EDUCATE Symposium, 12th January 2010
Budapest University of Technology and Economics (BME), Faculty of Architecture
“A” Building, Conference Hall

9.00  Welcome
Dr Gabor Becker, Dean of the Faculty of Architecture, BME

9.05  Address
Tamás Noll, President of the Chamber of Hungarian Architects / MÉK

9.15  Special Address
H.E. Greg Dorey, Ambassador of Great Britain in Hungary

9.25  Film: WAKE UP!

9.35  Presentation of the EDUCATE Action
Dr Sergio Altomonte, EDUCATE Action Coordinator, University of Nottingham

10.05  The EDUCATE Action in Hungary
Dr Zsuzsa Fülöp, Department of Building Constructions, Faculty of Architecture, BME

10.35  Sustainable Environmental Design at BME
Dr Erzsébet Lányi, Department of Building Constructions, Faculty of Architecture, BME

11.00  Coffee/Tea

11.30  Sustainable Environmental Design from a global perspective: low energy buildings
Katarina Korytarova, Centre for Climate Change and Sustainable Energy Policy (3CSEP)

12.00  Sustainable Environmental Design in Hungary
Attila Ertsey, Vice President of the Chamber of Hungarian Architects

12.30  Q&A, Plenary Discussion and Feedback

13.00  Lunch

14.00  Environmental Projects in Hungary
Dr Károly Matolcsy, Head of ÉMI, Company for Quality Control and Innovation in Buildings

14.30  Case study: Pannon Headquarters
Turi Zoltan, Architect of Zoboki-Demeter és Társai Építésziroda Kft

15.00  Sustainable Environmental Design in Students’ projects
Lang Krisztina and Jusztin Áron, Students at the Faculty of Architecture, BME

15.30  The Budapest Agenda for Sustainable Architectural Education
Dr Gabor Becker, BME, and Dr Sergio Altomonte, University of Nottingham

16.00  Debate / Plenary Discussion

17.00  Close

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EDUCATE Symposium

The EDUCATE Symposium “Sustainable Architectural Design in University Curricula and Architectural Training” was organized by the Department of Building Constructions, Faculty of Architecture, Budapest University of Technology and Economics (BME), and was held on Tuesday, the 12th of January 2010.

An audience of more than one hundred Hungarian professionals, educators, students, and representatives of industry, governmental institutions, and the general public - other than a number of foreign guests - attended the event.

The Symposium was opened by a welcome address by Dr Gabor Becker, Dean of the Faculty of Architecture, BME University, and was followed by a general introduction given by Tamás Noll, President of the Chamber of Hungarian Architects / MÉK, and a special address by H.E. Greg Dorey - Ambassador of Great Britain in Hungary.

Greg Dorey’s presentation specifically focused on identifying the challenges that we are currently collectively facing to sustain our common future, highlighting, amongst others, the following points:

Problems for the future
- It is estimated that by 2030 the global population will have risen to 9 billion. Over half of this people will live in cities, with consumption patterns very similar (if not higher) to ours today. However, we already use much more of the Earth’s natural resources than it can reproduce;
- The average global temperature is estimated to rise between 2 and 6 degrees Celsius (depending on the outcomes of global climate actions and the share of clean technologies that will be effectively implemented) and, with the depletion of oil and gas stocks, cheap energy will no longer be available.

Buildings Emission Statistics
- Buildings account for one third of all Green House Gas emissions globally (45% in the UK);
- According to the Intergovernmental Panel on Climate Change (IPCC), green building practices could cut emissions by 30-50% without significantly raising costs;
- Studies by the UK Green Building Council suggest that operational energy consumption of commercial buildings can be cut by more than 60%.

UK experience
- Since 1990, the UK economy has grown by 48%, while UK emissions have fallen by over 20%. This is an encouraging signal, meaning that it is possible to be competitive and produce sustained economic growth, at the same time as reducing emissions;
- In the UK, the low carbon industrial sector will grow by about 4% a year in value for the next few years;
- The sector’s current value is estimated at GBP 106 billion and employs 880,000 people;
- It is also one of the few areas of the economy to maintain growth rates through the economic downturn – around 4-5% until 2014-15.

Following the address by Ambassador Greg Dorey, Dr Sergio Altomonte, EDUCATE Action Coordinator, presented the EDUCATE project to the audience, emphasising the aims of the Action, its mission and challenges, its specific and strategic objectives and the impact indicators that can be foreseen in the short as in the long term on the sustainability of the built environment upon successful completion of the various tasks involved in EDUCATE.

Dr Altomonte introduced to the audience the structure of the work programme of EDUCATE and the activities completed within Work Package 2, which have resulted in the following outcomes:

- Detailed description of accredited architectural degrees at each of the seven participating institutions (including undergraduate, graduate and postgraduate courses);
- Significant exempla of architectural curricula for each of the six participating European countries (other than the partners’), i.e. United Kingdom, Belgium, Germany, Italy, Spain and Hungary;
- Paradigmatic models of architectural curricula in non-participating EU countries;
- Exempla of architectural pedagogies in selected non-EU countries (e.g. Switzerland, Australia, USA, Canada, Singapore, Brazil, Mexico);
- Surveys with architectural firms in EU and non-EU countries;
- Appraisal of the conditions for accreditation of academic curricula and for professional registration as Architects in Europe and in selected non-European countries.

Overall, Work Package 2 has lead to the consolidation of more than 70 accredited degrees throughout Europe and in non-European countries; the acknowledgment of criteria and conditions for accreditation and professional qualification in some 35 EU and non-EU countries; and the evaluation of 370 surveys conducted
with building professionals around the world. These results are being critically evaluated as part of the tasks of the following Work Package 3 in order to emphasize pros and cons of educational methodologies, teaching contents, delivery, assessment methods, etc., regarding the implementation of sustainable environmental design in academic curricula, and to benchmark the needs and demands of the professional market.

Dr Altomonte's presentation was concluded by the illustration of the EDUCATE dissemination strategy and communication activities, which include the continuous uploading of the results of the Action on the EDUCATE Website (www.educate-sustainability.eu), the monthly publication of electronic newsletters, the six-monthly publication of printed newsletters, and the organisation of Action Events in conjunction with each EDUCATE Management Meeting.

The EDUCATE Consortium is also investing considerable resources in the development of an interactive Portal on Sustainable Environmental Design and Energy Efficiency in Architecture, which will facilitate the achievement of the educational objectives of the Action, other than representing an important tool for dissemination of best practice and knowledge-base to target groups (i.e., students, academics, professionals and the general public). The Portal will consist of six main components – a Knowledge Base, a Student Space, an Expert Space, a Tutor Space, a Discussion Space, and a Public Space – and a functioning platform will be presented at the next EDUCATE Action Event to be held in London in July 2010.

Dr Zsuzsanna Fülöp, Coordinator of Work Package 2 on behalf of the Department of Building Constructions, Faculty of Architecture, BME, presented the importance of EDUCATE for the development of university curricula in Hungary. Dr Fulop’s presentation analysed the knowledge and wider context for educational and practical experiences in the field of Sustainable Architecture afforded by EDUCATE, considering the benefits this could entail for Hungarian academics and practitioners in order to provide a framework for tackling today's social and environmental problems, including air pollution, forests, biodiversity, human health, population, poverty, energy consumption, waste production and transport issues.

Zsuszanna Fulop also reflected on the meaning of the word "sustainability", which is a key term not only when talking about environmentally friendly buildings and construction methods, but also when reflecting on lifestyle and development in general. However, this is a term which is used and misused to label almost everything today. But, what does it really mean, and how do we define and measure whether or not we are progressing towards sustainability?

A building should be conceived and approached as a whole. It should be considered as a complete system, with specific features and performance requirements, and not as a mere collection of contributions from disparate industrial engineering disciplines (e.g., electrical, mechanical, structural, and so on). A building should be seen as an integrated part of a living process in dialogue with the surroundings and its occupants.

Dr Fulop also discussed the cost and ecological impact of the building over its entire lifetime - from extraction and processing of the building materials to construction, occupation and the eventual demolition of the building at the end of its useful life - emphasising the importance of running costs, energy efficiency, maintenance and durability of products and components, pollution minimization, energy embodied in the materials during their manufacture, and the building's potential for refurbishment or adaptive reuse. Dr Fulop listed some of the main criteria that a “sustainable” building should consider, namely:

- Take full account of the climate;
- Be designed for durability;
- Use renewable local building materials wherever possible;
- Increase efficiency in the use of materials, energy and other resources;
- Use life-cycle analysis in decision-making about materials and construction techniques;
- Minimize the consumption of resources, especially non-renewable ones;
- Use materials with low embodied energy;
- Use renewable energy;
- Minimize pollution of soil, air and water;
- Identify opportunities and facilitate the re-use and recycle of wastes for the occupants;
- Identify opportunities for water conservation and re-use, taking care of sewage treatment and waste treatment;
- Maintain or - where it has been disturbed - restore biodiversity;
- Reinforce and exemplify environmental responsiveness;
- Enhance appreciation and awareness of the environment;
- Be aesthetically sympathetic with its natural environment and cultural context.
Finally, the presentation of Dr Fulop was concluded by an analysis of the main priorities to consider in the design of a “sustainable” architectural curriculum, basing on the following considerations:

- Education on sustainable environmental design should be introduced at the early stages of education;
- In architectural university curricula, environmental design should provide complex knowledge and expertise in relation with other related professional skills (e.g. building engineering);
- According to the complexity and importance of the profession of architecture, architects need to have sufficient knowledge, responsibility and skills;
- Architectural education should be based on a holistic approach, providing competence also on a complexity of cognate subject areas which include environmental, climate-change and land-use issues, energy production and use, ethics and society, legislation and building codes, finances and investment;
- Beyond the character of general education, there should be also be specific training for architect-consultants with specialized skills able to represent the points of view of the profession and provide communication with governmental and professional institutions (at both, national and local level);
- Research and analysis of best practice should be encouraged to support educational activities;
- Training on architectural issues for policy decision makers (government and local) and investors should be reinforced to bridge the gaps between different interests.

Jolán Rácz, representative of the MÉK- Chamber of Hungarian Architects, summarised the conclusions of the surveys conducted in Hungary with professionals. Amongst the positive findings are the following:

- Hungarian architects are conscious about the importance of sustainable environmental design (67% rate of agreements, with 10% being neutral and 23% in disagreement);
- Sustainable environmental design represents a core part of the design approach for more than 82% of the professionals surveyed, whilst only 7% declared to be in disagreement with this statement;
- A unanimous 100% of the respondents to the survey agreed (44% strongly agree and 56% agree) that sustainable environmental design should be included in the curricula of architectural education;
- Around 60% of the surveyed architects agreed that competence in sustainable environmental design should be required for professional qualification;
- Architects have confidence that Universities and Chambers of Architects can support the implementation of sustainable environmental design in the practice of architecture.

However:

- Regulations in Hungary are not perceived as adequately supporting sustainable environmental design in the practice of design (according to 60% of respondents);
- Architects in Hungary strongly agree that the Government should take the primary responsibility to support the implementation of sustainable environmental design in practice;
- The majority of respondents (59%) reported negative experience with public clients, which do not seem to consider sustainable design as a creative opportunity beyond the mere meeting of regulations;
- The experience of surveyed architects demonstrates that financial considerations are the most important drivers for clients, independently from ecological, ethical and environmental issues.

Jolan Racz also illustrated the various professional courses currently offered by the MÉK, Chamber of Hungarian Architects, to building professionals (e.g. obligatory and optional courses such as Autonomous Buildings, Energy Efficiency, etc.), and listed a number of other resources currently in place in Hungary, such as the activities of various Hungarian Associations (e.g. Independent Ecological Centre, Hungarian Passive House Federation, Soft Technology Foundation, etc.), research endeavours (e.g. VAHAVA Program, Strategy of National Climate Change, etc.), conferences (e.g. Passive House Conferences, Zero CO2-Sustainable Architecture Conference, etc.), programs supported by the Government (e.g. ZBR Climate Friendly Homes Program/KWWM) and existing Awards (e.g. HOLCIM Award for Sustainable Construction, 2008 Europe Gold Medal Janesch Péter, etc).

Dr Erzsébet Lányi, Head of the Department of Building Constructions, Faculty of Architecture, BME, introduced and discussed the history and structure of education on sustainable architecture at the Faculty of Architecture at the Budapest University of Technology and Economics. Environmental education in architecture at BME effectively began in the late 90’s with the introduction of two optional courses named “Environmentally Friendly Constructions” I and II. This subject consisted not only of technical themes, but also focused on evaluation of social and wider architectural contexts. Recently, the aim has shifted to the introduction of obligatory modules with similar contents, so as to provide an answer to contemporary challenges. The first possibility offered by education in architecture could focus on trying to follow traditional social models alongside with changing technologies, although the real answer also requires a basic rewriting of social and personal habits.
Katarina Korytarova, of the Centre for Climate Change and Sustainable Energy Policy (3CSEP), Central European University, discussed the role of low energy buildings in mitigation of climate change, presenting a case study of public buildings in Hungary. The scenario of the analysis in Hungarian public buildings included consideration of the following points:

- **BAU**
  - New buildings: according to 2006 BC
  - Existing buildings: retrofitted at 1% to average 23% (Panelprogram in Szekesfehervar, Pajer 2009)

- **Passive accelerated**
  - New buildings: gradual phase-in of PH standard
  - Existing buildings: gradual phase-in of PH standard at accelerated rate

- **Passive 1%**
  - New buildings: gradual phase-in of PH standard
  - Existing buildings: gradual phase-in of PH standard at 1%

- **Suboptimal accelerated**
  - New buildings: 2006
  - Existing buildings: retrofitted to the typical level of 23%

This lead to the following conclusions:

- There is a need for minimal requirements for ANY retrofit of ANY building type;
- There should be NO public subsidies for the retrofits which result in less than 70% energy savings;
- To reach 72% reduction compared to 2030 baseline (or 21% compared to 2005), the following requirements apply:
  - For NEW buildings:
    - Phase-out 2006 in 2011
    - Gradual phase-in of PH by 2020
    - Transition through introducing 60 kWh/m²a and LE standards
  - For EXISTING buildings:
    - Phase-out of partial retrofit in 2011
    - Gradual phase-in of PH retrofit by 2020
    - Transition through 60 kWh/m²a and LE standards
- 10 year transition period for preparing the future planners, architects and builders;
- There is a need to educate and get educated.

Attila Ertsey, Vice President of the Chamber of Hungarian Architects and Curatorial President of the Soft Technology Foundation, conducted an informed analysis of sustainable architecture in Hungary. Amongst the main points discussed in his presentation are the following:

**Facts, 2009:**
- The British Secretary of State on Energy Affairs has risen the goals of CO2 reduction from the previous 60% till 2050 up to 80%;
- Meanwhile, the Hungarian Government asked the EU to accept the moderation of the reduction goals from 20% down to 13% till 2020, although there is no action plan to apply this in practice;
- There is a dependence of over 85% on Russian gas;
- Great floods in springtime and great droughts in summertime, damaging agricultural production.

**Facts, 2009-2010:**
- The summer temperatures in Budapest will rise in 20 yrs to that of today’s Taskent, reaching over 40-45°C in peak periods;
- The Hungarian Government is building strategic gas tanks for 1 billion HUF, conserving gas-dependence;
- The world’s greatest gas CHP plant is planned on the river Tisza, reducing the river’s water level by 20%;
- The world’s greatest straw-power plant is planned, using straw from 20% of the arable land of Hungary, transported from more than 100 km;
- Between 2007 and 2013, Hungary can use 83 billion HUF (310 million EUR) subsidies from the EU, and in the past 2 years only 2 billion HUF have been used;
- A new nuclear block is to be built for 1,000-2,000 billion HUF.
Dreams and reality
- Corruption, negligence of legislation;
- A corrupted competition for getting state subsidies for renewables (quoted from the President of the Republic, László Sólyom), and resulting in negative energy-balance investments (e.g., straw-power plant, biofuels, etc.);
- Handicap for renewables and decentralised energy and waste water treatment systems, with favours to great, centralised systems, resulting in high costs;
- Strong lobbies for fossil fuels and nuclear energy;
- Business interest on ecological solutions, without serious commitment;
- Ecological quality certification institutes - public and private (ÉMI, HuGBC) - with strong interests by real estate investors (HuGBC);
- Growing number of "ecological" office buildings;
- Significant interest on passive houses business;
- Great interest for information;
- Eco houses built by peripheral groups;
- Lack of subsidies and credits and absence of an appropriate economic/financial environment;
- As a reaction to slow and bureaucratic EU project financing, new credits appeared with fast and easy access for communities.

Goals of the Chamber of Hungarian Architects
- Setting up standards for the outcome of education on sustainable design and planning;
- Deregulation and incentives to low impact and natural building materials;
- Speeding up legislation of energy-efficiency, passive and low energy standards;
- Support of local, decentralised systems of energy and waste water systems.

Built examples in Hungary
- Solanova – Dunaújváros 2005:
  - Energy-efficient project;
  - 80% reduction of heating energy;
  - 50% reduction of energy used;
  - Water heating provided by solar panels;
  - 16 cm insulation, triple glazing;
  - Ventilation with heat regain;
  - Green roof;
  - Quasi-passive house;
  - ~3,0 million HUF, 12,000 EUR/flat.
- “Village House”, the biggest block in Hungary with 886 flats:
  - Energy-efficient project;
  - EU Concerto II;
  - 49% reduction of heating energy;
  - 62% reduction of CO2 emission;
  - 50% reduction of energy used;
  - Water heating provided by solar panels;
  - 10 cm insulation, double glazing;
  - 1,6 mHUF, 6,400 EUR/flat;
  - Finished at the end of 2009.
- Biosolar-houses (Architects: Attila Ertsey – Nóra Rosnyay):
  - Solar House of the Year 2007;
  - Shared prize;
  - Sunspaces, solar heating support.

Dr Károly Matolcsy, Head of ÉMI – Non-profit Company for Quality Control and Innovation in Buildings, presented the experiences of ÉMI, illustrating in detail the projects in which the company participated:
- Reconstruction of rented flats: ECOBES;
- Performance-based buildings;
- Green Catalogue EGCN NAS;
- DEMOHOUSE;
- Eur-Active Roofers;
• Green City Building;
• Green Solar Cities (CONCERTO II);
• PIME’s (CONCERTO III).

Turi Zoltan, Architect of Zoboki-Demeter és Társai Építésziroda Kft, presented in detail the design and construction of the Pannon Headquarters (Törökbálint), one of the newest public buildings in Hungary which has been built according to sustainable design principles and requirements. Turi Zoltan’s presentation particularly focused on the development of the design and the integration of renewable and low-energy systems, such as ground source heat pumps for heating and cooling and solar collectors for hot water supply.

Lang Krisztina and Jusztin Áron, students at the Faculty of Architecture, Budapest University of Technology and Economics, introduced their reconstruction plan of an old multilevel high residential building in Budapest, which has been conducted basing on principles and strategies of sustainable environmental design. Their presentation specifically focused on energy efficiency of the solutions proposed and strategies for recycling of waste materials and sewage.

The Symposium was concluded by a final plenary session chaired by Dr Gabor Becker and Dr Sergio Altomonte, which featured the presentation to the audience of the proposed ‘Budapest Agenda for Sustainable Architecture Education’, a document containing 10 priorities to be considered in the development of architectural curricula in order to guarantee a successful implementation of environmental design in the education and practice of architecture.

The presentation was followed by an open debate with the audience, where the ten principles were discussed and re-edited for publication. At the conclusion of the Symposium it was announced that the EDUCATE Agenda for Sustainable Architectural Education will be featured in the first Printed Newsletter of the EDUCATE Action, translated in six languages (English, French, German, Italian, Spanish, Hungarian) and widely distributed to academic and professional institutions across Europe.