

ICEBO/APCBC

Asia Pacific Conference on
Building Commissioning

2006.11.7

Opening Address

Energy/Environment/Commissioning



/NESTEC

Nobuo Nakahara

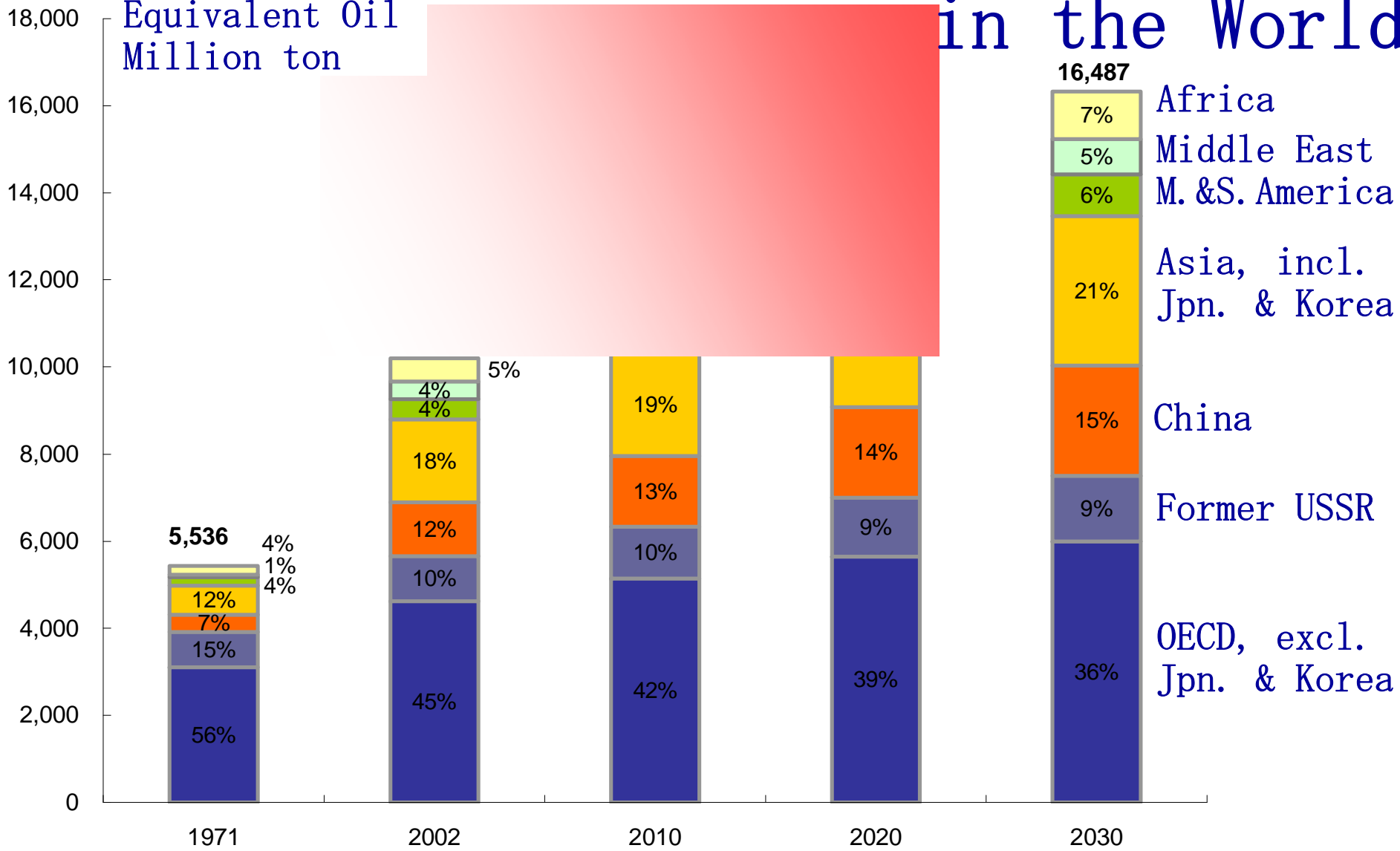
Call for participation to International Conference for Asia Pacific at NCBC 2006

- Asia Pacific Conference on Building Commissioning, APCBC has been planned to kick-off in Shenzhen in Nov. 6-8, 2006, together with
 - Annex 47, IEA/ECBCS
 - ICEBO 2006
- HKBCxC, Hong Kong Building Commissioning Center, is to co-sponsor and other bodies from mainland China and Asian countries are expected to participate.
- Commissioning bodies such as PECCI, BCA, etc. in USA are desired to participate in this

Actual and Estimated Energy Demand in the World

ESL/IC 06-11-224

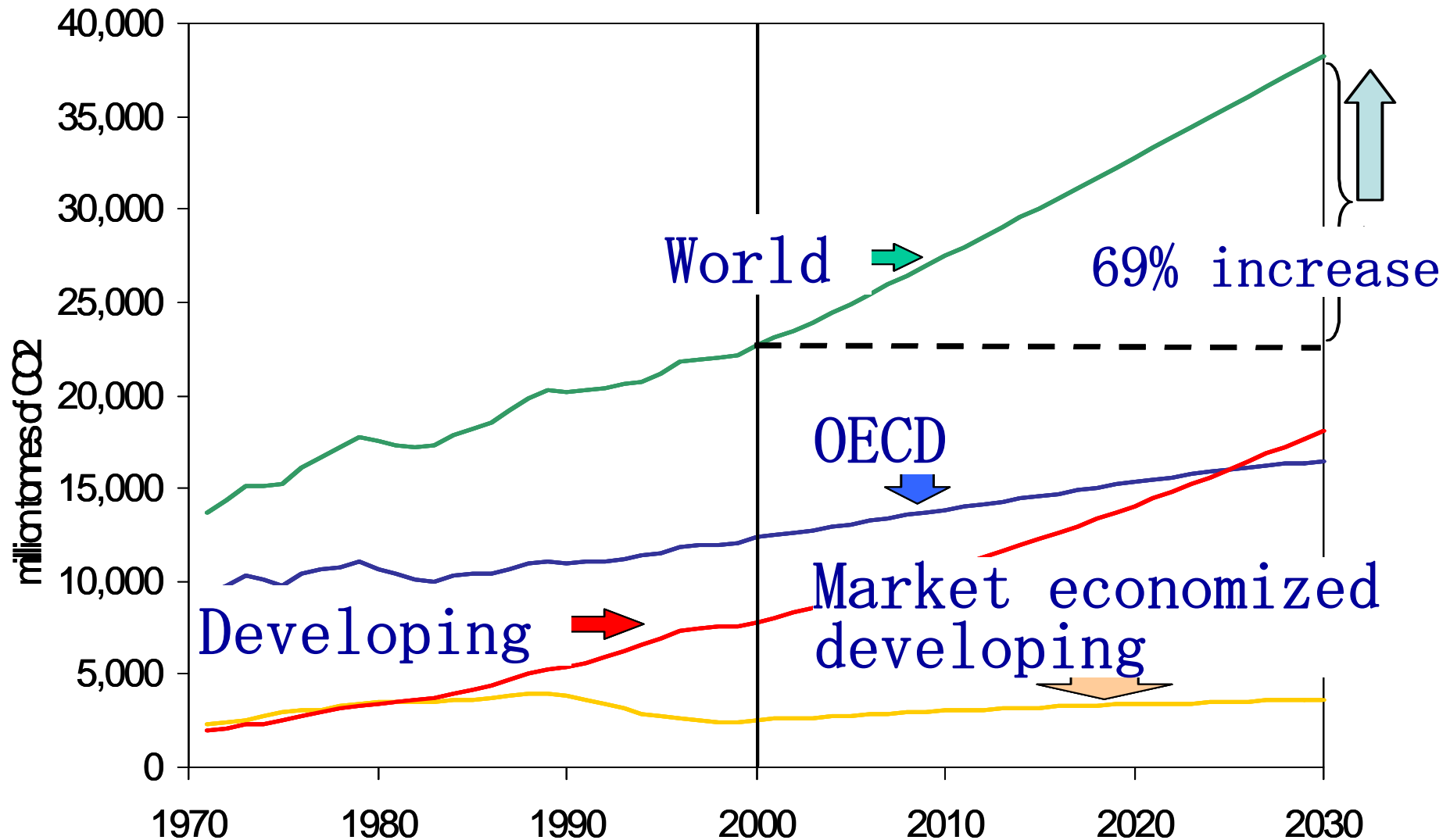
Equivalent Oil
Million ton



Proceedings of the Sixth International Conference for Enhanced Building Operations, Shenzhen, China, November 6 - 9, 2006

From IEA/World Energy Outlook 2004

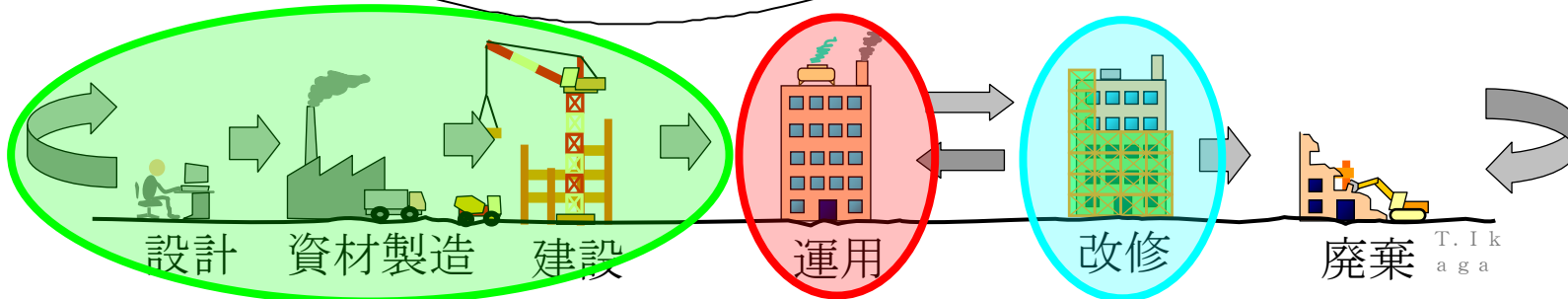
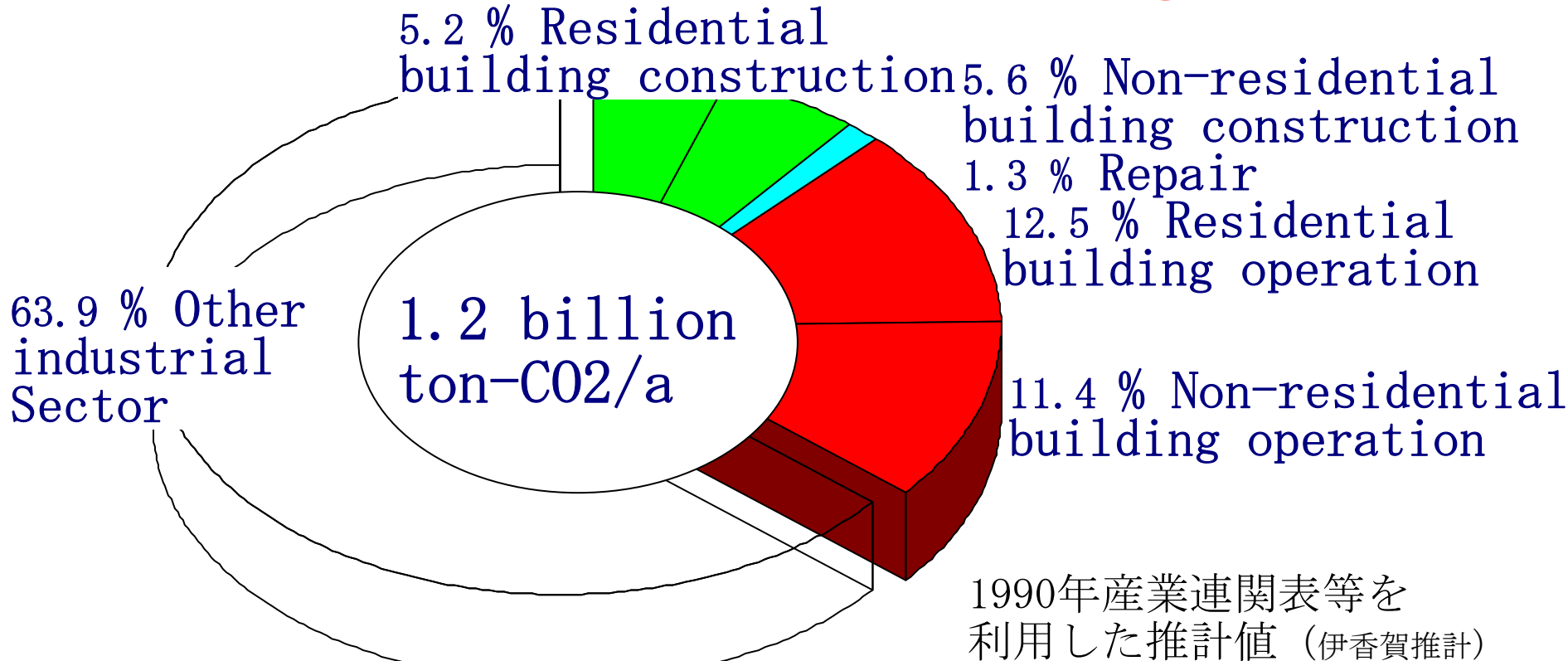
Energy-originated CO₂ in the World



Proceedings of the Sixth International Conference for Enhanced Building Operations, Shenzhen, China, November 6 - 9, 2006

From data

Origin of CO2 generation in Japan, ESL-C-06-11-324 A third comes from Building sector



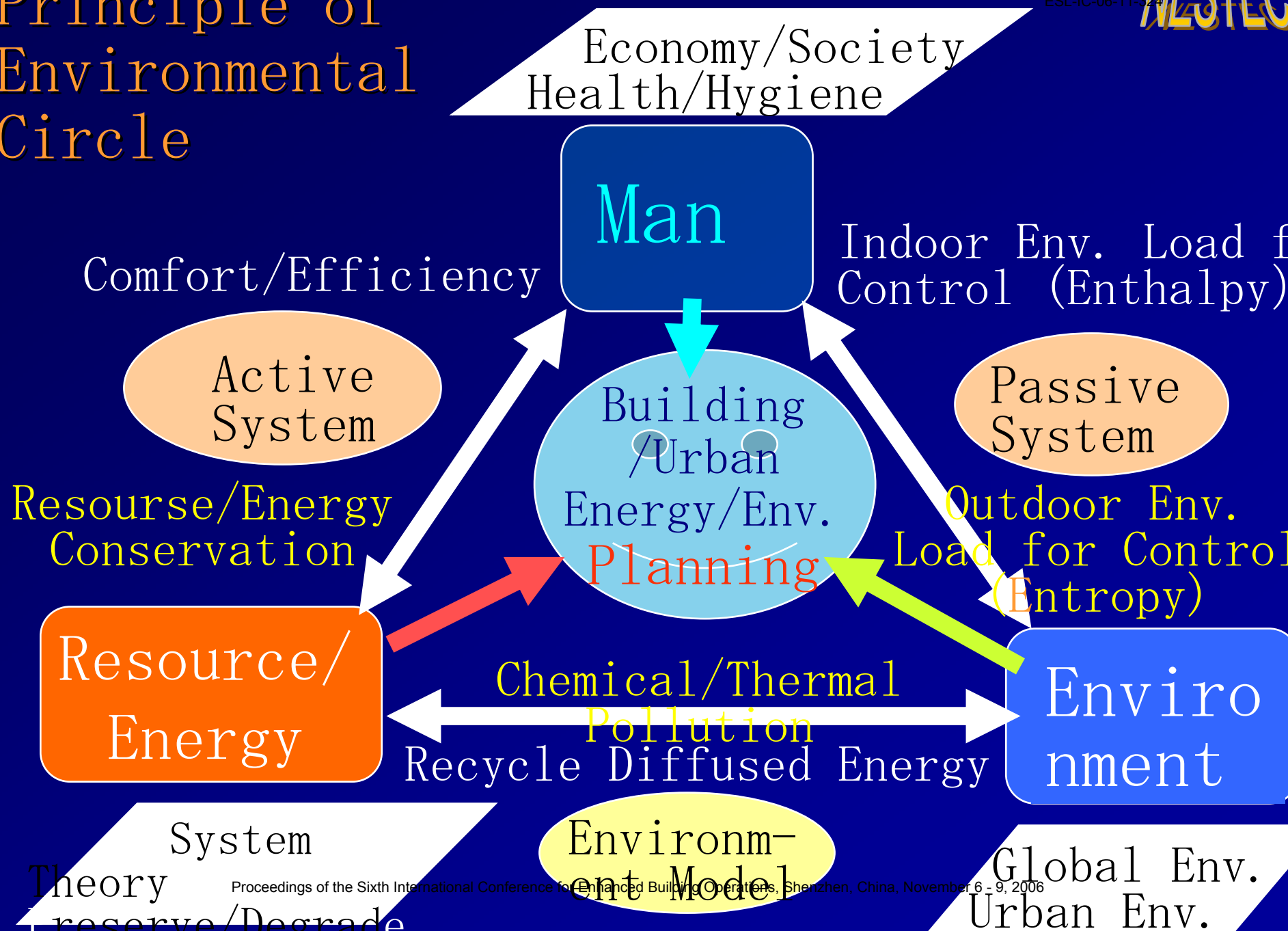
Four Principles of Reformation of Building, Town and Globe

- Environmental Circle Principle
- Energy Conservation Principle
 - Commissioning Principle
 - Evaluation Principle

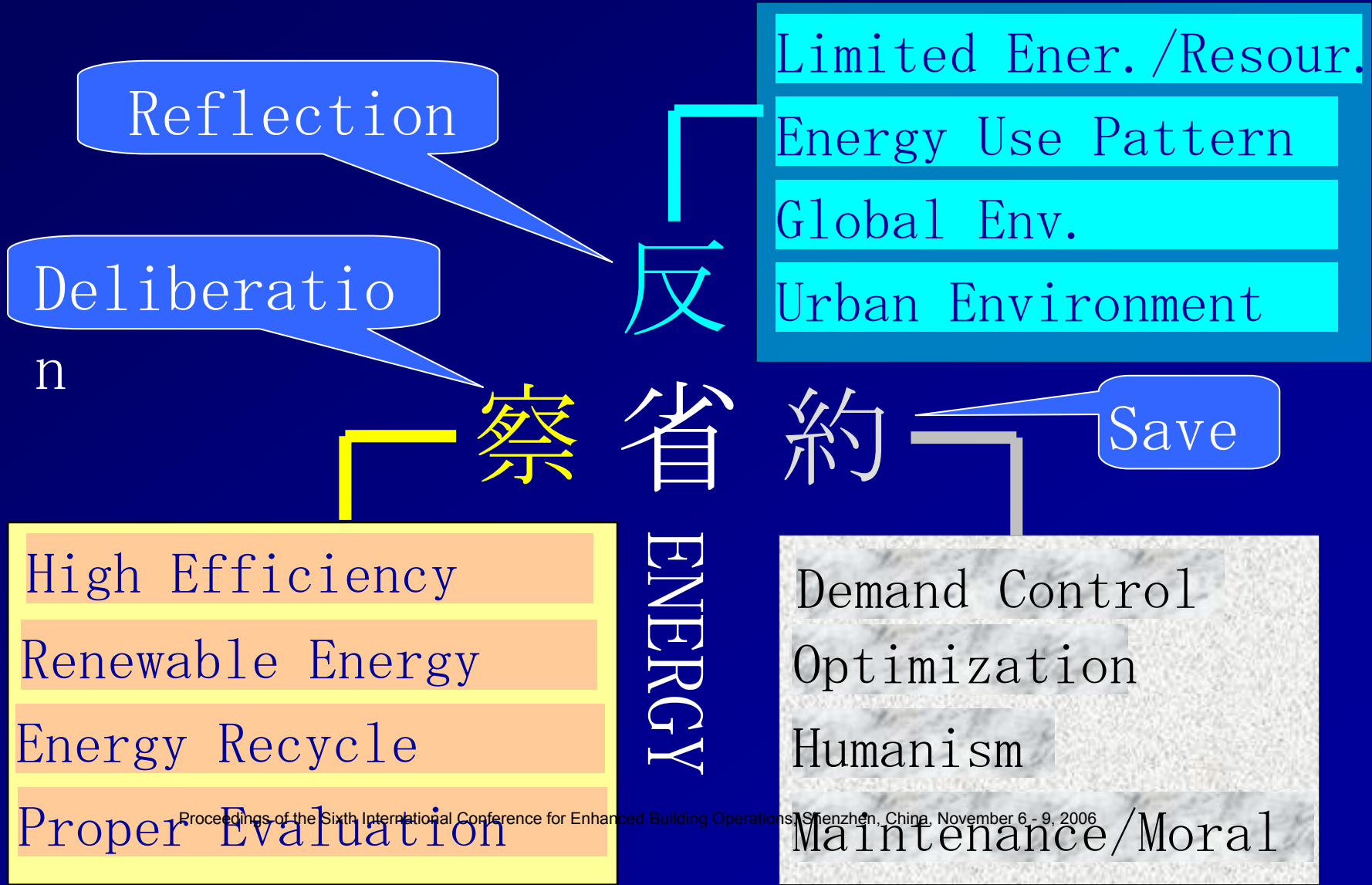
How Building & Urban Energy System shall be completed and maintained?

- Mechanism of Urban Environment State Change
 - Virtual/Vicious Circle of Man-Environment-Resource/Energy
- Principle of Energy Conservation
- Recognize the Big Effect of Commissioning Process from Program to Maintenance
- Proper and Unbiased Evaluation System for Energy / Environment/ Sustainability

Principle of Environmental Circle



Energy Conservation Principle



Commissioning Application

- Life Cycle Commissioning
- Initial Commissioning
 - Total Initial Commissioning)
 - Partial Initial Commissioning)
 - Ex1 : Acceptance Step Commissioning
 - Ex2 : Program Phase Commissioning
(Consulting)
 - Ex3 : Construction Phase Commissioning
- Retro Commissioning
- Continuous Commissioning

What is Commissioning (Cx) ?

--process definition

- the process to accomplish the real Owner's Project Requirements through building construction stage and continuing to operation and maintenance stage as the life-cycle process

--global definition

- Commissioning is performed in order to keep the system in optimal condition through the life of the building from the viewpoints of environment, energy and facility usage

Who manages Cx Process?

Commissioning Authority (CA)

CA shall be

- nominated and paid directly by owner,
- individuals or organizations which are socially acknowledged as a bearer of fair mind with sufficient professional knowledge and management capability,
- the third personality concerning the project in concern
- preferably, standing-alone professional independent from design team and construction team

Commissioning phases

Production Stage

Program Phase (Pre-Design Phase)		Design Phase		Elabolation Phase
Program Step	Planning Step	Preliminary Design Step	Working Design Step	Elabolation Step

CA

Des.

Cont

RFP_CA

RFP_Des

Design
Doc.

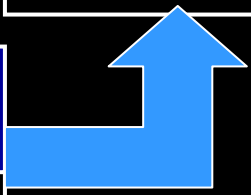
Bid/Order
Contracting

OPR

Cx Spec.

Cx Plan

Const.
Doc



Production Stage

Operation & Maintenance Stage

Construction Phase

Operation Phase (Occupancy and Operations Phase)

Construction Step

Acceptance Step

Post-Acceptance Step

Post-Post-Acceptance Step

ont.

Const. Doc.

Syst. Manual

TAB

FPT

Season. FPT

Re-Cx,
On-going Cx
Stage

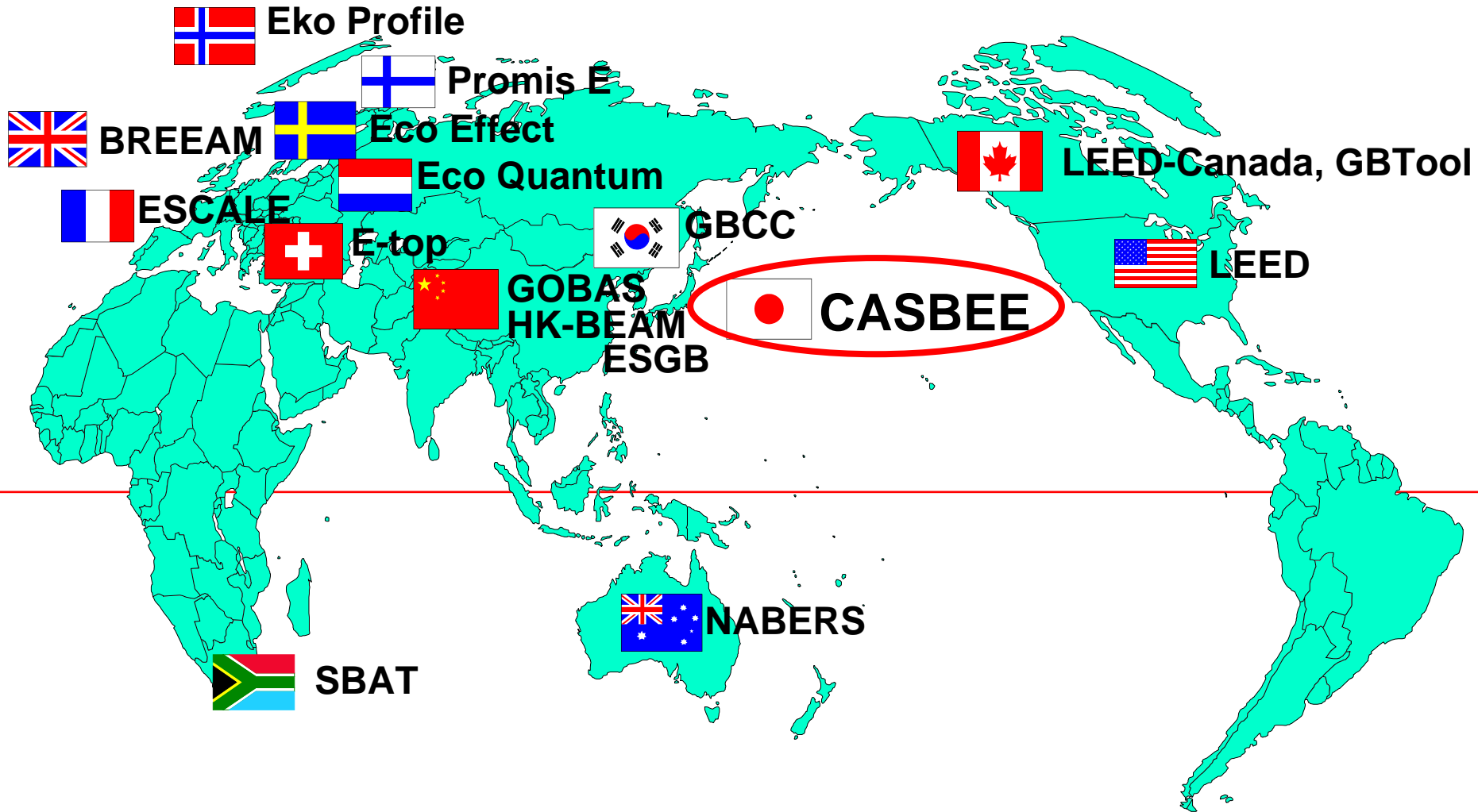
Cx Plan_update

Train.
/edu.

Final
Cx

Report

Evaluation System of Sustainable Building ESL-IC-06-11-324



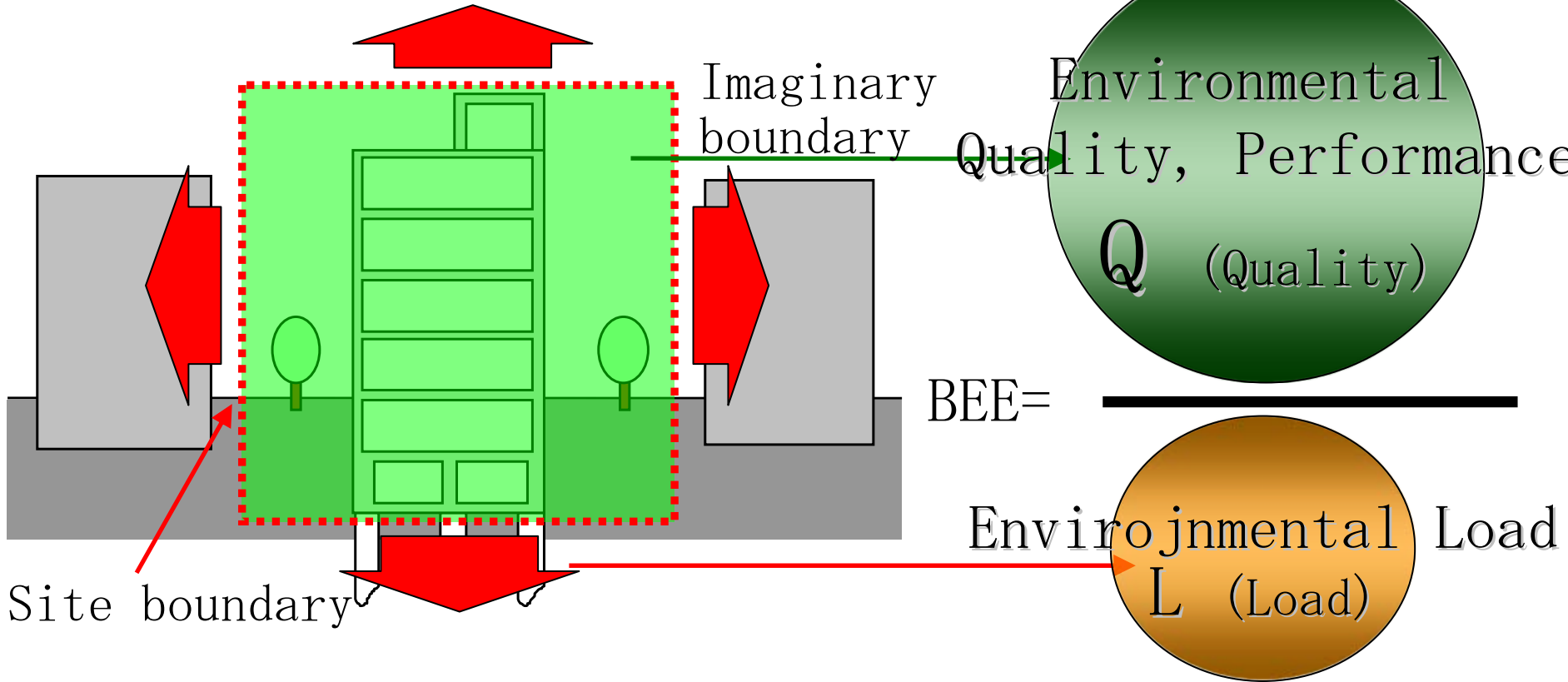
LEED-NC 2.2 Prerequisite 1: Fundamental Cx of Building Energy Systems

- Designate an individual as the Commissioning Authority (CxA) to lead, review and oversee the completion of the commissioning process activities.
- The Owner shall document the Owner's Project Requirements (OPR)
- Develop and incorporate commissioning requirements into the construction documents.
- Develop and implement a commissioning plan.
- Verify the installation and performance of the systems to be commissioned.

CASBEE (Japan)

ESL-IC-06-11-324

Comprehensive Assessment System for Building Environmental Efficiency



Realize Buildings with better Q&P

⇒ BEE (Building Eco Efficiency)

emitting less Environmental Load

Proceedings of the Sixth International Conference for Enhanced Building Operations, Shenzhen, China, November 6 - 9, 2006

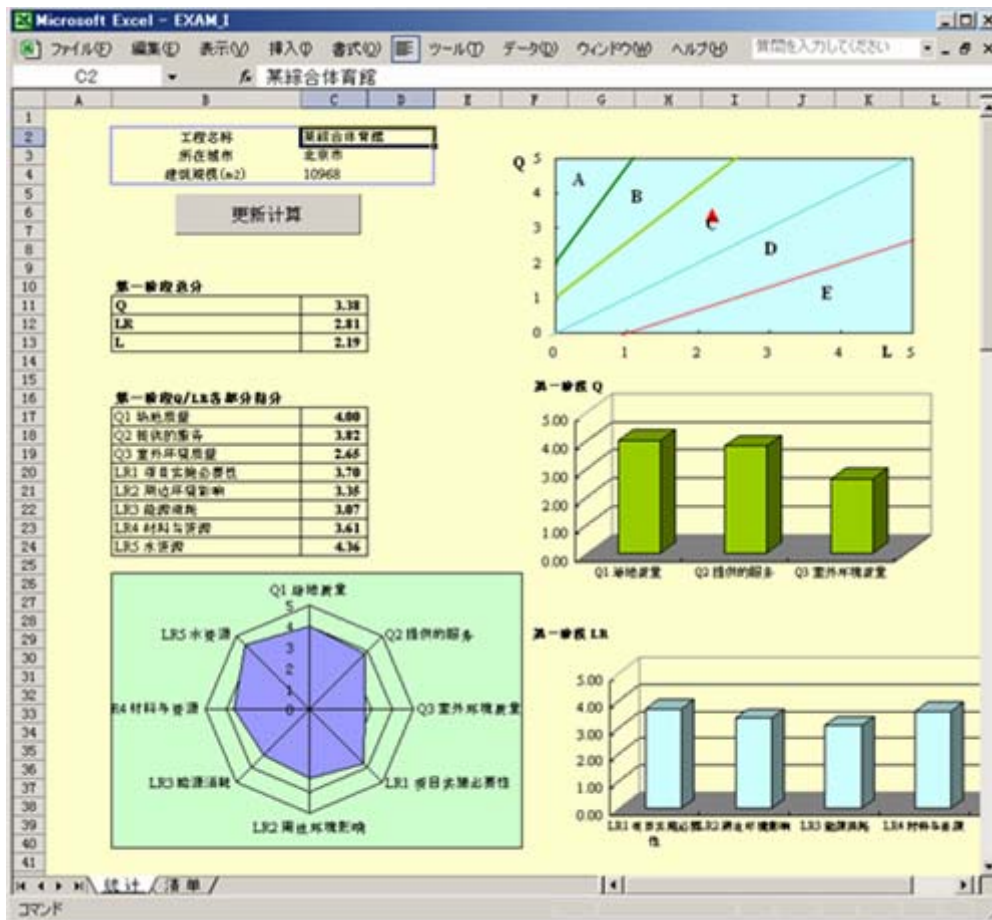
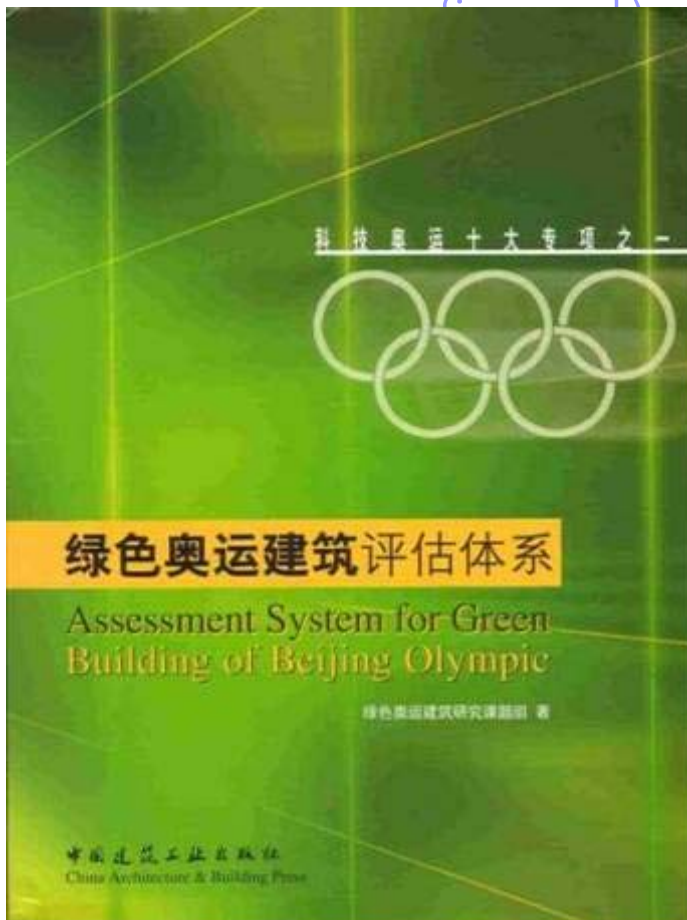
伊香賀俊治 (慶応大)



GOBAS (China)

ESL-IC-06-11-324

(For 2008 Beijing Olympic Facilities, 2003.8)
(CASBEE was



グリーンオリンピック建築研究チーム著： 清华大学（江教授、秦教授、朱教授ほか）
+ 北京市持続的発展科学技術促進センター（藤センター長ほか）+ 中国建築科学研究院
+ 北京市建築設計研究院 + 中国建築材料科学研究院 + 北京市環境保全科学研究院ほか

Proceedings of the Sixth International Conference for Enhanced Building Operations, Shenzhen, China, November 6 - 9, 2006

伊香賀俊治 (慶応大)



Merit of Commissioning

For Building Owners;

- Building truly match Owner's requirements
- Realize High Quality Products and Maintenance
- Contribution to Facility Management
- Obtain Cost Efficient Building through Lifecycle
- Satisfactory Room Environment
- Added Value to Real-estate
- Reasonable rent
- Satisfaction through Energy Conservation

Merit of Commissioning

For Design Professionals:

- Raises Quality of Design
- Clarify Roles and Responsibility of Designers
- Economical Merit
 - Fair amount of fee deserving its quality
 - Reduced Troubles
 - Cost Effective Design
- Raised Fame as Design Professional
- Act as CA based on their experience

Merit of Commissioning

For Contractors:

- Clarify Scope of TAB
- Reduce Troubles during Construction and after Occupancy
- Economical Merit
 - Clarified Scope and Responsibility for TAB and Cx-related Works
 - Reduce Risks for Trouble Solution Expense
 - Clearly define Fee for Design Support Works
- Clearly define Acceptance Procedure
- Act as CA based on their experience

Merit of Commissioning

For O&M Engineers:

- Earlier Participation to Cox Team Process
- Improved Maintainability
- Improved System Documentation to Operate
- High Quality Accepted Systems through Complete TAB, FPT process
- Acceptability to Instruction and Guidance by CA as Consultant
- Improved Status of O&M assisted by Deepened Knowledge and Improved Working Environment

World Commissioning History World/Asia

ESL-11-06-11-324



- 1970s Cx Activ. started, USA
CIBSE Code on Cx
- 1979 ASHRAE Symp. on TAB
- 1986 ASHRAE Symp. On Cx.
- 1988 First SIBSE Code in UK
- 1989 First AHRAE Cx Guide
- 1991 Annex25, BOFD
- 1993 First NCBC held, PEI
- 1995 Annex34, BOFD Demo
- 1996 ASHRAE New Cx Guide
- 1999 BCA (US) established
- 2000 Annex40, HVAC Cx
- 2003 UK Cx Code M issued
- 2005 ASHRAE/NIBS Cx Process
200X-0
issued
- 2006 ICFRC 2006 (Shanghai)
- 2006 ICFRC 2006 (Shanghai)

Asia

- 1980s (HK) TAB/Cx Activity started
- 1987 (J), First introduction of Cx
- 1991 (J, C) Annex25
- 1995 (J, HK) Annex34
- 1997 (J) Cx Activity started
- 1998 (J) First Cx Guide Draft
- 2000 (J, HK) Annex40 participation
(J) First Application of I
- 2003 (TW) TAB/Cx began to work
- 2004 (J) BSCA established
(HK) HKBCxC established
- 2005 (J) Cx Guideline issued
- 2006 APCBC 2006 11 (Shenzhen)

Annex47, Retro-Cx,



Thank you
for your participation