

THE CONFERENCE ON SUSTAINABLE BUILDING SOUTH-EAST ASIA (SB04SEA)

Kuala Lumpur, Malaysia
11-13th APRIL 2005

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1. INTRODUCTION

The regional Sustainable Building Conferences held in 2004 (SB04) is part of an international conference series on Sustainable Buildings co-sponsored by the International Council on Research and Innovation in Building and Construction (CIB), The United Nations Environment Programme (UNEP) and the International Initiative for a Sustainable Built Environment (iiSBE). Since launching of the first GBC conference in Vancouver in 1998, the international conference series have become a pre-eminent international forum for mapping the process towards creating a more sustainable built environment. Subsequent events were then held in Maastricht in 2000 and Oslo in 2002. The forthcoming international conference, World Sustainable Building Conference (SB05), will be hosted by Tokyo, Japan, in 2005.

The international events at Maastricht and Oslo highlighted the need to place an increasing focus on regional development and on tropical and developing countries. The organisation of such input from regional needs and developments on to the global level received consensus from organisers of the World Sustainable Building Conference (SB05) in the attempt to reflect an inclusive vision of these agendas into the conclusions of SB05. Given this, the international hosts (CIB, UNEP, iiSBE) decided to launch a series of regional conferences in developing countries to advance sustainable building agendas one year before World Sustainable Building Conference (SB05).

The regional conferences (SB04 conferences) will be held in Latin America, Africa, China, Central/East Europe, Middle East and South East Asia. Details can be found at www.sb04.org

The Construction Technology & Management Centre (CTMC) , Universiti Teknologi Malaysia is the local host to the **Conference on Sustainable Buildings 2004 - South-East Asia (SB04-SEA)**. Previously, in 2002, CTMC collaborated with CIB and UNEP in the development of *Agenda 21 for Sustainable Construction in Developing Countries in South Africa*.

The SB04-SEA conference will be held in Kuala Lumpur, Malaysia, 11 – 13 April 2005 under the auspices of the CIB, iiSBE, UNEP to advance sustainable building agendas in South East Asia.

The objectives of the Conference are:

- To bring together major stakeholders to enhance the awareness of sustainable building issues within South-East Asia
- To provide an opportunity for South-East Asian experts to share local and regional knowledge with one another and with the broader international community.
- To establish a network of South-East Asian experts on sustainable buildings and construction for future co-operation.
- To develop an action plan for the implementation of Sustainable Buildings construction practices, technologies and techniques in South-East Asia.

The conference provides an opportunity for professionals, governmental and non-governmental organisations, academics and researchers in these areas, decision makers to present their works and exchange information and eventually participate in a *working conference* to establish action plans for Sustainable Building and Construction for South-East Asia. Details are available on the website: www.cibklutm.com

The conference was held back-to-back with **The EU-Asia Cross Learning Seminar on Mainstreaming Sustainable Building and Construction in South-East Asia (8-10th April 2005)** for developing research agenda and action plans for SBC and later to be presented at the World Sustainable Building Conference (SB05), Tokyo.

The seminars are part of UNEP's initiative aiming at building capacity and developing action plans for promoting and ultimately mainstreaming sustainable building and construction in Asia and other emerging economies. With the support from the European Commission (EC), the seminar provided a forum for exchanging information and ideas between Europe and Asia on sustainable building and construction (SBC) practices. The seminar also helped participants to understand the challenges and opportunities for operating sustainable construction in the region.

2. GENERAL FACTS OF THE CONFERENCE

Outline of SB04 South-East Asia

SB04 South-East Asia	
Dates:	11-13 April 2005
Venue:	Pan Pacific Kuala Lumpur International Airport Hotel.
	
Hosted by:	Construction Technology and Management Centre, Universiti Teknologi Malaysia
Co-host:	The International Council for Research and Innovation in Building and Construction (CIB), European Commission – Asia Pro Eco Programme (EC) United Nations Environment Programme (UNEP) The Organiser of SB05, Japan International Initiative for Sustainable Built Environment (iiSBE) Malaysian Industry-Government Group for High Technology (MIGHT) Pusat Tenaga Malaysia, Malaysia Perbadanan Putrajaya Malaysia The Ministry of Energy, Water and Communication, Malaysia Hijjas Kasturi Associates, Malaysia The Council on Tall Building and Urban Habitat, USA (CTBUH) Corus Asia Ltd, Malaysia Sunway Construction Berhad, Malaysia High Commission of Canada, Kuala Lumpur, Malaysia
Attendance:	180 participants
(Nations):	21 (Australia, Turkey, Malaysia, Taiwan, USA, UK, Egypt, Hong Kong, New Zealand, South Africa, Singapore, Italy, Brazil, Spain, The Netherlands, Indonesia, Philippines, Denmark, Sweden, Bahrain, Kuwait)
Presentations:	Special Session (Keynote Papers : 10) ; Technical Session : 4 (Papers : 64)
Programs:	Keynotes, Technical Sessions, Technical visit
Official language:	English
Sponsor:	EU, UNEP, CIB, SB05, MIGHT, CORUS, Sunway Construction
Main Organiser:	Assoc. Prof. Dr. Faridah Shafii

PROGRAMME					
	April 10 Sunday	April 11 Monday	April 12 Tuesday	April 13 Wednesday	
0800	FREE	Registration	Technical Session 1	Technical Session 3	
0900		Opening Ceremony			
1000	REGISTRATION	Refreshments	Keynote 8	Keynote 9	
1100			Refreshments	Technical Session 2	Keynote 10
1200			Special Session 1: Global Issues on Sustainable Building Keynotes 1, 2, 3		Technical Session 4
1300		Lunch	Lunch	Lunch	
1400		Special Session 2: Regional Issues & Framework of Action Keynotes 4,5,6,7	Technical Visit to Putrajaya An Evening in Kuala Lumpur	<ul style="list-style-type: none"> • General Conclusion and Calls for Global action • Action Agenda for Regional Co-operation • Recommendations for Tokyo SB05 Conference End of Conference	
1500		Refreshments		Refreshments	
1600		FREE		FREE	
1700		Welcome Reception	Banquet	FREE	
1800					
1900					
2000					
2100					

3. TOPICS AND ISSUES

In view of the variations in interests amongst the South-East Asian countries, a broad range of issues on SBC was initially offered for discussions at the Conference (Call for Papers).

Upon received of final papers for publication and presentation the themes were narrowed down to the following topics indicated below.

10 Keynotes were delivered by eminent experts including from CIB, UNEP, iiSBE. The keynotes include the outcomes from SB04 regional conferences held earlier. The speakers include Prof. Iwamura from Musashi Institute of Technology, Japan. A special presentation was also given by Prof. Iwamura on the developments and preparation of SB05.

3.1 Keynotes

Keynote 1 Sustainable Construction: The Global Agenda

W. Bakens, Secretary General CIB, The Netherland

Keynote 2 Mainstreaming Sustainable Building And Construction Through Life-Cycle Thinking

I. Chung, S. Chandak, United Nations Environment Programme (UNEP), Paris, France

Keynote 3 Developing A Global Strategy to Meet Climate Change

N. Larsson, International Initiative for Sustainable Built Environment (iiSBE), Canada

Keynote 4 Action for Sustainability: Opportunities for Partnership from The African Plan of Action

C. Du Plessis, CSIR Building and Construction Technology, South Africa

Keynote 5 Sustainable Building : The European Way

P. Huovila, VTT Building and Transport, Finland

Keynote 6 Development of Sustainable Building in China : A Report from SB04 China Conference

X. Qiang, Shanghai Research Institute of Building Sciences (SRIBS), Shanghai, China; S.Y.S.Lau, The University of Hong Kong, and Professional Green Building Council (PGBC), Hong Kong SAR, China

Keynote 7 Sustainable Building and Construction in South-East Asia

F. Shafii, M.Z. Othman, Construction Technology & Management Centre, Universiti Teknologi Malaysia, Malaysia

Keynote 8 Sustainable Development Planning and Construction in Putrajaya

Dato Jebasingam Issace John, Putrajaya Corporation, Malaysia

Keynote 9 Sustainability Embodied in the Local Context

K. Iwamura, Musashi Institute of Technology, Japan

Keynote 10 Catalyzing Energy Efficiency & Renewable Energy Efforts in Malaysia

Dr. Anuar Abdul Rahman, Pusat Tenaga Malaysia, Malaysia

3.2 Topics and issues discussed at SB04 South-East Asia

Technical Sessions 1

- Sustainable Construction in Asia
- Urban and Environmental Sustainability
- Education for Sustainability
- Case Studies

Technical Session 2

- Energy Efficiency and Renewal Energy Technologies
- Demonstration Projects
- Materials

Designing of Spaces

Technical Session 3

Policies, Legislation & Codes

Design and Tools

Day Lighting and Building Sustainability

Knowledge Management

Technical Session 4

Thermal Comfort in Residential Buildings

Sustainable Housing and Development

Assessment of Sustainable Building

4. OUTCOMES OF CONFERENCE AND SEMINAR

4.1 Issues

(i) Awareness on sustainable building

Sustainability is still a relatively new concept for the construction industry in the developing countries and has not yet received sufficient attention. However, generally, there is an increase in awareness on sustainable building and construction (SBC) in the region however not across the whole spectrum of the building and construction sector.

Participants highlighted that education about the principles and concepts of sustainable building is most essential in main streaming SBC as it requires changing behaviour which in turn requires changing attitudes. Technical training which follow after education will provide better a understanding of sustainability issues to support implementations.

The need for a definition of sustainability and sustainable building in the regional context was highlighted by many stakeholders. Participants expressed about the need for more education (not only for building professionals, but for the public at large) about what sustainability is all about and why we should strive for it in buildings and in general.

Many important stakeholders (contractors, manufacturers, developers) in South-East Asian construction industry are not even aware of the concept of sustainable building, and so are naturally resistant to change. Hence, the greatest barrier to implementation is the lack of understanding of the NEED for sustainable design.

The economic barriers are also inextricably tied to the awareness mentioned above, because markets are based on demand.

(ii) Special and cutting edge projects

It appears that majority of sustainable building projects in South-East Asia (SEA) are 'special' and cutting-edge rather than the 'norm'. Currently, the extent of sustainable building practices are limited to office and commercial buildings. The sophisticated nature of the projects involved only major organizations/corporations and those with the resources and capability to undertake such major projects.

(iii) Sustainable Housing

In regions marked by poverty and economic problems, it is very difficult to establish environmental sustainability as a national priority. Sustainable construction in South-East Asia tends to focus on the relationship between construction and human development hence marginalising the environmental aspects. The development of sustainable housing projects, as well as related research in this area is still in its infancy. Currently, there is no guideline/policy available to address sustainable housing construction.

(iv) Project delivery

Project delivery is a major issue in developing countries. Due to the fragmented nature of the construction industry, project delivery is complex. Sustainability has added to this complexity. The quality of construction delivered is a major issue which in many respects are linked to the far wider issues of educating the population and promoting investment. Just like developed countries, it need effective procurement and regulations to ensure satisfactory in project delivery.

(v) Public policies and regulatory frameworks

In some countries, public policies and regulatory frameworks do not encourage the development of the construction sector. Policies that negatively affect the growth of the industry are often related to technology imports, government subsidies for certain materials, distribution and pricing control of the industry.

(vi) Energy efficiency driven

SBC practices concentrated on energy efficiency designs. The cost of sustainable building options is a barrier to the routine use of sustainable strategies in the construction profession. Some respondents quoted "The construction industry won't go sustainable unless it saves money somehow." Majority of clients focused on energy efficiency heat, which is believed to lead to an immediate payback.

(vii) Need of demonstration projects

The lack of interest from clients was cited as one of the significant barrier to more widespread sustainable building practice in South-East Asia.

There is a clear need of further examples of SBC practices and demo/pilot projects to convince construction stakeholders to adopt sustainable building concepts. Builders and architects illuminate the perceived discord between profits and environmental protection within the construction industry. Many designers, especially from small-medium enterprises (SMEs) perceived sustainable design and construction to involve extra costs, thus reducing the competitiveness of their tenders and potentially resulting in loss of business.

High cost is also the result unfamiliarity of the design team and contractors with sustainable methods. The lack of education about the economic benefits of this approach is one of the barriers to mainstreaming SBC.

The environmental issues are not yet seen as a central business concern for most small-medium enterprises although lip service was paid to sustainability issues. This is because that small firms are not subjected to the same stakeholder pressure for environmental management of large corporations. Although they acknowledged that their industry should be at the forefront of sustainability, most firms felt they could not push the environmental agenda forward for fear of alienating their clients, who were reportedly driven by commercial rather than environmental or social concerns. Clearly, these market dynamics have a major impact on the supply chain as builders perceived a low demand for sustainable buildings and construction methods, and therefore have no incentive to improve their environmental performance.

In addition, small firms lack resources and support systems and do not have the capacity to carry out such measures. Whilst it appears that the environment is not a priority for policymakers or stakeholders, hence it become even less priority for small firms. In conclusion, a policy emphasizing on voluntary action tend to place the environment as a peripheral issue.

(viii) Stakeholder involvement at early design stage

In some projects stakeholders participation came at the later stage of construction. Hence, there is a need to make clear the importance of stakeholders involvement in the early

design of the project. Implementing sustainability issues starts at the strategic and concept planning and project programming stage where the technical and economic feasibility of alternatives will be compared in order to select the best possible project.

Sustainability decisions made at the beginning of a project life cycle have a far greater influence than those made at later stages since design and construction decisions will influence the continuing operating costs and, in many cases, revenues over the building's lifetime.

(ix) Participation of stakeholders in construction process

Early participation of stakeholders in the construction process needed. The participatory approach need to be emphasized to all stakeholders to encourage successful implementation of projects.

(x) Holistic design concept

Need to encourage the use of holistic building concept (Integrated Design Process). Basic understanding of the concept will lead to appreciation of integrated design team which encourages involvement of stake holders from the beginning.

(viii) Financial support

Financing of sustainable building projects are major problem unless if government driven.

(xi) Public-Private partnership

From case studies, most economic players agree that to undertake sustainable building projects a "purely public" or "purely private" mechanism will no longer fit the bill. It can be seen that Public-Private Partnerships (PPPs) are not simply a budgetary tool, but a fully-fledged instrument that encourages co-development and contributes at an operational level to general socio-economic growth.

4.2 OUTPUT

- **Proceedings of The Conference on Sustainable Building South-East Asia**
(distributed at the conference)
- ***Agenda 21 for Sustainable Buildings in South East Asia.***
This publication will be made available and distributed through CIB, UNEP and CTMC

5. SUGGESTIONS FOR SB05 TOKYO

(i) Awareness Programmes

The awareness programmes on SBC for South-East Asia need to be enhanced through Sustainable Building SEA Forum, SEA countries information exchange, SEA-EU & SEA-international exchange through meetings, websites or newsletters. Considerations for the development of a centrally coordinated activity with international supports and funding to undertake these activities are proposed.

A Sustainable Building Awareness Campaign should be considered as an outreach programme to promote the benefits of sustainable building. The campaign should target the general public, the design and building community and importantly education at all levels. In general it is believed that currently in South-East Asia the sustainable building idea simply does not have a high enough profile.

Elements of the marketing efforts mentioned above should emphasized on:

- Lifecycle cost savings of sustainable buildings (energy savings and employee productivity benefits)
- Natural evolution of building standards (changing needs from conventional designs to sustainable design incorporating performance requirements and needs for disabilities. This may be targeted to building designers and authorities, building

code/regulatory officials and related stakeholders to encourage understanding on the need for change)

- Health benefits of green buildings
- Targeted outreach to all education levels

(ii) Emphasis on SBC in education and research

The emphasis of SBC in education will provide students/academic the exposures to sustainability issues in a holistic manner, i.e. an integration of sustainable education principles into mainstream education (including tertiary level education and vocational training activities)

Sustainable construction education/research must be holistic in order to address environmental challenges, and understand systems, connections, patterns and causes. Such education must be practical and lead to actions for better environmental outcomes, not simply the accumulation of inert knowledge or impractical skills.

(iii) Development of expertise on SBC at universities

The development on SBC expertise plays a crucial role to pave the way towards sustainable building and construction.

(iv) Develop pilot projects to demonstrate the benefits of SB

Develop pilot projects to demonstrate the benefits of SBC and create bigger impacts on stakeholders and public.

To support sustainable building clients and convert new ones, there is a need for :

(a) credible evidence of the advantages of sustainability

(b) case studies of sustainable building materials and performance

© long-term studies of the value of environmental effects resulting from building materials and operations

(d) fiscal studies of capital and operating cost increments for sustainable features and

(e) research on the impact of sustainable building design and construction techniques on occupant productivity.

(v) Develop Builder Incentives

Financial disincentive to builders is shown to be one of the major obstacle to the mainstreaming of sustainable building. The challenge is to create a structure that allows some of the value of the long-term benefits to be transferred to the builder to offset first-time costs.

- Proposal for builder incentives calls for a Sustainable Building fund where governments invest in public funds for energy efficiency, which could spark private sector activity in this area. This strategy could be effective in creating financial incentives to construct sustainable building.
- Development of government and industry-led voluntary initiatives to encourage best practice like 'Partners in Innovation' and the Construction Best Practice Programme', or Public-private partnership campaign - all with sustainability as part of their remit will raise awareness of the importance of sustainable construction.

Besides the above recommendations, legislation is seen as the only drive for all stakeholders to commit to sustainable building.

6. SELECTION OF SB05 TOKYO FUND SUPPORT PROGRAMME

Support recipients were selected based on the quality of the paper and presentation at SB04SEA. The authors indicated in blue are final recipients of the supports from SB05.

1. Sustainable Building and Construction in South-East Asia

*Dr. Faridah Shafii, [M. Zahry Othman](#), Construction Technology and Management Centre, Universiti Teknologi Malaysia
(SBC case studies of SEA/ Regional report)*

2. Catalyzing Energy Efficiency & Renewable Energy Efforts in Malaysia

*[Dr. Anuar Abdul Rahman](#), Malaysia Energy Centre, Malaysia
(Case studies)*

3. Sustainable Development Planning and Construction in Putrajaya

*[Dato' Jebasingam Issace John](#), Putrajaya Corporation, Malaysia
(Case Studies)*

4. The PTM ZEO Building

*P. E. Kristensen, IEN Consultants, Denmark & Malaysia; R. Khalid, Ruslan Khalid Associates, Malaysia;
[C. K. Tang](#), Virtual Environment, Malaysia
(Case Studies)*

5. Low Energy Office Building in Putrajaya, Malaysia : Case Studies and Innovation

*[A.K.Roy](#), A.R.Mahmood, Ministry of Energy, Water & Communication, Malaysia; O.Baslev-Olesen, S.Lojutin, CK.Tang, KS.Kannan, DANIDA
(Case Studies)*

6. Potential Development in Environmental Design and Sustainable High Rise Buildings in Malaysia

P.Jones, Cardiff University, UK; [E.Salleh](#), Universiti Putra Malaysia, Malaysia

7. Improvement to Thermal Comfort in Low-Income Housing in Malaysia

[S. H. Ibrahim](#), University Malaysia Sarawak, Malaysia; J. A. Tinker, University of Leeds, UK

8. Awareness, Education and Training Towards Sustainable Energy and Development in Malaysia

[M.Z.Kandar](#), A.M.A.Rahman, CETREE, Universiti Sains Malaysia, Malaysia

9. Reducing Urban Heat Island Effect with Thermal Comfort Housing and Honeycomb Townships

[M. P. Davis](#), N. A. Nordin, University Putra Malaysia, Malaysia; M. Ghazali, M. J. Durak, Arkitek M. Ghazali, Malaysia; G. Reimann, Technical University of Denmark, Denmark

10. Public Housing Schemes for the Poor in Kerala: Recommendations for Sustainable Housing

[D. G. Nair](#), C.H.F. Hendriks, A.Fraaij, P.J. Vergragt, B.Enserink, Delft University of Technology, Netherlands; G. Gopikuttan, N.S.S College, India; R. Dalmeijer, Straw Bale Network, Netherlands