

IC7 Paris

Emerging Innovation Eco-system in Cleantech in the Pearl River Delta

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Project Background

This action research project attempts to analyze the emerging cluster of Cleantech industry in the Greater Pearl River Delta.

Research partners are universities from Hong Kong, Shenzhen, Guangzhou and Macau, industry and professional associations, local and foreign companies in the cleantech industry, public agencies, think tanks related to innovation, sustainable development, green/clean technology and NGOs.

It is operating as an open innovation project, using open knowledge-sharing environments such as wikis, creative and science commons. The project started in late 2010 and is an ongoing multi-stakeholder initiative to foster innovation in GPRD.



Innovation eco-system

Greater Pearl River Delta - an innovation region?

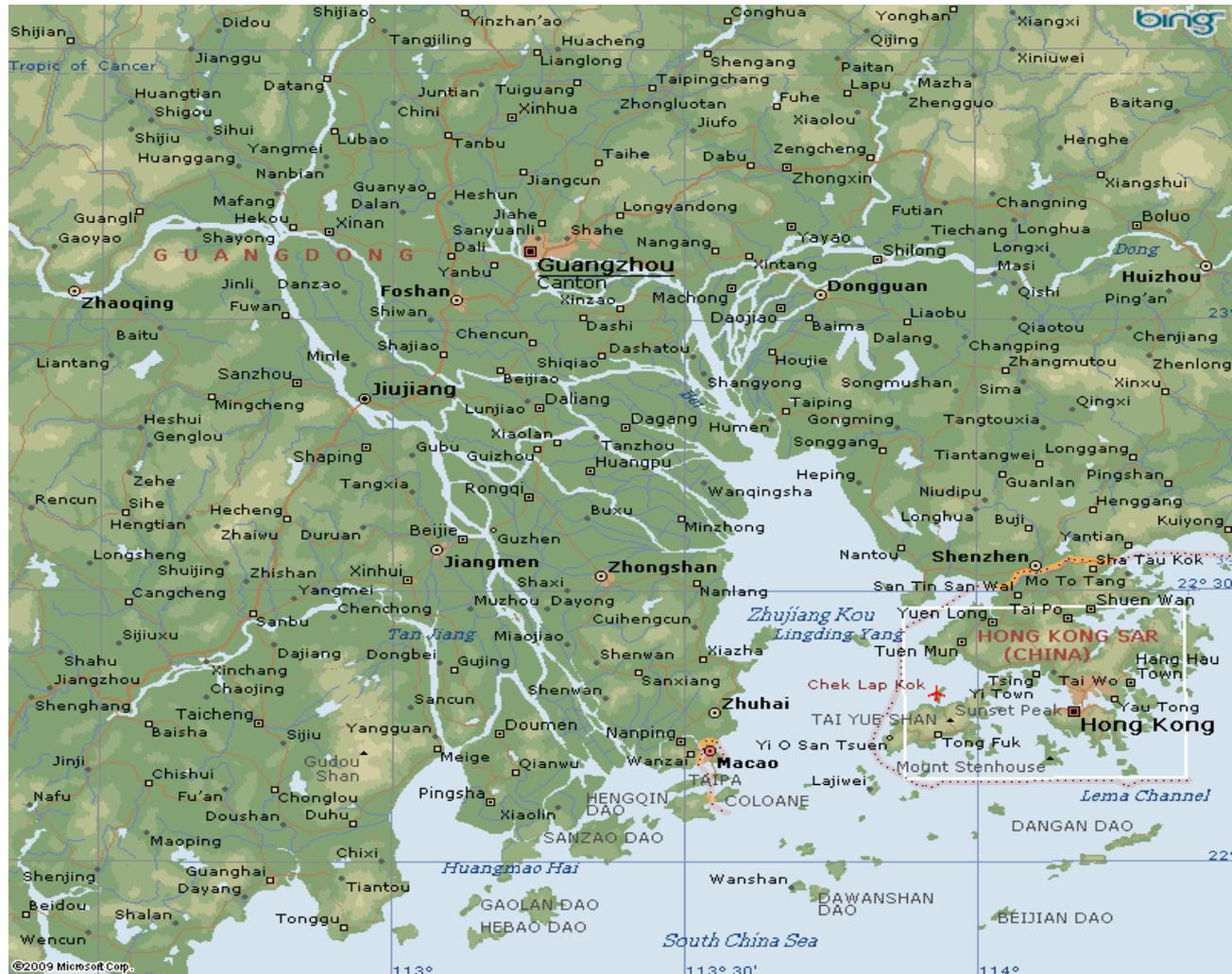
The Cleantech industry - some facts and figures

Networks of Cleantech know-how

Emerging innovation network in Cleantech



Greater Pearl River Delta





The Greater Pearl River Delta ('GPRD')

Comprising Hong Kong, nine municipalities of the Guangdong Province in the mainland of China and Macao, the Greater Pearl River Delta (GPRD) is the location of perfect complementarity and an ideal place for foreign investment.

Here in the GPRD, you have the world-class financial, logistics and service centre, Hong Kong, and the first-rate manufacturing capabilities. Powered by the cost-effective production centres in the north and the international expertise in the south, this export-led economic mass shares the transport artery that is the Pearl River and the comprehensive transportation

2006 BUSINESS FAIR FOR GUANGDONG-HONG KONG ECONOMIC, TECHNOLOGY TRADE COOPERATION

10:00 a.m. Wednesday, July 5, 2006

3rd Floor, Hong Kong Exhibition Centre, China Resources Bldg, 26 Harbour Road, Hong Kong

- About GPRD- key facts and figures**
- Area
 - Population and people
 - Output by industry
 - History
 - Transportation and connectivity
 - FDI and international trade
 - Administration
 - Main economic indicators
 - Financial markets

Register

Register here for up-to-date information about The Greater Pearl River Delta.

Greater Pearl River Delta region

The 2010/2011 State of the World Cities report, published by the UNHSR*, estimates the **population of the delta region at 120 million people**. The region is fast becoming the world's first **Mega-region**, which are large agglomerations of urban agglomerations with over 100 million people; effectively creating an "endless city"

*UN Human Settlements Programme



Innovation advantage of GPRD region?

- ▶ Guangdong tops the Mainland in 3 indexes: enterprises' innovating capability, large- and medium-sized enterprises' investment in research and development, and industries' innovating capacity on the international level.
- ▶ For many years, Guangdong has filed the most patent applications for scientific and technological inventions in the Mainland.
- ▶ More than 70% funds for scientific research are raised from enterprises and more than 70% hi-tech products are developed independently thereby.

Source: http://www.thegprd.com/advantages/gd_advantages_05.html



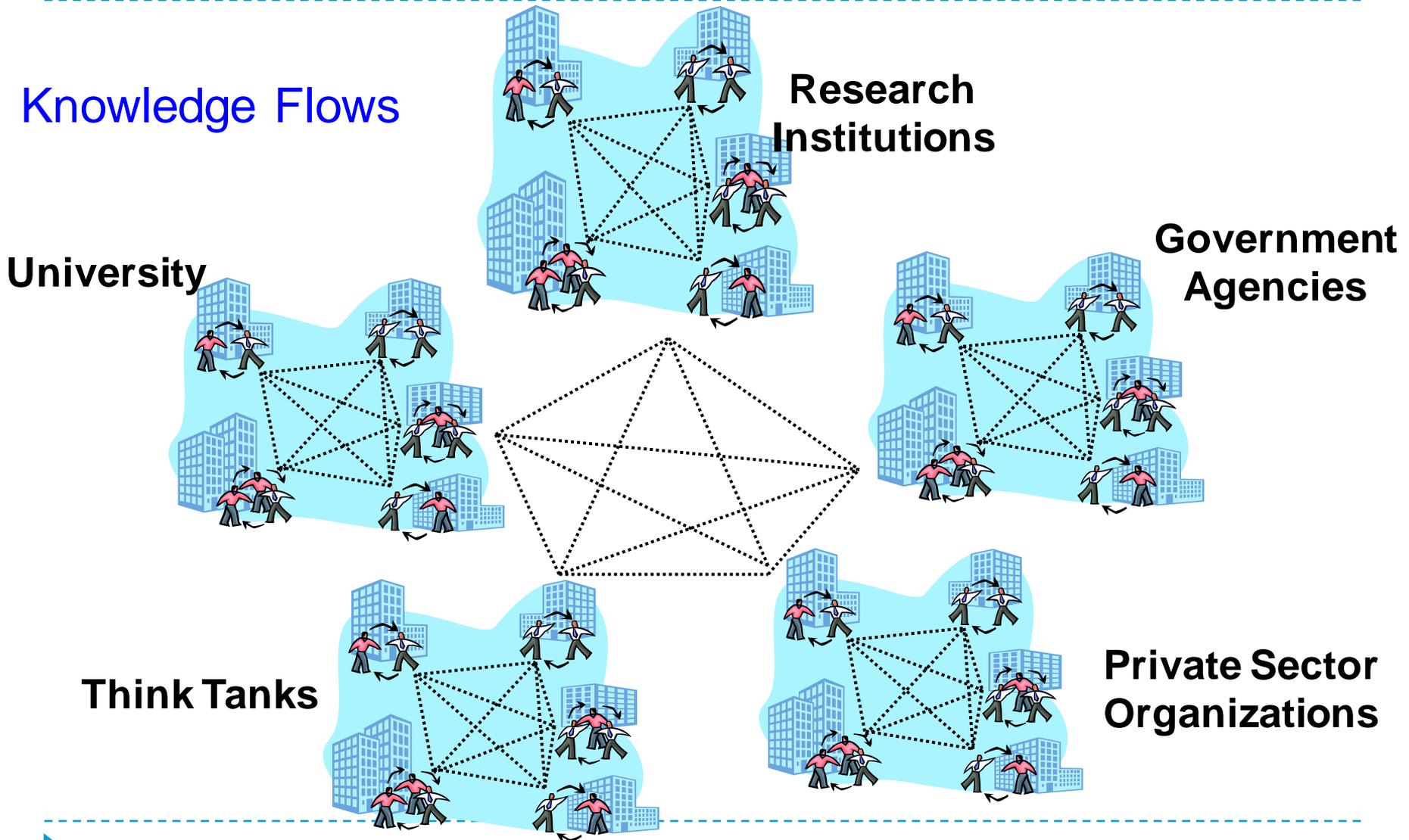
Greater Pearl River Delta Innocluster

The innovation index does not include the **network intensity, quality of network linkages, established and emerging networks**, diversity of stakeholders in the innovation cluster.

The qualitative aspects of an innovation cluster are largely intangible, but we need to identify and visualize them to **understand the dynamics and value creation**.



Stakeholders in an innovation cluster



Analysing the GPRD innocluster

Are there existing Cleantech networks in the Pearl River Delta?

Are they informational in nature or engaging in business collaboration and transactions?

How can they be further developed to foster open innovation, supporting new business model based on shared and open IP?



Cleantech: What does it mean exactly?

The term is generally used to explain the concept that both efficiency and productivity can be increased by using new processes, products and services, whilst at the same time reducing greenhouse gas emissions and protecting natural resources.

To align the growing demand for goods and services with the need to protect both the environment and the world's resources, it is necessary for the economical and ecological aspects of the economy to work in harmony.

The use of CleanTech helps to achieve this by providing a method for **sustainable and environmentally friendly economic growth.**

<http://www.dcti.de/en/cleantech/definition.html>



New Policy effecting Cleantech industry

China's 12th Five-Year-Plan and Low-Carbon Roadmap

"By placing energy efficiency and clean energies for the first time at the heart of their economic development, the plan bets heavily on strengthening China's competitive advantage in fields like electric vehicles, renewable energy, smart grids and other low-carbon technologies"

Connie Hedegaard, European Commissioner for Climate Action

http://www.china.org.cn/environment/2011-03/16/content_22153038.htm



Global Cleantech market

- ▶ The overall trend for clean-tech markets continued to be one of growth and expansion in 2010.
- ▶ Combined global revenue for solar PV, wind power, and biofuels surged by 35.2 percent over the
- ▶ prior year, growing from US\$139.1 billion to US\$188.1 billion.

▶ Source: Clean Edge 2011



Open Innovation

is build on the idea that organizations should make **greater use of external ideas and technologies** in their own business and allow their own technologies and ideas to be used by others in their business. In areas that can be considered a *public common good* such as “environment”, open innovation concepts are increasingly applied to speed up innovation across universities, business, environmental NGO, and governments.



Open Innovation

Knowledge and IP created in Cleantech can be more efficiently used than in monopoly structures created through traditional IP regimes which slow down innovation.

Model for open IP and Science Commons exchange are still at an experimental stage in the Cleantech industry.



Innovation Cluster - Knowledge Spaces

- ▶ High-tech industry
- ▶ Advanced services
- ▶ R&D
- ▶ Creation of new companies
- ▶ Social capital
- ▶ Technology transfer and IP
- ▶ Technology commercialisation
- ▶ Knowledge management
- ▶ International networking

.....within a physical, social and mental space



Knowledge Exchanges

Identifying network linkages and exchanges, as they indicate the strength and maturity of a cluster. An agglomeration of companies of a particular industry is not enough to build a sustainable cluster; the **knowledge flows and exchanges**, as well as leveraging the **economic value creation** created through them determine the quality and importance of a cluster.



Value Networks in innovation clusters

A web of relationships that generates economic value through complex dynamic exchanges of both tangible and intangible goods, services and benefits.

Tangible and intangible flows of knowledge

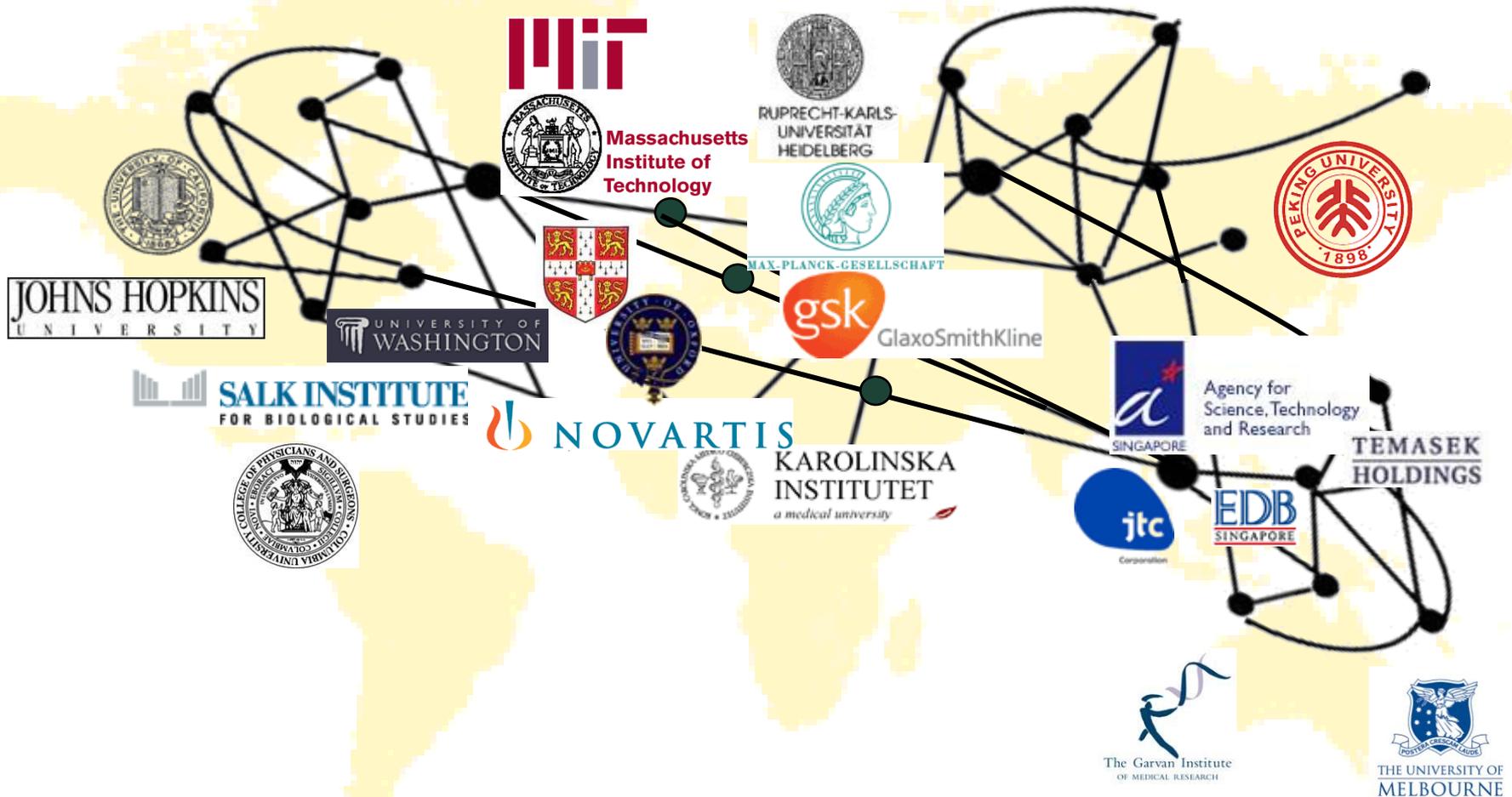


Knowledge Flows in Innocluster

- ▶ What is the value of alliances, links, networks?
- ▶ What to measure?
- ▶ How to measure?
- ▶ How can we visualize the linkages?



Example: Knowledge network of an R&D professional in Biotech



Characteristics of Innovation Cluster

A more or less **integrated university structure** (many collaborating universities, science centres, research laboratories etc)

Multiple science clusters (life and food sciences, ICT, nano-technology etc)

Developed mechanisms to produce and commercialize scientific knowledge (science parks, incubators, venture-holding companies etc)

Developed governing mechanisms for regional innovation activities (regional confederations of universities, joint holding companies etc).



”The most crucial aspect of Silicon Valley is its networks”.

Mark Granovetter, Stanford University



Outlook

- ▶ Assess the knowledge dynamics and value networks of different stakeholders in Cleantech
- ▶ Understand the tangible and intangible dimension of knowledge flows and networking
- ▶ Using value network analysis to identify exchanges
- ▶ Monitoring and assessing strength of regional value networks
- ▶ Measuring innovation dynamics



References: Cleantech

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<http://gigaom.com/cleantech/china%E2%80%99s-overhyped-and-underhyped-greentech-boom/>



Cleantech Exchange GPRD Project

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