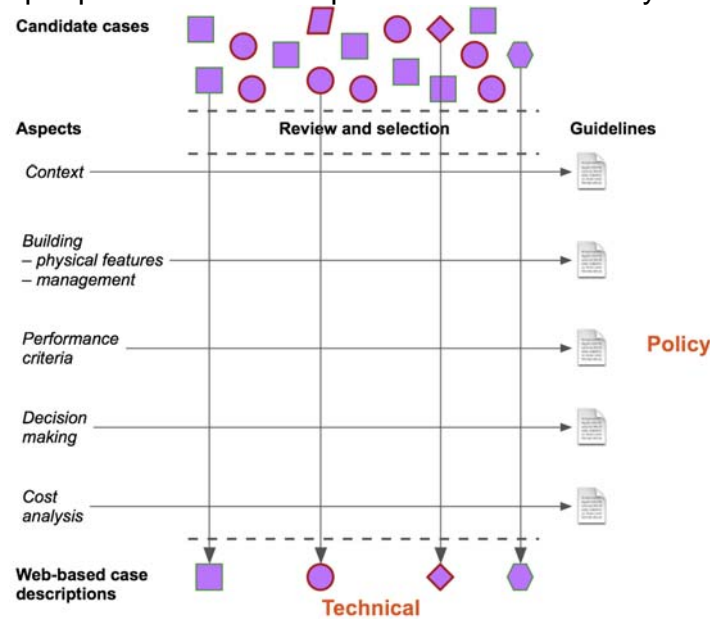


Figure 1: deliverables for WG1 showing main headings for analysis of cases to arrive at guidelines.

Working group 2 progress

There is a vital role of urban infrastructures to reduce the energy bill of cities and the wide scope of the examination of the indirect energy impacts of infrastructure developments. The need to focus the objectives of the WG2 was generally felt, through a disciplinary perspective that is bound to touch on urban planning, urban design and urban engineering, and through a subject matter perspective touching transport and land-use, water and sewage, wastes and blue/green structures. Membership of WG2 has increased to 12 members and this has resulted in useful contribution to the WG activities. Tasks include:

Task 2.1 involves WG2 looking for innovative experiments, in the fields of urban infrastructure and urban planning, to promote a low carbon built environment to collect case studies, at national level, of best practices in the provision of urban infrastructures and in the formulation and implementation of urban plans and projects, designed to reduce fossil fuel derived energy consumption in urban areas and/or promoting the use of renewable energies.

Progress Work has focussed on case studies and 9 have been received to date.

Task 2.2 collect national and regional planning guidelines and regulations for each country aimed at reducing the energy burden of urban areas, related to strategies for a low carbon urban built environment.

Progress Work on planning guidance has not yet yielded many outcomes, as in most countries this work is embryonic. So far, very few, if any, interesting planning guidelines have been found showing that, at the planning level, a lot has to be done, at both national and regional level, to reduce the energy burden of cities. WG2 have now started to look not just for planning guidelines, but also for more general planning policy documents, addressing the energy issue in cities along the objectives of this action.

Case studies in both WG1 and WG2 are examining the identified themes:

- Theme 1 – Case study selection and analysis
- Theme 2 – Performance Criteria

- *Theme 3 – Decision making processes*
- *Theme 4 – Cost analysis*

It has been recognised that although there were significant improvements in energy efficiency and carbon reductions on an individual building level, at the macro-level of cities, carbon emissions were continuing to increase. Discussions have therefore involved linkages between WG1 and WG2. The diversity of the group should be exploited to explore the integration of scales from building to city.

Future direction is to consider both city scale and building scale case studies, collecting information on the efficiency of cities in relation to their main 'carbon' related aspects, including, dominant building types, transport systems, sustainability policy, etc.. Also, low carbon buildings in relation to their context within the urban situation should be looked at. For example, a low carbon building in a location which results in higher travel to work distances, may raise overall carbon emissions. Information is to be collected for 5 cities, to include the main characteristic of the city in relation to carbon emissions and a case study illustrating a typical low carbon building development. This will then be developed further to look at more cities once a format for information collection is developed.

Working group 3 progress

A conference is to take place in Vienna on 17th and 18th April 2007. The conference will involve speakers from inside and outside C23. C24 and C25 are to be invited to make presentations at the conference. The European Housing Ecology Network are to be invited to participate in the conference. Publication opportunities are being explored for the conference.

The Cost Action C23 L-CUBE website can be found at <http://www.lcube.eu.com> and is managed by Phil Jones. This website includes the sections information about the aims of C23 and the separate WGs, a list of members and meeting venues, dates agendas, minutes and additional documents, the Memorandum of Understanding, a list of the case studies (currently password protected as work is in progress – available to C23 participants only. When documents have been approved they will become publicly available) and a link to the COST home page.

A meeting is currently being arranged with C24 and C25 in order to investigate collaboration opportunities and overlaps between the Actions.

We are also seeking to liaise with other European networks and are currently discussing possible collaboration with European Housing Ecology Network (EHEN).

II.B. Dissemination of results

Action related Publications and Reports

Guidelines will be produced to assist built environment professionals with procedures to ensure maximum consideration for low carbon are made for all built environment construction and renovation from building to city wide scale. These will focus on carbon reduction strategies identified and reviewed from working groups 1 and 2 relating to new/existing buildings and urban infrastructure.

Conferences and Workshops

Conference

The first C23 L-CUBE conference will take place on 17th and 18th April 2007 in Vienna, Austria. This will disseminate the preliminary findings of the WG1 and WG2 and will also involve relevant participation from other COST actions and organisations. The proposed programme of the conference is as follows:

Time	Tuesday 17th April 2007
8.30	Registration and coffee
9.15	Welcome
9.30	Presentation of C23 Action (Phil Jones)
9.45	Keynote speakers (x2)
11.00	Coffee
11.30	WG1 – New/existing buildings – Introduction by Chris Tweed Aims and objectives for WG
11.50	WG2 – Urban Infrastructure – Introduction Paulo Pinho Aims and objectives for WG
12.10	Panel discussion
12.45	Lunch
14.15	WG1 Session (Chris Tweed to lead) 3 presentations from internal and external speakers
16.15	Coffee
16.40	WG2 Session (Paulo Pinho to lead) 3 presentations from internal and external speakers
18.00	Close

Day 2

Time	Wednesday 18th April 2007
9.00	Welcome
9.15	Presentation by European Housing Ecology Network (not confirmed)
10.30	Coffee
11.00	C25/C245 opportunities for collaboration
12.30	Lunch
14.00	Excursion

Website

The Cost Action C23 L-CUBE website can be found at <http://www.lcube.eu.com> . This website includes the sections:

- An introduction to L-CUBE,
- Management Committee - list of members and meeting venues, dates agendas, minutes and additional documents,
- Descriptions of WG1, WG2 and WG3 together with tasks and meeting venues, dates agendas, minutes and additional documents,
- Memorandum of Understanding,
- A list of the participants,
- A list of the case studies (currently password protected as work is in progress – available to C23 participants only. When documents have been approved they will become publicly available)
- Link to the COST home page.

The website has had over 1400 page requests over the reporting period.

Scientific and Technical Cooperation - List briefly cooperation and contacts established with scientific institutions, with other research programmes (especially in the EU Framework programme), and with potential users.

Contact has been established with C24 'Analysis and Design of Innovative Systems for Low-EXergy in the Built Environment: COSTeXergy' and C25 'Sustainability of Constructions: Integrated Approach to Life-time Structural Engineering'. A meeting between chairs and vice chairs and WG leaders is being arranged in the near future to discuss contribution of ACTIONS in a broader perspective, common themes and how to target output. C23 are likely to meet in Lisbon in September to coincide with the C24 conference and meetings.

Members of C20 'Urban Knowledge Arena' and C21 'Towntologies' will also be invited to the April conference to discuss potential cooperation.

We are also discussing possible collaboration with European Housing Ecology Network (EHEN).

Short Term Scientific Missions

A number of early researchers have been identified for short term scientific missions. They are

- Researcher from Oporto to visit Norway (PP and PN),
- Researcher from Belgrade (AKF),
- Researcher from Germany to visit Cardiff (AH and PJ),
- Researcher from Belgium to visit Trento (MF and RA).

This should take place over the next half year period.

Transfer of results List briefly cooperation and contacts established with the Commission, with normalisation and standardisation bodies, with industry and operators.

C23 is promoted to relevant national and regional governments and other regulatory bodies and organisations by partners in an informal manner where appropriate.

End users have also been invited to attend and make presentations at C23 meetings. At the meeting in Trento two presentations were made by end users, these included

Professor Antonio Frattari, Head of the Laboratory of Building Design (LBD) - Trento
Renovation: a sustainable intervention, and Mr Salvatori, Minister for Planning, Research
and Innovation of the Autonomous and Regional Province of Trentino. New Technology
District for Sustainable Building, Renewables and Regional Planning,

Local end users will continue to be invited to meetings to make presentations and be
involved in discussions.

Contacts in the ERA List the contacts, if any, with other activities in the Community R&D programmes,
EUREKA, the European Science Foundation and other European cooperative research frameworks etc.

Information has been used in connection with the Asian Link project 'Sustainable urban
housing : strengthening capacity in policy formation an implementation in the city of city of
Xi'an china' which has partners in the Xi'an Urban/Rural Construction Committee , Xi'an
University of Architecture and Technology, WWF UK and Joanneum Research, Austria
(also a WG2 member of the COST ACTION).

II.C. Self evaluation Indicate in no more than 1 page what, in the opinion of the MC, were the main successes, drawbacks (if any) and the key difficulties encountered (if any).

Information has already been collected for more than 27 case studies which explore a range of low carbon technologies and approaches to design and planning for new/existing buildings and urban infrastructure. These are from 18 different countries from both in and outside the European Union. The case studies cover a range of different built environment structures from an education building for unemployed in Belgium, refurbishment of a retail shop in Slovenia to the construction of a biomass power station in Austria. Some of the case studies also investigate in detail the use of tools to evaluate sustainability.

Preliminary information has been collected regarding the implementation of Energy Performance of Buildings Directive in the following member states: Belgium, Denmark, Finland, Germany, Greece, Italy, Serbia and Montenegro, Slovenia, and United Kingdom. Further information is being prepared for Austria, Cyprus, Norway and Poland.

National and regional planning guidelines and regulations for are being collected for each country. This task has proved to be far more difficult to carry out than expected as so far, very few, if any, planning guidelines have been identified. This does indicate that at a planning level, there is still a lot to do at both national and regional level to reduce the energy burden of cities.

It has been recognised that although there were significant improvements in energy efficiency and carbon reductions on an individual building level, at the macro-level of cities, carbon emissions were continuing to increase. The diversity of the Action should be exploited to explore the integration of scales from building to city. It was agreed that future direction should focus on both city scale and building scale case studies, collecting information on the efficiency of cities in relation to their main 'carbon' related aspects, including, dominant building types, transport systems, sustainability policy, etc.. Also, low carbon buildings in relation to their context within the urban situation should be looked at. For example, a low carbon building in a location which results in higher travel to work distances, may raise overall carbon emissions.

To investigate macro-level carbon reductions information is to be collected for 5 cities, to include the main characteristic of the city in relation to carbon emissions and a case study illustrating a typical low carbon building development. This will then be developed further to look at more cities once a format for information collection is developed.

The membership of the Action is expanding which is enriching the content of the discussions and outputs. Presentations by end users during C23 meetings have provided stimulation for interesting and relevant discussions and debate.