The Art and Science of Smart Eco-City Development
智慧生态城市持续发展的艺术和科学技术
Cross Cultural Collaboration 跨文化合作

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Urban Population Growth 城市人口增长

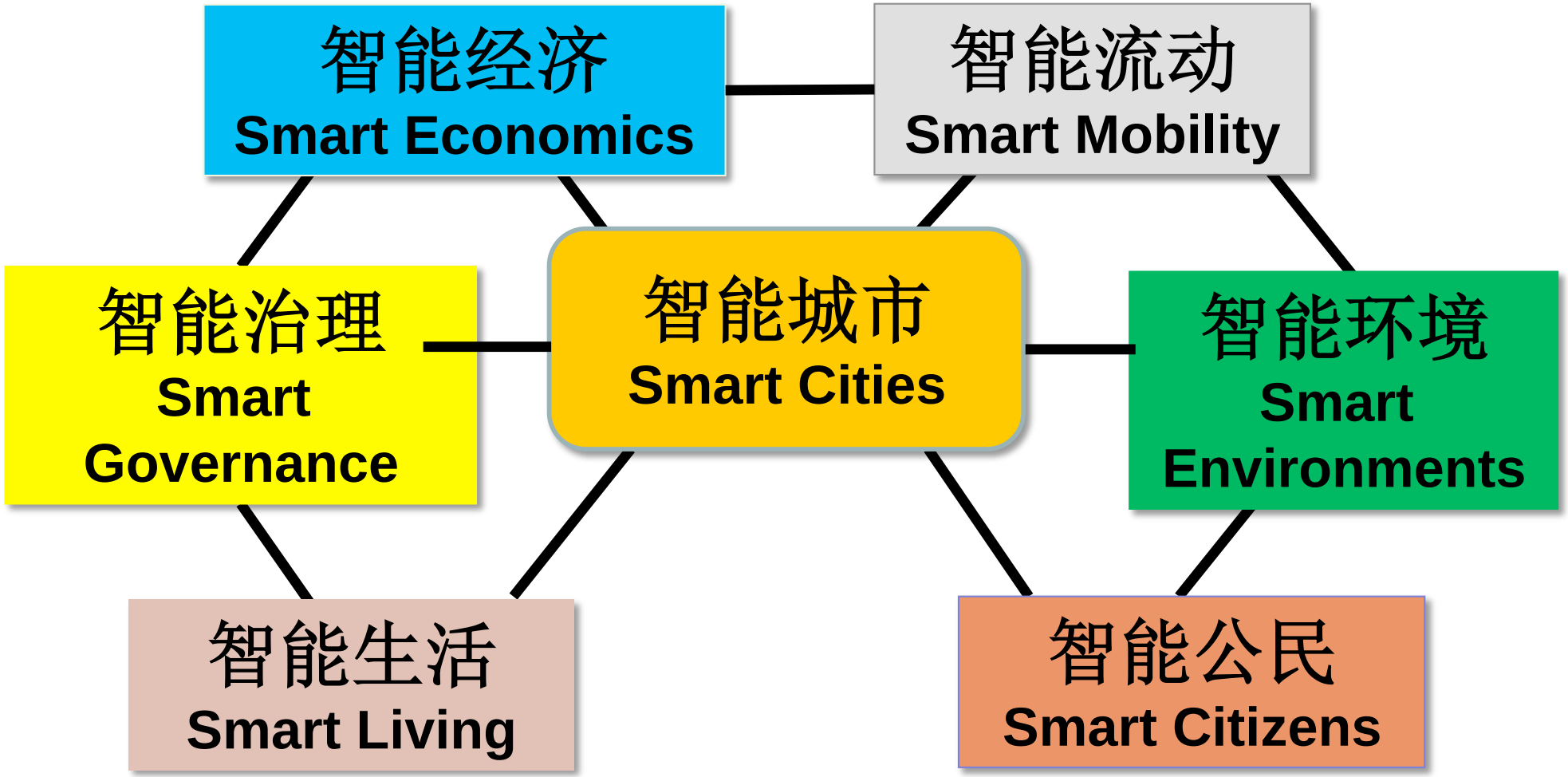
In order for the planet to support this many people, we have to avoid the mistakes that will come from not sharing perspectives. Let's find solutions that will work for all. We have no time to waste blaming each other or competing to waste more energy and resources. (JC)

地球怎么能支持这么多人口？我们需要避免过去的错误而合作创造新方法。没有可浪费的时间或资源,也不能够怪别人或跟别人竞争或浪费资源与能源。咱们反而合作吧。

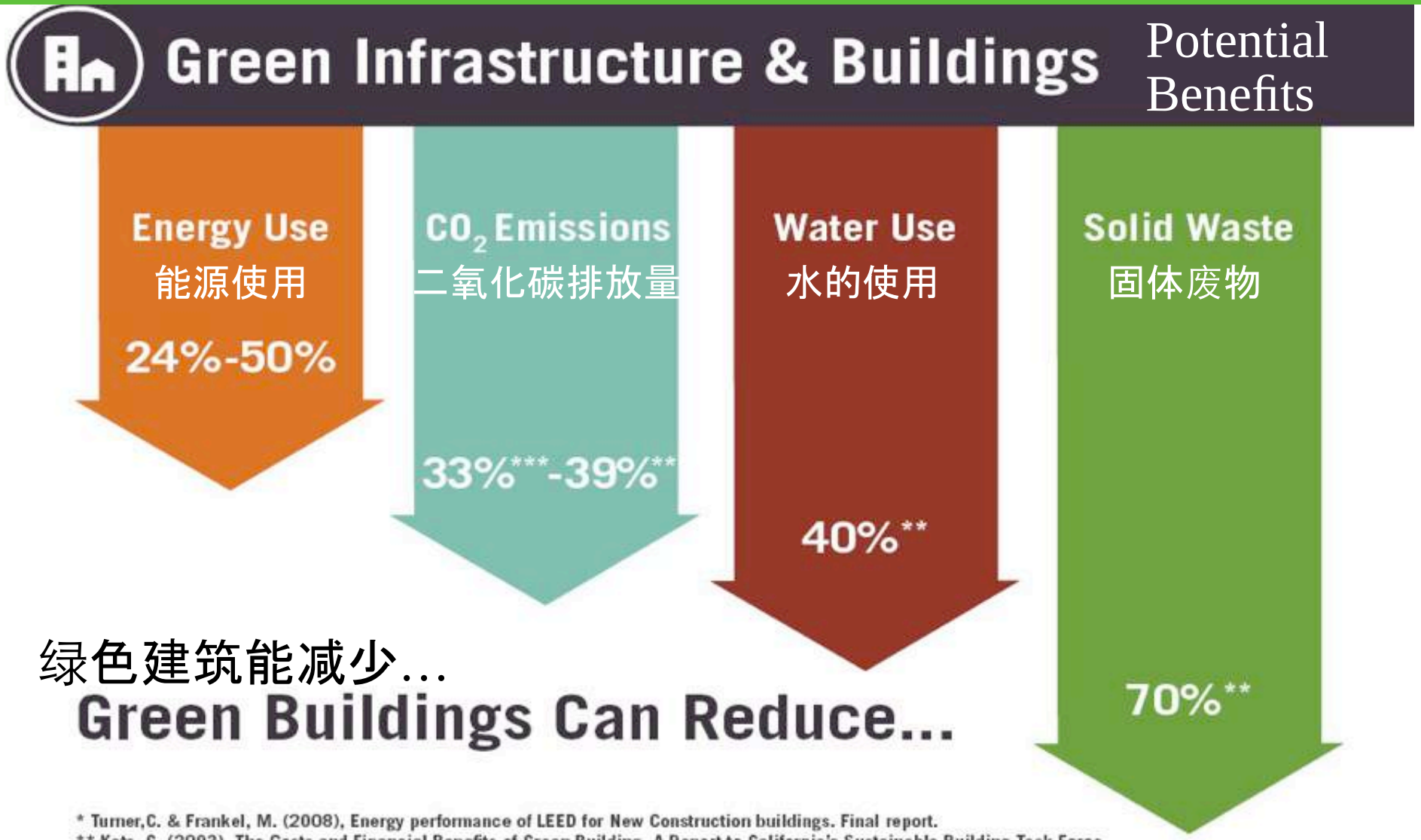
Smart Buildings & Ecocities 智慧生态城市和房屋

What Benefits will Smart Cities and Buildings Bring?

未来的智慧城市和房屋将会带来什麽利益？



绿色基础设施和建筑物的潜在好处



https://www.usgbc.org/ShowFile.aspx?DocumentID=1991

Biomimicry (Imitate Nature Holistically)

Beyond Buildings: Cradle to Cradle (Full Cycle) Design, Build, Operate …

超越建筑：摇篮到摇篮（全周期）设计，建设，使用 …

In nature, everything has value, whatever is waste for a species of one kingdom, is a nutrient for a living organism in another kingdom… because the five kingdoms of nature generate sufficient for everyone on Earth. www.Zeri.org

在自然界里, 一切都是有价值, 任何在一个生物是废物，在另一个生物界变成营养素。 自然界的五大生物界一起能够产生充足给人类的必需品。

http://zeri.org/ZERI/Case_Studies.html http://zeri.org/ZERI/The_Blue_Economy.html

Five Kingdoms of Natural Life		大自然的五个生物界	
1.	Bacteria,	细菌	
2.	Algae,	海藻	
3.	Fungi,	真菌	
4.	Plants,	植物	
5.	Animals,	动物	

Five Key Intelligences of Humans		人类的五关键意识和智能	
1.	Emotional	情感	
2.	Academic	学术	
3.	Artistic	艺术	
4.	Ecological	生态	
5.	Social-Organizational	社会和组织	

Social Organizational Intelligence includes open data sharing as the basis for mutual benefits

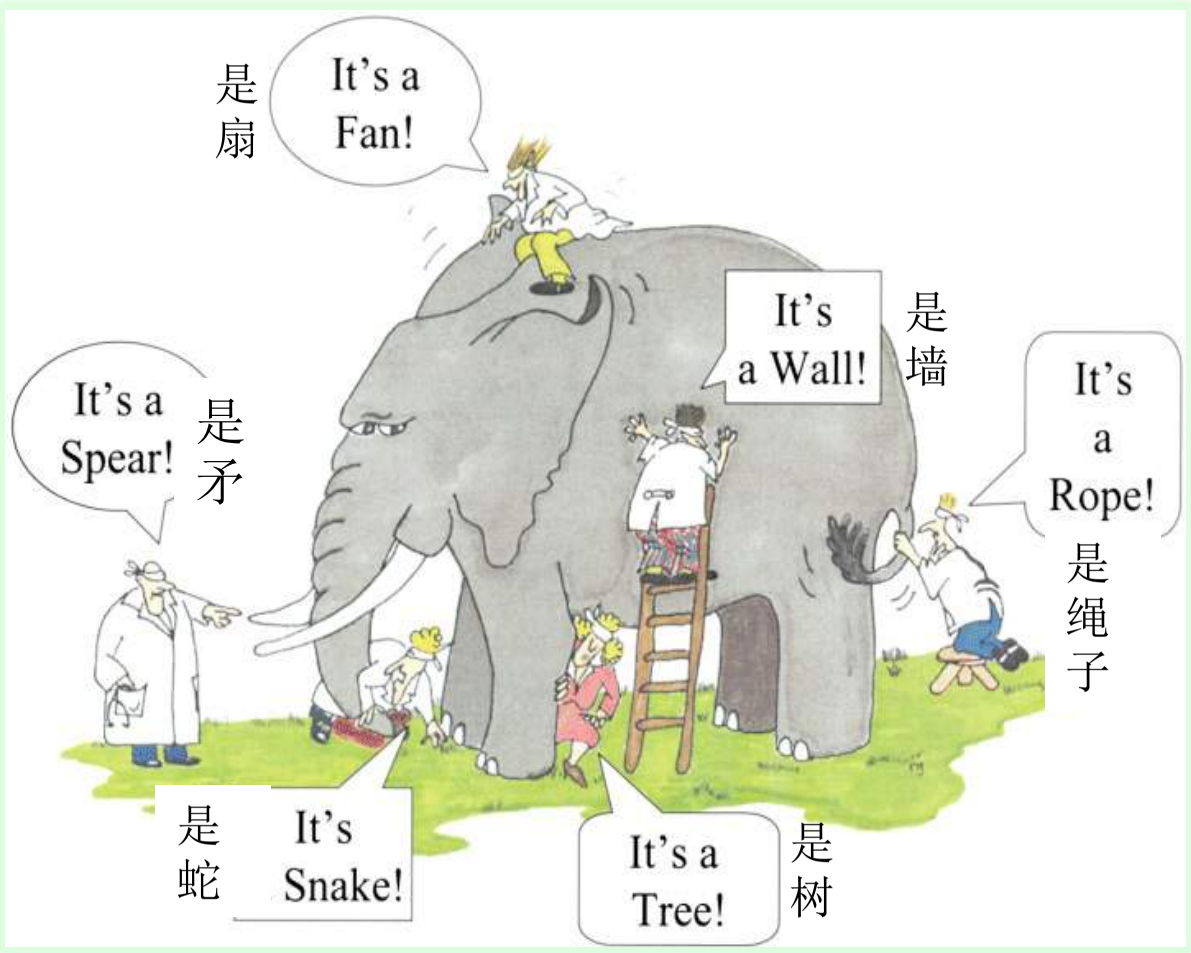
社会和组织智能包括利用数据为基础而合作实现共有利益

How shall we integrate them? 我们怎么样使一体化

Can We Illuminate Stakeholder Blind Spots!
我们能够照亮利害相关着的盲区

Blind men and the elephant:

Every one of them is correct within the limits of their perceptions.



瞎人摸象

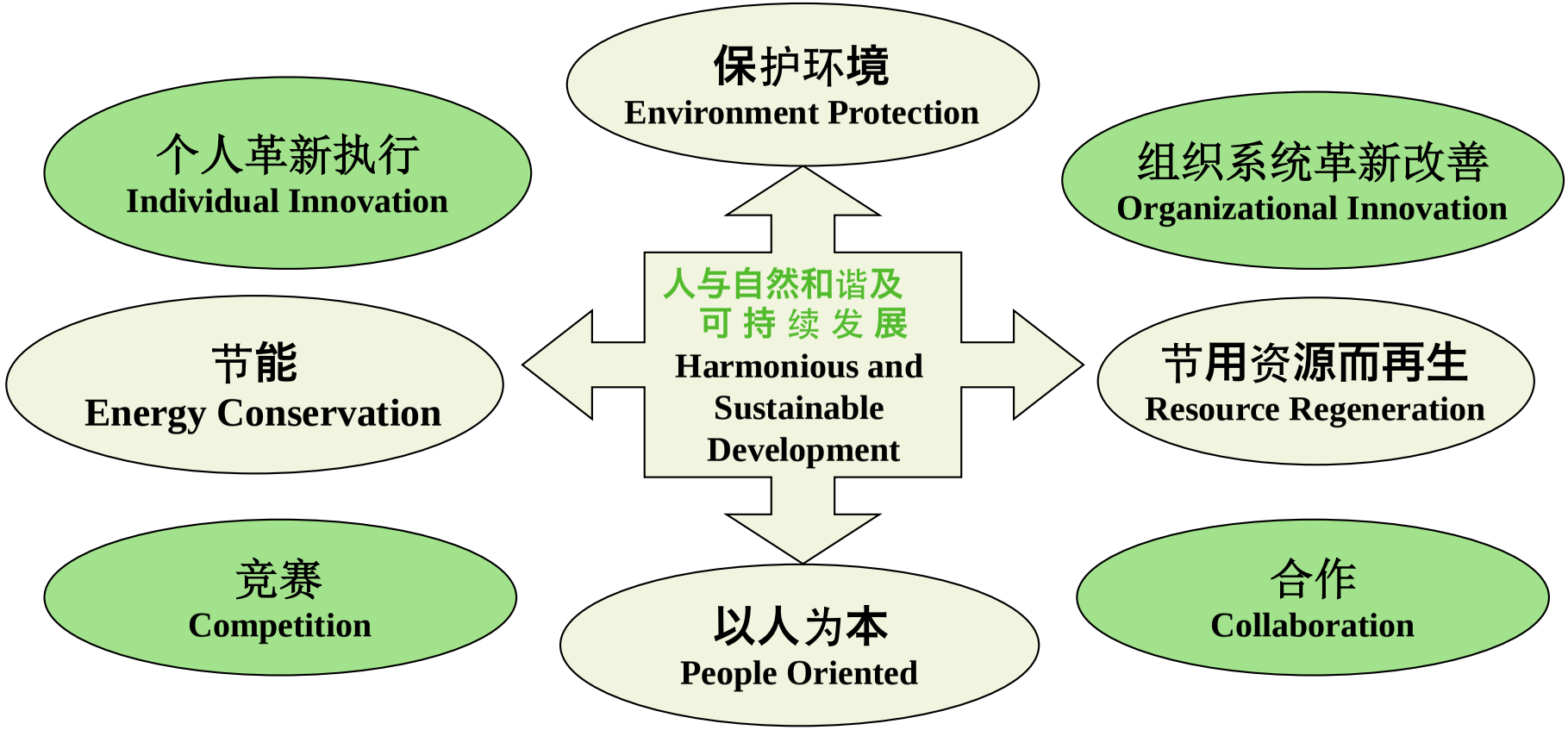
都正确在他们的感觉范围内。

把冲突改成合作 Convert Conflict into Collaboration：Make Some Suggestions 提出建议

1. Integrate the Five Human Intelligences, Five Kingdoms & Stakeholders through Dynamic Organizational Models

One Example: Chinese Yin/Yang Balancing Model for Cities 城市模仿阴阳模式

(Modified by JTC, including green circles) Any other suggestions?



Chinese Planners: Xu Qiang, Shanghai Building Science Research Institute & SCRIBS

2. Stakeholder Engagement 利害关系人约定

Children's Art That Engages Stakeholders. 小孩子们艺术在约定利害关系人

Do we Want to Continue in this Direction?
我们要继续走这个方向吗?

In Chinese,
three trees 森 = forest;
two trees 林 = woods;
one tree 木 = tree or wood.
The Christian cross is borrowed to symbolize a grave marker or burden. 十字架

Changes 变化
by Zeng Fei 曾斐 (age 15岁)
Jiangxi 江西, PRC 2002

" A Picture is worth 1,000 words"
一张图片胜过千言万语

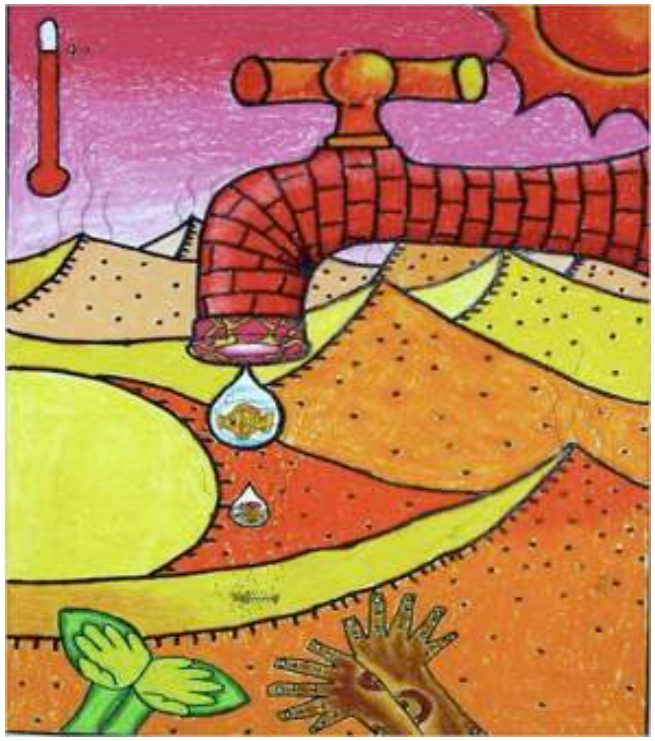
Children's Art and the Environment Project of the 1990 Institute, the All China Women's Federation, the China National Children's Center and the Chinese Ministry of the Environment. (one million children participated.)

What are some other ways to engage stakeholders?

3. Stakeholder Education 利害关系人教育

A Power of Art：Raise Awareness　　艺术的力量：提高认识

Do We Want to Create More of This Kind of Results? 我们要继续创造这样的成果吗?



Saharan Water: 撒哈拉的水
by Zhu Siying 朱思颖 (Age 6岁),
Hubei 湖北, PRC 2002

Gauze Masks are in Fashion 街上流行戴口罩
Li Xiaoxiang 李小翔 (age 10岁)
Hubei 湖北, PRC 2002

How else can we educate stakeholders?　还有什么利害关系人教育办法？

4. Stakeholder Envisioning 利害关系人展望

A Power of Art：Create A Vision 艺术的力量: 创建愿景
These Children are Now Adults. 这些孩子现在是成人。

Chinese children envision an Eco-City future they would like to create
中国孩子们给我们看看他们要创造的未来生态城市

Welcome to Green Dragon City
绿色的龙城欢迎您
Zhang Jun 张君 (age 11岁) Guangxi 广西

The Garden City
我们的家园像花园
Zhu Wei 朱维 (age 13岁) Shanghai 上海

How else can we empower stakeholder envisioning? 有另外办法 授权利害关系人展望?

5. Build Models for testing and Inspiration
建立模型进行测试与启示

Bosco Verticals in Milan, Italy 2012

6. Standards are Needed but Alone They are not Enough 需要标准可是只有标准不够
Measurement is Critical 测量是关键的

Measured Results of LEED Certified Buildings (USGBC 2008)

LEED Standards Were Since Revised to Require Measured Results before Certification.

拿到LEED认证建筑的实测结果 (美国绿色建筑委员会 2008)

What went wrong?

Or Right?

How can we control quality results?

What else is needed?

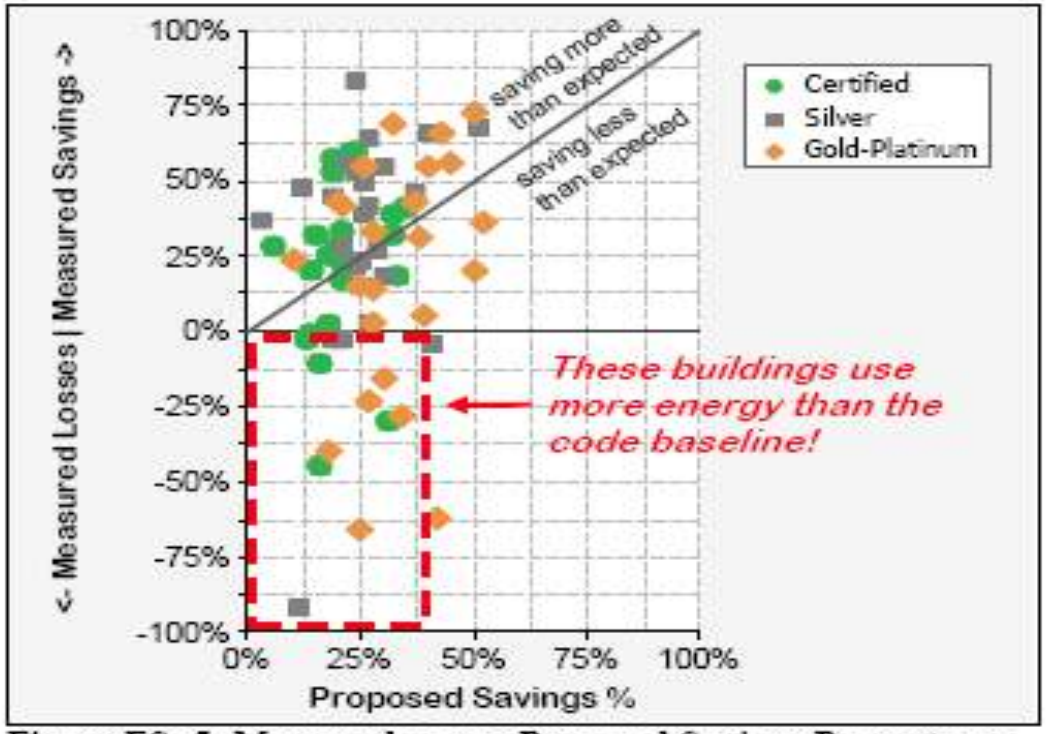


Figure ES- 5: Measured versus Proposed Savings Percentages

问题在那里?

成功在那里?

错误在那里?

质量效果怎么处理?

还需要什么？

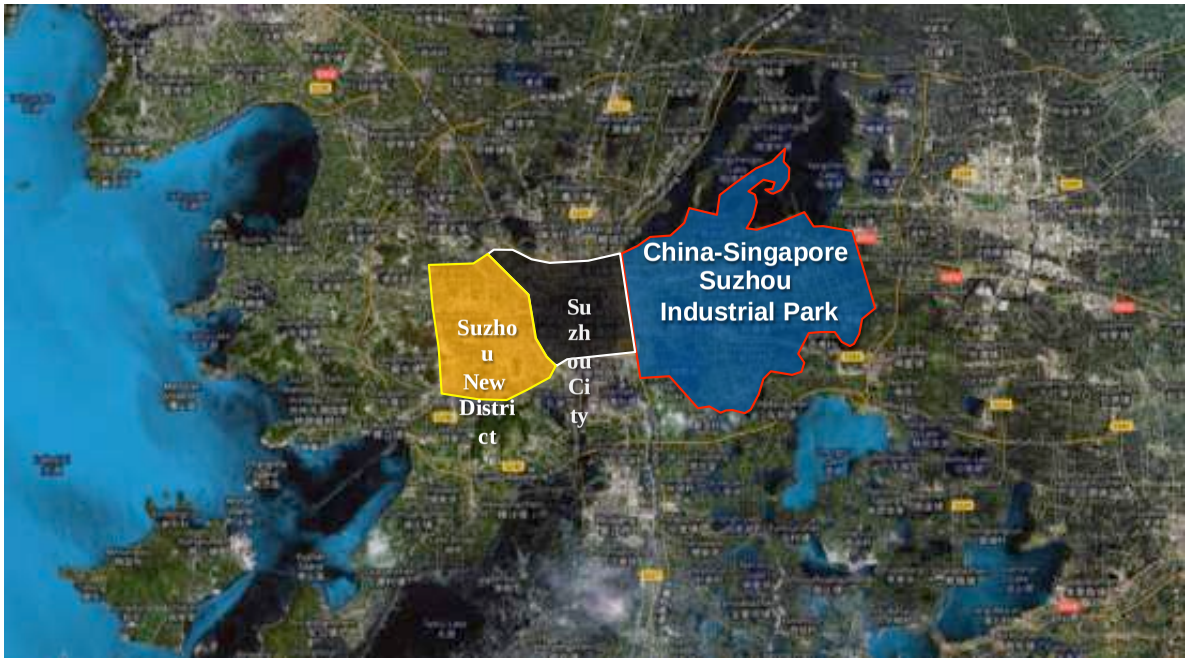
Mistakes are Valuable Evidence for Learning. 犯错误是学习的宝贵证据. More suggestions?

7. Collaborate and Build 合作而建设

China-Singapore Suzhou Industrial Park (SIP) 中国－新加坡苏州工业园区 1994-2010

International Collaboration in Eco-City Development Showed Strong success through 2010
很早的国际合作生态区发展道2010有很好的效果

Began in1994, under guidelines set out in **ISO 14000 series of standards on Environmental Management** -- which began development at the U.N. Rio de Janeiro conference in 1992.

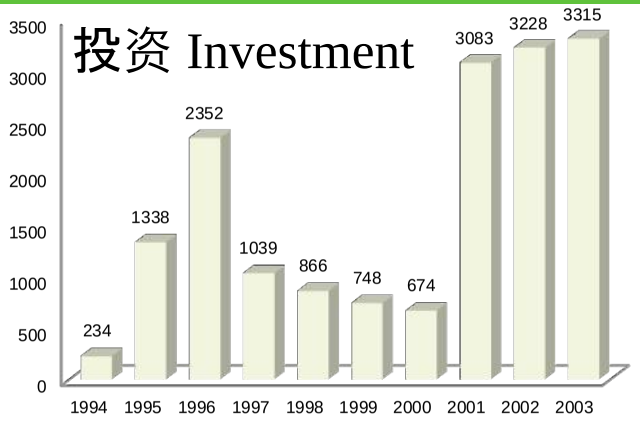


SIP covers a total jurisdiction area of 288 sq km, among which 80 sq km area belongs to China-Singapore Cooperation Zone.
一共288平方公里。80平方公里属于中国新加坡合作区

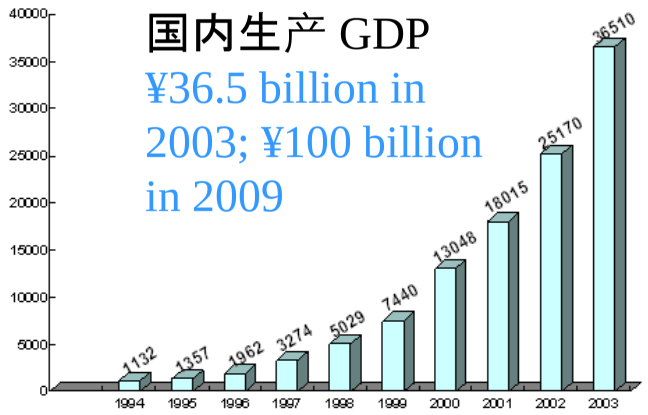
Collaboration was critical in their successes

Khee Poh Lam PhD

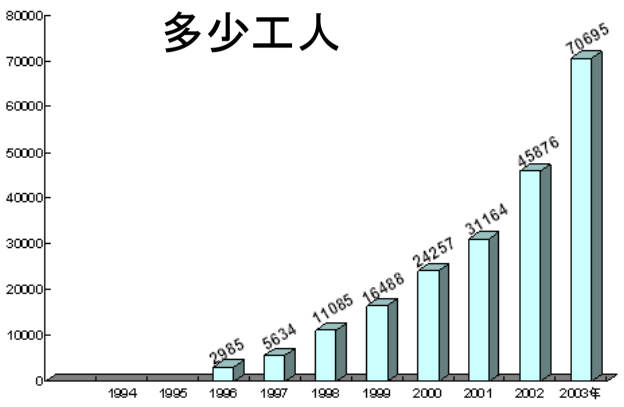
7a. Good Results of SIP by 2003 苏州的2003效果很好



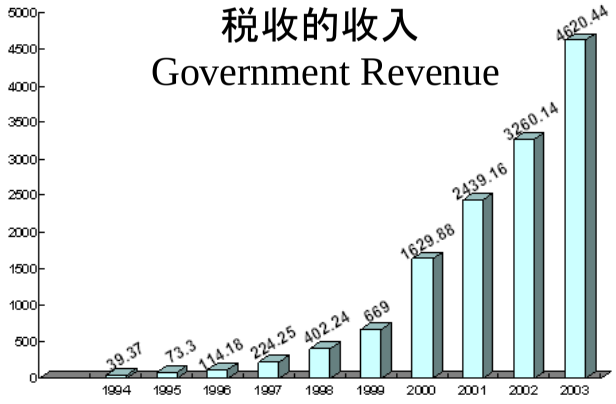
Total Investment (x million US$)



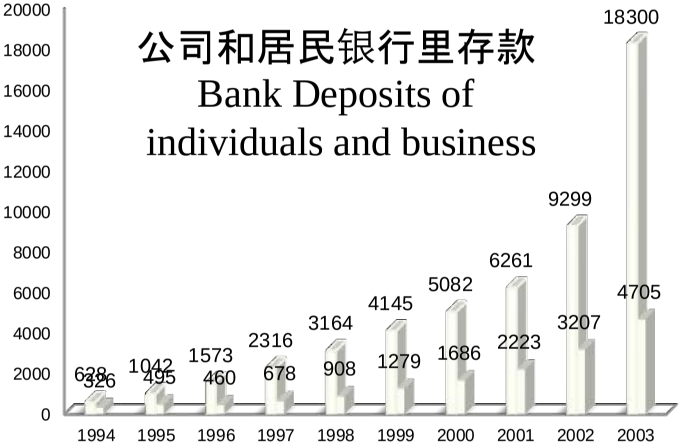
Gross Domestic Product (¥ x million)



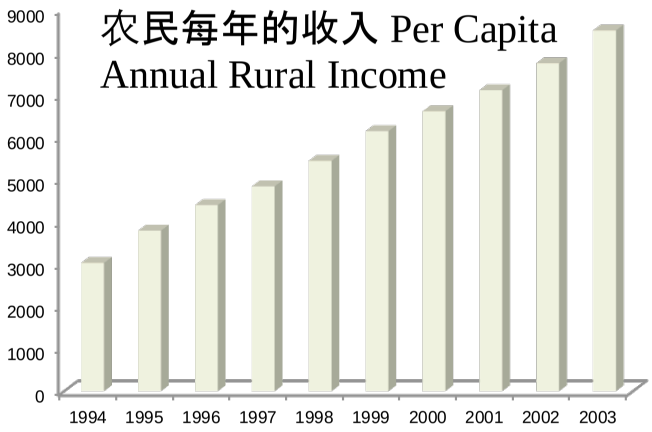
Total Employees



Total Government Revenue (x million Yuan)



Deposits Balance of Financial Institutions at Yearend
And Savings Deposits of Residents (x million Yuan)



Net Income Per Capita of Farmers (Yuan)

Why do some people argue that green solutions will prevent economic development and limit jobs?
为什么有人说绿色建筑会阻碍经济发展而限制就业？
What can we do to learn from the various successes and failures and create more success?

8. Today we Measure Multiple Dimensions, Publish Results, Seek Input..
Some Key Performance Indicators (KPI) We used in Nansha Eco-city planning.

Indicators	Proposed index value
Forest cover	15%
Greening rate of coastal beach land suitable for afforestation	95%
Nearshore mangrove intertidal zone recovery rate	100%
Mangrove area	1026.72 ha
Water rate: % of land that is surface water	28%
Protected areas as a proportion of total land area	–
Construction of flood control standard of proof	Once in 200 years
Shelterbelts areas along the coastal/Rivers	5059.20公顷
Rate of geological disaster prevention measures in place in urban areas	100%
Rate of soil erosion measures implemented	100%
Rate of completed urban lifeline construction	100%

Safety

Low Carbon

Indicators	Proposed index value
The rate of work/life balance	80%
Percent of basic services within 500 meters of living space	90%
Bus station coverage within 500m in cities	100%
Transit Ridership	80%
Coverage of bicycle lanes	80%
Clean energy proportion of total energy consumption	51%
Energy consumption per Unit of GDP	0.47-0.50
Unit of GDP decreased rate of fresh water consumption	20%
Units of carbon dioxide emissions intensity of GDP	Reduced by 50% compared to 2005
Green construction proportion of the total construction	80%
Proportion of Green Public Building	80%
Relative Wind speed in residential areas	0.6

Indicators	Proposed index value
Potable water source and quality compliance rate	100%
Urban water district water quality compliance	100%
Water quality compliance rate of coastal waters	100%
Ambient air high quality days	355天
Compliance rate of noisy areas	100%
Urban area rate of rain and sewage flow coverage	100%
Urban sewage centralized treatment rate	100%
Rate of motor vehicle exhaust emission compliance	100%
Separated Garbage collection rate	85%
Reuse of recaptured waste resources	80%
Harmless treatment rate of garbage	100%
Rate of safe disposal of hazardous waste	100%
Consolidated industrial solid waste treatment	100%

Health

Livability

Indicators	Proposed index value
Proportion of green space in Developed areas	40%
Percent of greened coverage in Developed areas	45%
Park green area per capita	17m2
Average Visible Parkland, within 500 meters	90%
Primary School within 500 meters of residential areas	100%
Secondary School within 1,000 meters of residential area	100%
Sports facilities within 1,000 meters of residential areas	100%
Level 3+ general hospital < 2000 meters from Residential	100%
Rate of waterfront shoreline wetlands	50%
Degree of preservation of landscape views	5%
Visibility of the mountains from residential areas	30%
Preservation of Historical Cultural Sites	100%

Thank you

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