Nordic-Chinese
Energy & Climate Day
25 JUNE 2010

NPU-KTH的合作及对北欧-中国更广泛合作的展望

Collaboration Between NPU and KTH & Perspectives for Broader Collaboration on the Nordic-Chinese Scale

EXPO
SHANGHAI CHINA

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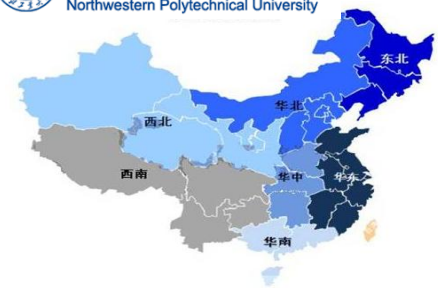
1.Collaboration between NPU and KTH

西北工业大学和瑞典皇家工学院的合作

1.1 Initiation of the Collaboration 合作的起因



- **Common concerns of the building related energy and environmental problems.**
- **Common interests in developing sustainable buildings.**
- **Common understanding of the need of cross-disciplinary collaboration**

- 对资源与环境问题的共同关注
- 对发展可持续建筑的共同兴趣
- 对跨学科合作需求的共同理解

1. Common concerns of the building related energy and environmental problems
对建筑相关资源与环境问题的共同关注

50%of steel

40%of wood

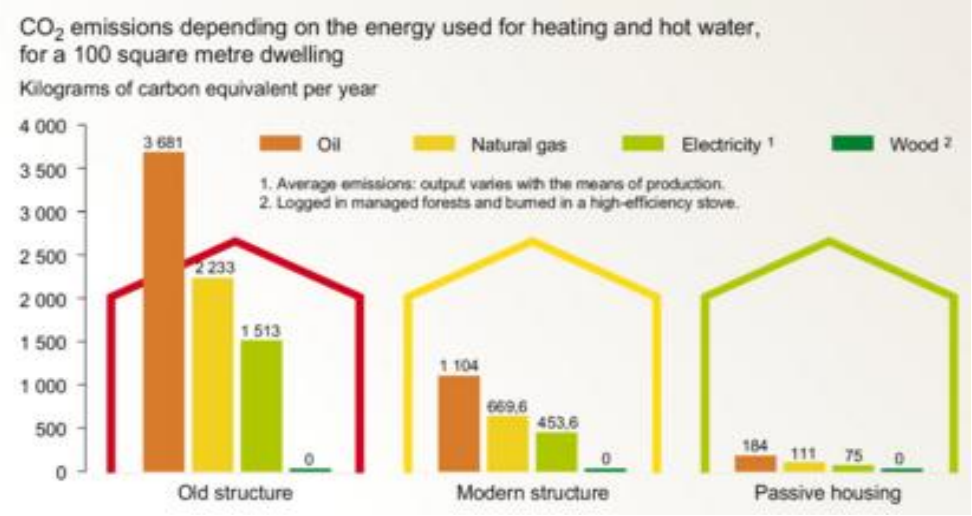
12%of water

30-50%of energy

30%of pollutions and CO_2 emission

40%of wastes

2. Common interests in developing sustainable buildings
对发展可持续建筑的共同兴趣



Resource: The UNEP/GRID-Arendal Maps and Graphics Library

3. Common understanding of the needs for cross-disciplinary collaboration
对跨学科合作需求的共同理解

Sustainable buildings need to combine attractive building design with a variety of factors related to different disciplines.

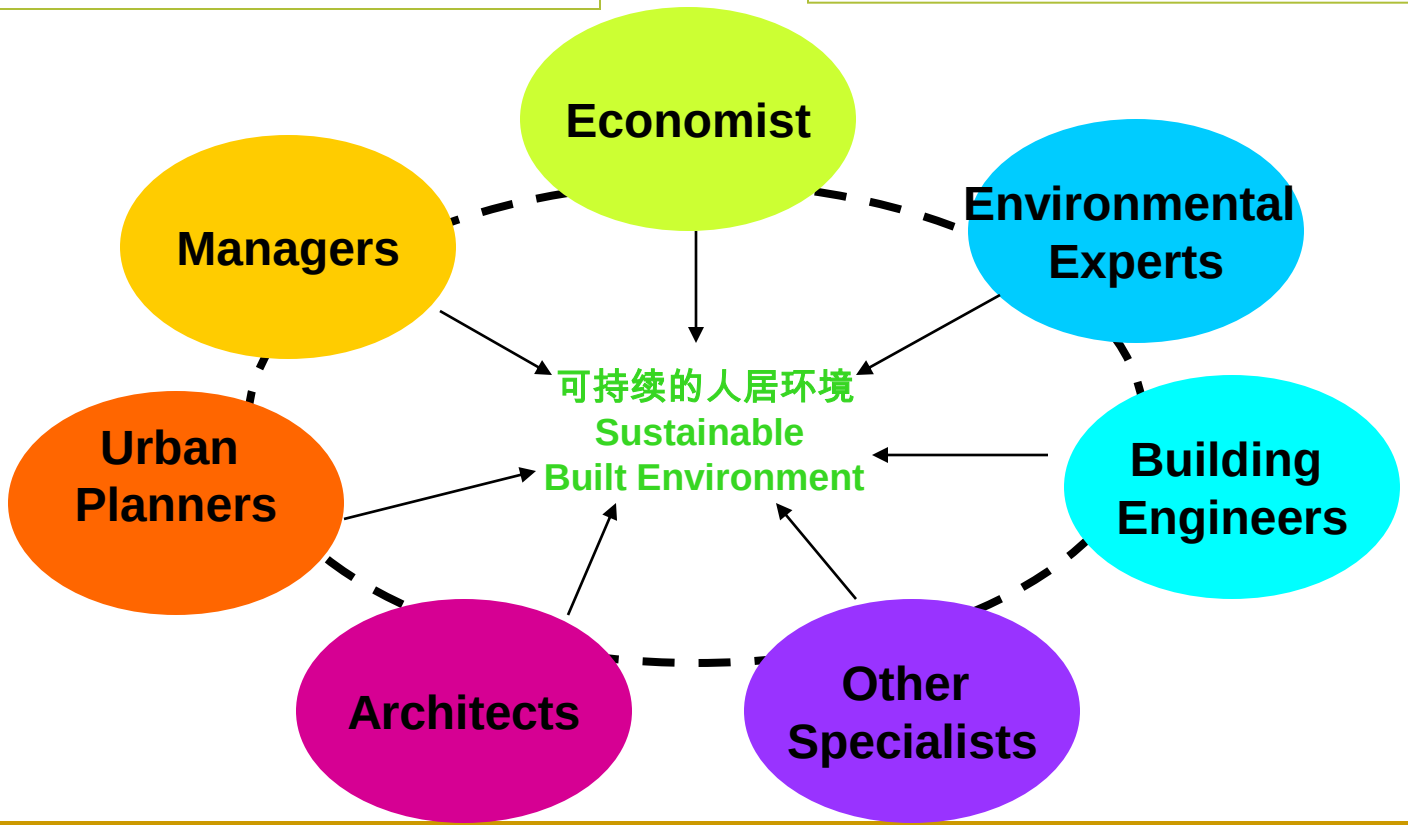
可持续建筑，需要兼顾建筑的艺术表现与多学科领域的多种相关因素。

NPU
Sustainable Building and Environmental Research Institute

西北工业大学
可持续建筑与环境研究所

KTH
Division of Sustainable Building System

瑞典皇家工学院
可持续建筑体系分部



1.2 On-going Collaboration 正在进行的合作

Joint Education 合作教育

PhD research 博士研究

1 Resource-Efficient Office Buildings – An Integrated Approach to Architectural and Building Service Systems Design Using Building Information Modeling.
2 Exergy Efficiency in the Architectural and Building Service Systems Design of Office Buildings.

1. 资源高效的办公建筑 – 基于建筑信息模型的建筑与设备系统的集成化设计途径
2. 办公建筑中建筑与设备系统的高能效设计.

PhD students from NPU discuss with their supervisor in KTH

NPU的博士生和KTH的导师

Joint master and undergraduate education 合作硕士和本科教育

Jointly participate in the EU Erasmus Mundus MSc. program hosted by the Department of Energy, KTH

共同参加KTH主持的Erasmus Mundus欧盟联合硕士教学计划

European joint Masters in Management and Engineering of Environment and Energy

Yu LIU
School of Mechanics, Civil Engineering and Architecture
Northwestern Polytechnical University
Xi'an, Shaanxi, 710072, P.R. CHINA

Nantes, 21 OCT. 2009

Re: Letter of selection for teaching participation in the European joint Masters in Management and Engineering of Environment and Energy (ME3)

Dear professor,

The ME3 Consortium is very pleased to inform you that you are awarded the Erasmus Mundus scholarship within the framework of the ***ME3 European joint Masters in Management and Engineering of Environment and Energy***.

The ME3 consortium is composed of:
- Ecole des Mines de Nantes, coordinating institution (EMN, France)
http://www.mines-nantes.fr/
- Universidad Politecnica de Madrid (UPM, Spain)
http://www.upm.es/
- Kungliga Tekniska Högskolan (KTH, Sweden)
http://www.kth.se/
- Budapest University of Technology and Economics (BUTE, Hungary)
http://www.bme.hu/
- Queen's University of Belfast (QUB, UK)
http://www.qub.ac.uk/

As a "scholar" you are invited to take part in the teaching activities of the ME3 Masters course in the hosting institution namely Kungliga Tekniska Högskolan.

This scholarship amounts to 4,333€ for a 4-week stay, to be scheduled between September and December 2010, it will cover travel and living expenses while in Stockholm.

For further details regarding the ME3 Masters course, please visit our website (http://www.mastereurope-me3.org) and contact the local coordinator at KTH:

Mr Andrew MARTIN: Andrew.Martin@energy.kth.se

Looking forward to welcoming you in Kungliga Tekniska Högskolan.

Yours faithfully,

Coordinator of the European joint Masters ME3

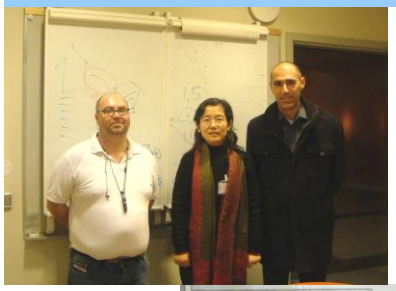
Florent Ghigliazza, Ph.D., P.Eng.

Jointly participated in the master and undergraduate program provided by the Architecture Department of NPU.

共同参加NPU的本科及研究生教学活动

Jointly establish collaboration with different local stakeholders both in China and Sweden
在中瑞两国共同建立与地方机构的合作关系

Research institutes
研究机构



Governments
政府部门

Design companies
设计公司

1.3 Long-term goals
远期目标

- Establish a Sino-Swedish Sustainable Building Alliance that will include the participation of a greater number of leading Swedish and Chinese universities, research institutes, as well as key partners from the public/private sector.

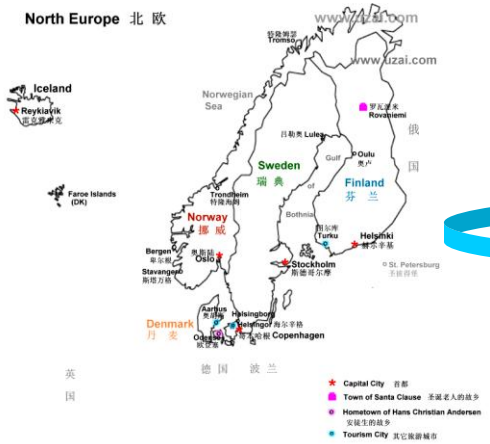
- Develop new PhD-program at NPU and KTH in the area of Sustainable Architecture and Built Environment.

- Develop a long term collaboration between academic and industrial partners in Sweden and China, focused on implementing best building practice in both countries, pushing the limit of what can be achieved towards accelerating the transition to a sustainable built environment within the next few decades.

- 建立“中瑞合作可持续建筑研究机构”，成员来自中瑞两国的高校、研究机构、以及其他公有和私立部门。
- 在NPU和KTH两校的可持续建筑与环境学科建立新的博士点
- 在中瑞两国的学术研究界和企业界之间建立长期的合作关系，通过最佳建筑实践，为促进可持续建筑环境的发展做出贡献。

2. Perspectives for broader collaboration on the Nordic-Chinese scale

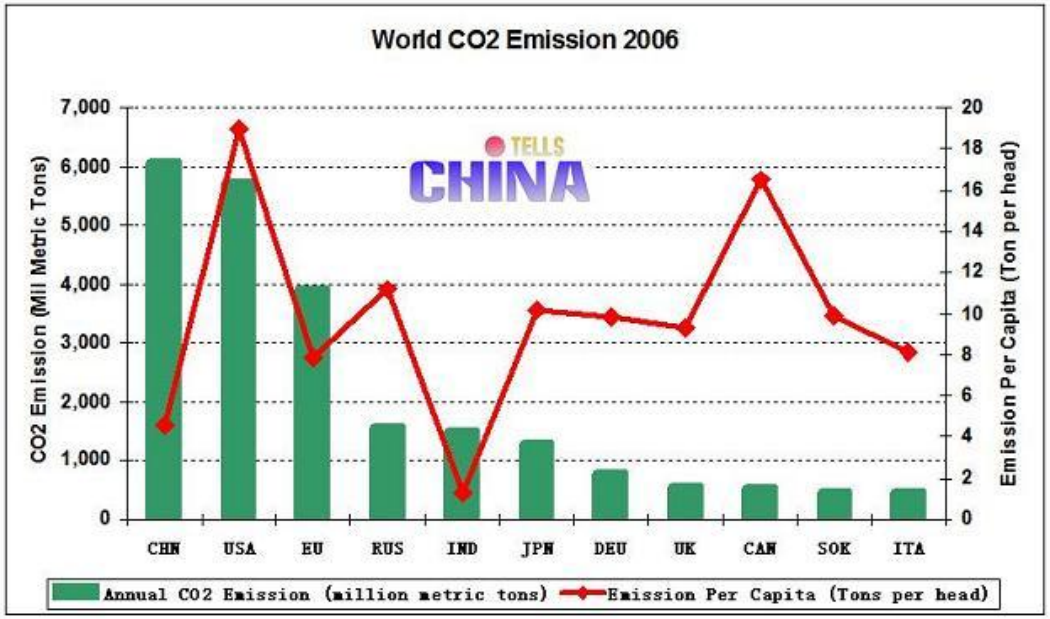
北欧-中国开展更广泛合作的展望



Current Conditions in China
中国现状

- China Government has announced to reduce CO2 emission to 40% of the 2005's level by 2020

- **Need to develop, identify, and adopt feasible new technologies and solutions towards achieving this target**

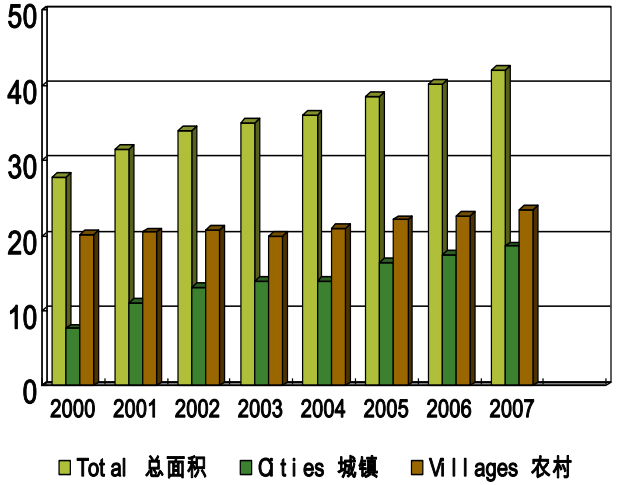


CO2 Emission of different countries

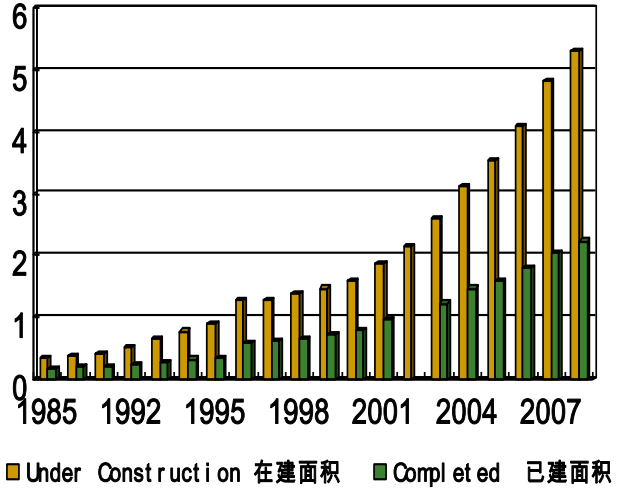
Resource:http://blog.chinatells.com/2009/10/3153

- Huge amount of existing and new buildings with a variety of climate and economic conditions in China

- **Need to develop, identify and adopt a variety of sustainable technologies and solutions for both new and existing buildings**



Floor Space of Existing Buildings in China
(Billion sq.m)
中国每年既有建筑面积 (单位：10亿平米)



Floor Space of New Buildings in China
(Billion sq.m.)
中国每年新增建筑面积 (单位：十亿平米)

Challenges 挑战

- How to enhance the opportunities for transferring sustainable technologies between Nordic countries and China, as well as integrating those in joint building projects？

- How to improve the multi-stakeholder collaboration across all segments of the building sector？

- How to develop innovative mechanism that will accelerate the adoption of advance technologies and sustainable solutions？

- 如何提升可持续技术在北欧国家和中国之间的引进、转化及合作应用？
- 如何提升不同利益群体之间的跨行业合作？
- 如何建立创新机制以加速先进可持续技术及方式的转化应用？

Opportunities 机会

- Increased awareness of the need of sustainable development

  可持续发展的意识已经提升

- Steady economic growth in China in the last three decades

  中国过去三十年来经济稳步增长

- Incentive regulations from governments and innovative researches and practices in both China & Nordic countries

  中欧政府的激励政策以及民间的创新研究与实践

- **Provide positive culture , economic and social bases for developing, adopting and implementing new sustainable technologies and solutions**

  为开发和转化新的可持续技术与方案提供了积极有利的文化、经济和社会基础

Hope we can join our forces in developing sustainable built environment and pursuing better city and better life in the future

Thank you!