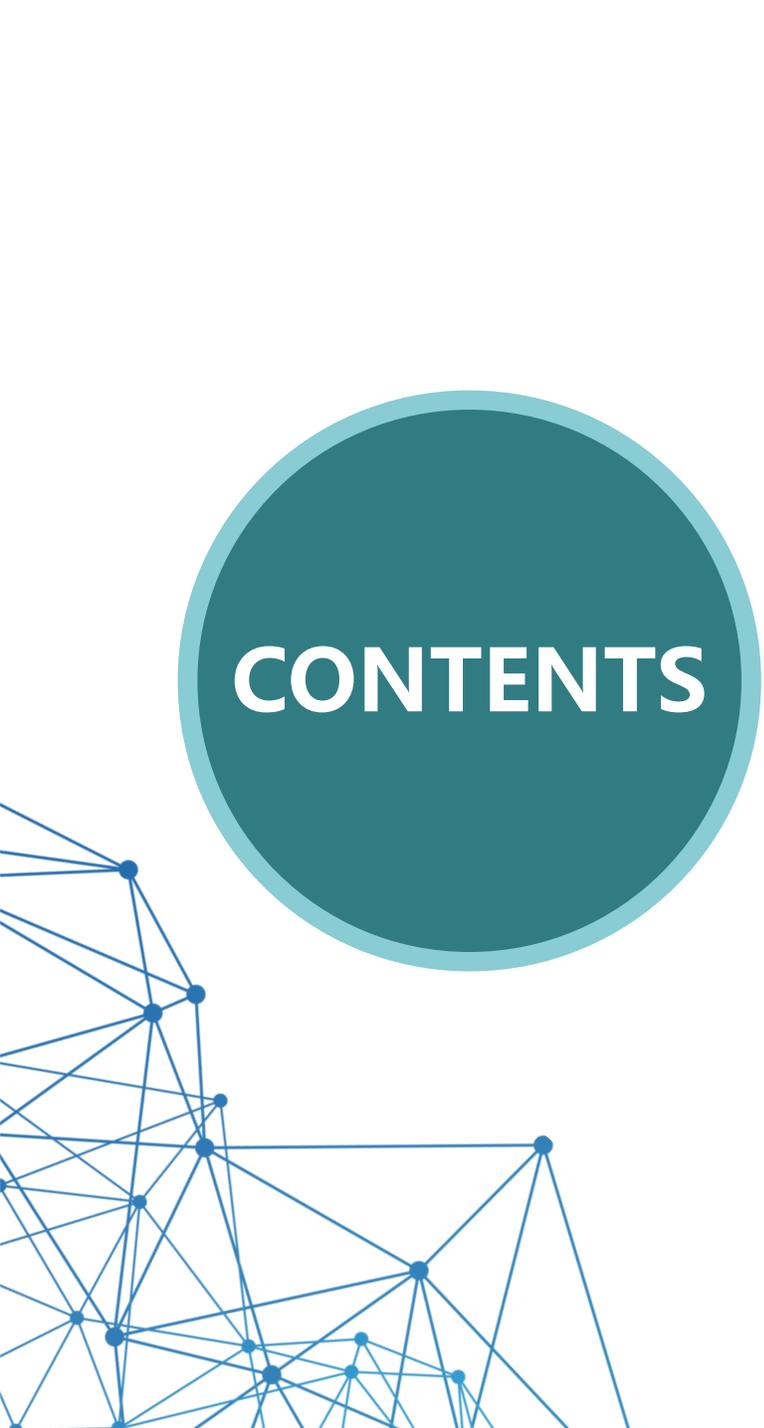


GUANGDONG PRACTICES ON INNOVATION AND SUSTAINABLE DEVELOPMENT

WU HANRONG

Research Professor
Director of Exchange and Cooperation
Department of Science and Technology of Guangdong Province, PRC (GDST)

Dec 13 2019
Guilin, Guangxi



CONTENTS

01

OVERVIEW OF GUANGDONG

02

SUSTAINABLE DEVELOPMENT THROUGH STI

03

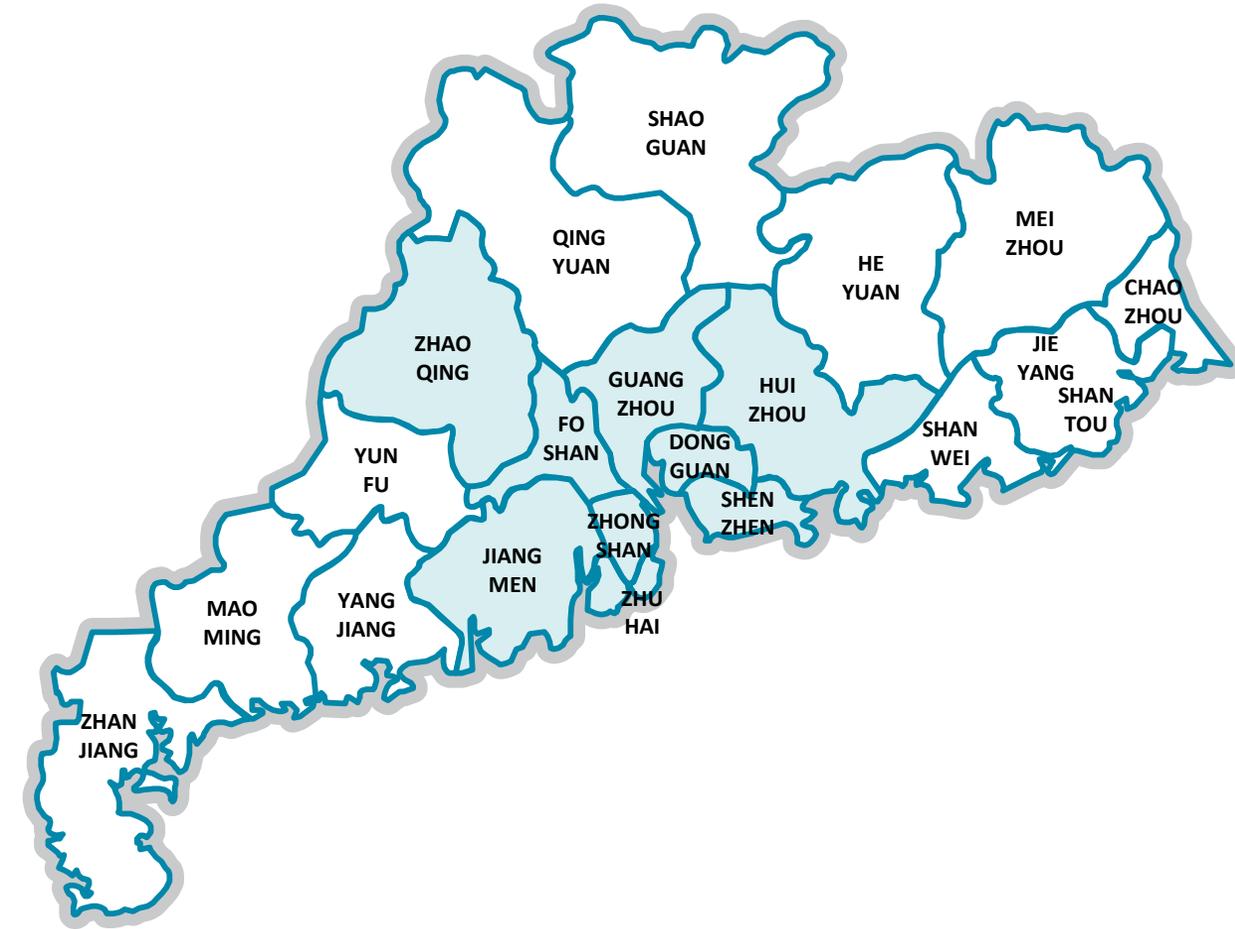
CONCLUSION

A network diagram background consisting of a complex web of light blue lines connecting small dark blue circular nodes. The nodes are distributed across the page, with a higher density in the bottom-left and top-right corners. A large, dark teal circle with a lighter teal border is centered on the page, containing the main title and subtitle.

OVERVIEW OF GUANGDONG

- PART.01 -

BRIEF DESCRIPTION



-Population: 113.46 million(2018)

8.13% of China's total

-Land area: 179,800km², 2.06% of China's total

-Municipal Level Cities: 21

-Natural Resources: Rare Materials, Biological Resources, Marine Resources, etc.

-Unbalanced Development:

Unbalanced and insufficient development gap between different areas

Peral Delta Area vs Other Parts in Guangdong



STRATEGIC SOUTHERN PORTAL



Opening-up to the world

- ✓ Long history: in the Kai Yuan reign of Tang Dynasty (713-741 A.D.), one third of Guangzhou' residents were overseas businessmen.
- ✓ Pioneer and pacesetter of the “opening-up policy” (1978-)
- ✓ Leader of the “full opening-up policy” (2018-)
- ✓ Support Shenzhen in building a demonstration pilot zone for socialism with Chinese characteristics (2019.8-)



The Belt and Road (B&R)

- ✓ Departure Port of Maritime Silk Road
- ✓ Significant Partner with B&R countries



INNOVATION HUB

Regional Innovation Capacity: Ranks #1 in China in a row of 3 years(2017~2019)

INDICATORS	2014	2015	2016	2017	2018	2019
Comprehensive Innovation Capacity	2	2	2	1	1	1
Innovation Performance	1	1	1	1	1	1
Innovation Ecosystem	3	3	3	1	1	1
Enterprises Innovation Practice	3	3	2	1	1	1
Knowledge Creation	3	4	4	4	4	3
Knowledge Acquisition	4	4	4	4	3	3



INNOVATION HUB



 Tech Self-sufficiency Rate **73%**

 R&D Expenditure **270 Billion RMB**,
R&D Expenditure/GDP Rate **2.78%**

 Contribution Rate of Scientific and
Technological progress **59.1%**

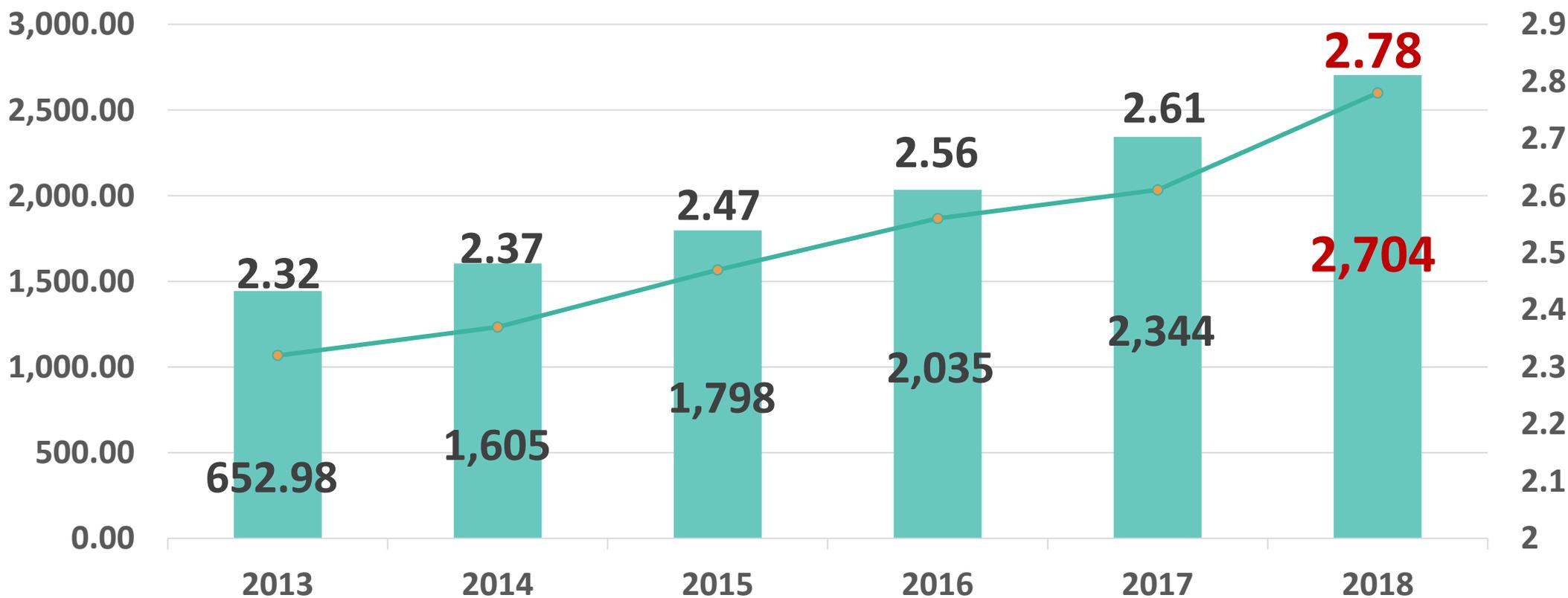
 Patent Grants: **478.1 Thousand Items**
PCT Applications: **25.3 Thousand Items**

 **45 State Science and Technology Awards**,
15.79% of China's Total



INNOVATION HUB

Provincial R&D Expenditure and R&D/GDP (2013~2018)



■ R&D Expenditure (100 million RMB) ● R&D Expenditure/GDP (%)



SUSTAINABLE DEVELOPMENT THROUGH STI

- PART.02 -

- 
- Improve Original Innovation**
 - Deal with unbalanced development**
 - Establish an open ecosystem of STI**
 - Promote International STI Cooperation**

- PART02 -



IMPROVE ORIGINAL INNOVATION

Guangdong is an Innovation-Driven Economy Body
Its Sustainable Development Relies on STI.

Provincial R&D
Programs in Key
Areas

Large-scale Research
Infrastructures

STI

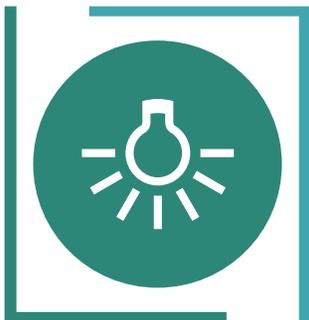
Basic and
Application-oriented
Basic Research

Provincial
Laboratory System



IMPROVE ORIGINAL INNOVATION

Focus on Key areas to Inspire Significant Technology Breakthroughs



Agglomerate International STI Resources

Industry-Research-Education Cooperation



Guangdong- Hongkong- Macao Greater Bay Area Collaborative Innovation



IMPROVE ORIGINAL INNOVATION

Major Projects

- ✓ Prospective Basic Research
- ✓ Original innovation breakthroughs

Guangdong Joint Funds

- ✓ GD-Municipal Governments Joint Funds
- ✓ GD-Companies Joint Funds



NSFC-Guangdong Provincial Government Joint Fund

- ✓ Cooperate with NSFC
- ✓ Leverage NSFC's resources

General Projects

- ✓ Encourage new discoveries in basic and applied basic research

Distinguished Young Scientists Projects

IMPROVE ORIGINAL INNOVATION

Large Scale Research Infrastructures

Tianhe-2
Supercomputer

天河二号超级电脑



Daya Bay Reactor
Neutrino Lab

大亚湾微中子实验室



HIAF & CiADS

强流重离子加速器及加速器驱动嬗变研究装置



China Spallation
Neutron Source
(Dongguan)

中国 (东莞) 散裂中子源





IMPROVE ORIGINAL INNOVATION

Provincial Laboratory System

Dec 22 2017

**Regenerative
Medicine and Health**

Cyber Tech

**Advanced
Manufacture**

**Material
Science**

Nov 14 2018

**Chemical and
Fine Chemical**

**Marine Science
and Engineering**

**Life Information and
Bio-medicine**

Aug 29 2019

**Artificial
Intelligence and
Digital Economy**

**Modern
Agriculture**

**Advanced
Energy**



DEAL WITH UNBALANCED DEVELOPMENT

Agriculture Technology Task Force Initiative For Rural Areas

-  Cover 1300+ Villages and Towns in Rural Area
-  Promote 2190+ Agritech Results and New Species, New Technologies and New Arts
-  Trained 630,000+ Primary-level Rural Technicians and Farmers
-  Motivated and Benefited 8,240,000 People
-  Improve Local Farmers' Capacity and Boost the Income



DEAL WITH UNBALANCED DEVELOPMENT

Construct Network for Prevention, Diagnosis and Treatment of Major Diseases

Case Study: Artemisinin (青蒿素) anti Malaria (疟疾)

- **Guangzhou University of Chinese Medicine**

- **Background:**

- Malaria is one of the three major infectious diseases that seriously endanger the lives and health of African people. About 80% of malaria cases occur in Africa.
- Prof. TU Youyou won the Nobel Prize for isolating artemisinin from Chinese herbal medicine for malaria treatment. In her speech, she referred to Guangzhou University of Chinese Medicine (Prof. Li Guoqiao's Team) to share this honor.

- **Successful Case in Union of Comoros (科摩罗in Africa):**

- From 2007 to 2017, Prof. Li Guoqiao and his team have been stationing in the Union of Comoros to promote the application of compound artemisinin. This anti-malaria approach can eliminate malaria via eliminating the source of infection at all which is quite suitable for African countries to adopt.
- After 10 year's work, zero deaths from malaria have been achieved by Prof. Li and his team in Comoros, and the incidence of malaria has fallen to lower than 2%.



DEAL WITH UNBALANCED DEVELOPMENT

Case Study: Artemisinin (青蒿素) anti Malaria (疟疾)

- **Further Promotion to Other B&R Countries:**
 - Southeast Asia: Vietnam, Cambodia, Thailand, Myanmar, the Lao, Indonesia, etc.
 - Africa: Kenya, Nigeria, South Africa, etc.
- **New Adventure—Papua New Guinea:**
 - On 26 Aug 2018, China (Guangdong) - PNG Center for Malaria Control and Prevention was Launched in the Capital of PNG, Port Moresby.
- **Credits and Grants:**
 - International S&T Cooperation Base (both recognized by MOST and GDST)
 - International S&T Cooperation Programs (received grants from both MOST and GDST)
 - International S&T Assistance Program (received grants from MOST)
- **Cooperated with Guangdong Pharmaceutical Companies to Commercialize and Manufacture New Drugs**



Artemisinin Anti Malaria





MASS ENTREPRENEURSHIP AND INNOVATION

Creates Equal Opportunities for Development



Innovation-Driven Strategy

Mass Entrepreneurship and Innovation Initiative

- ✓ Boosts the needs of STI capacity building
- ✓ Empowers Grassroots to pursue self-development



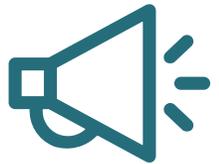
Encourages Scientists and Researchers to Commercialize STI Results





ESTABLISH AN OPEN ECOSYSTEM OF STI

Attracts Innovation Resources of Global Excellence is Key to Improve Regional Innovation Capacity



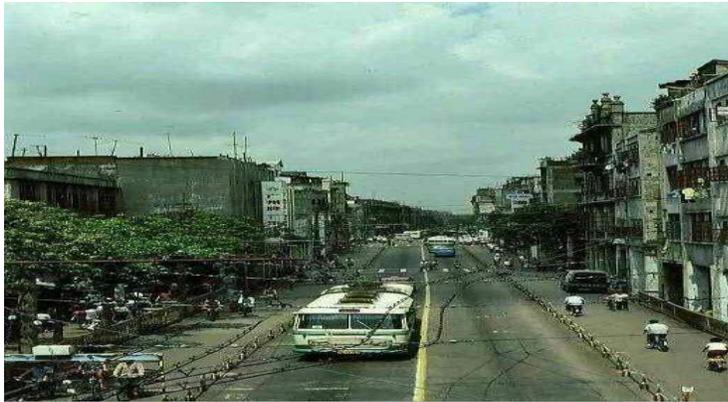
Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area (Released in Feb, 2019)

- ✓ Developing an International Innovation and Technology Hub
- ✓ Deepening innovation cooperation among Guangdong, Hong Kong and Macao
- ✓ Agglomerate international innovation resources

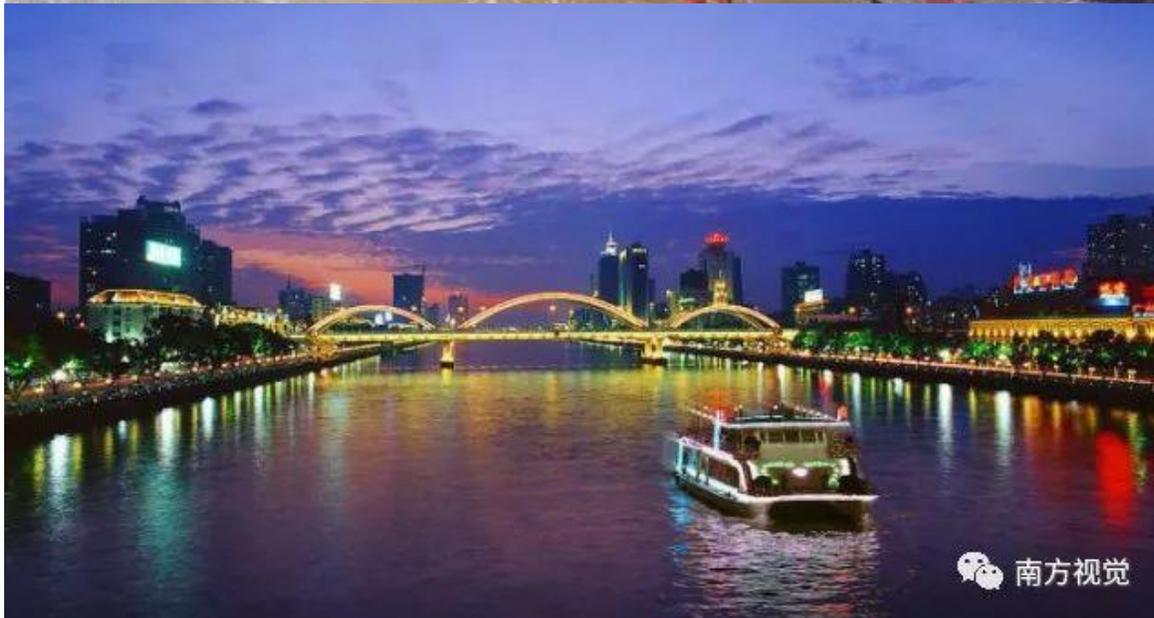
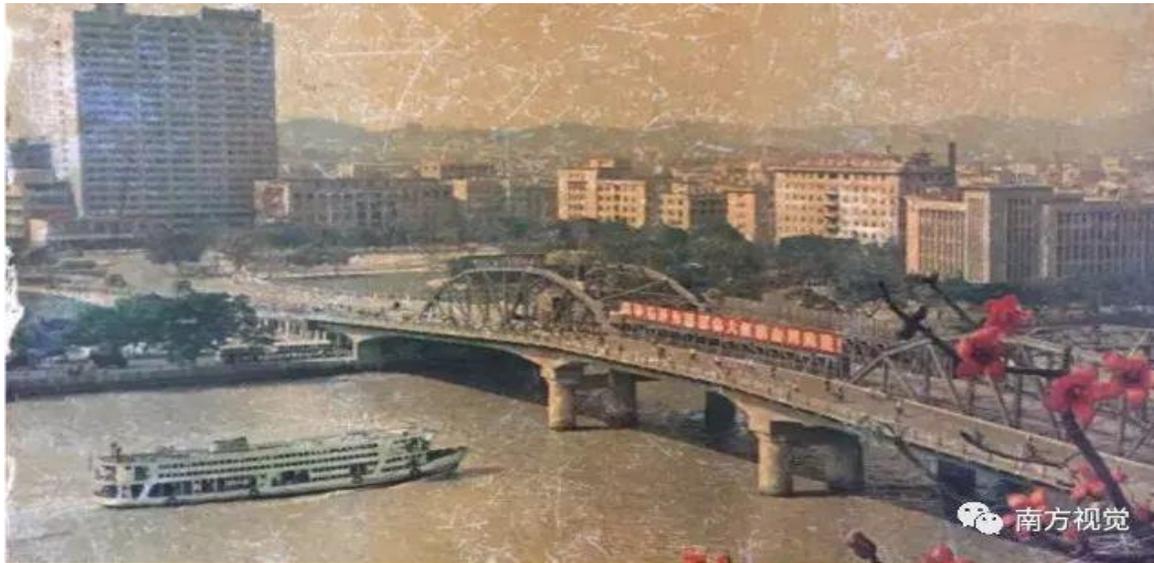
Guangdong-Hong Kong-Macao Bay Area



40 Years' Development of Guangdong-Hong Kong-Macao



40 Years' Development of Guangdong-Hong Kong-Macao



40 Years' Development of Guangdong-Hong Kong-Macao

Region	Guangdong		Hong Kong		Macao	
Year	1978	2017	1978	2017	1978	2017
GDP per capita (USD)	236	11922	3923	44999	3054	79564
Number of Population (Million)	50.64	109.99	4.67	7.39	0.24	0.62
Local fiscal Revenue (Million USD)	57.25	16398.55	1469.57	7101.45	7.04 (1980)	1138.44
R&D Expenditure (Million USD)	33.19 (1988)	33965.65	95.51 (1995)	7246.38 (2018)	—	68.12 (2015)



PROMOTE INTERNATIONAL STI COOPERATION



International S&T Cooperation Projects

Government funding
Cooperate with Overseas Partners



Young Scientists Exchange Projects

3 Months, 6 Months, 12 Months



Training Sessions on STI Capacity Building for Sustainable Development

Work with UNCSTD and MOST (China)
GDST Self-funded Training Sessions



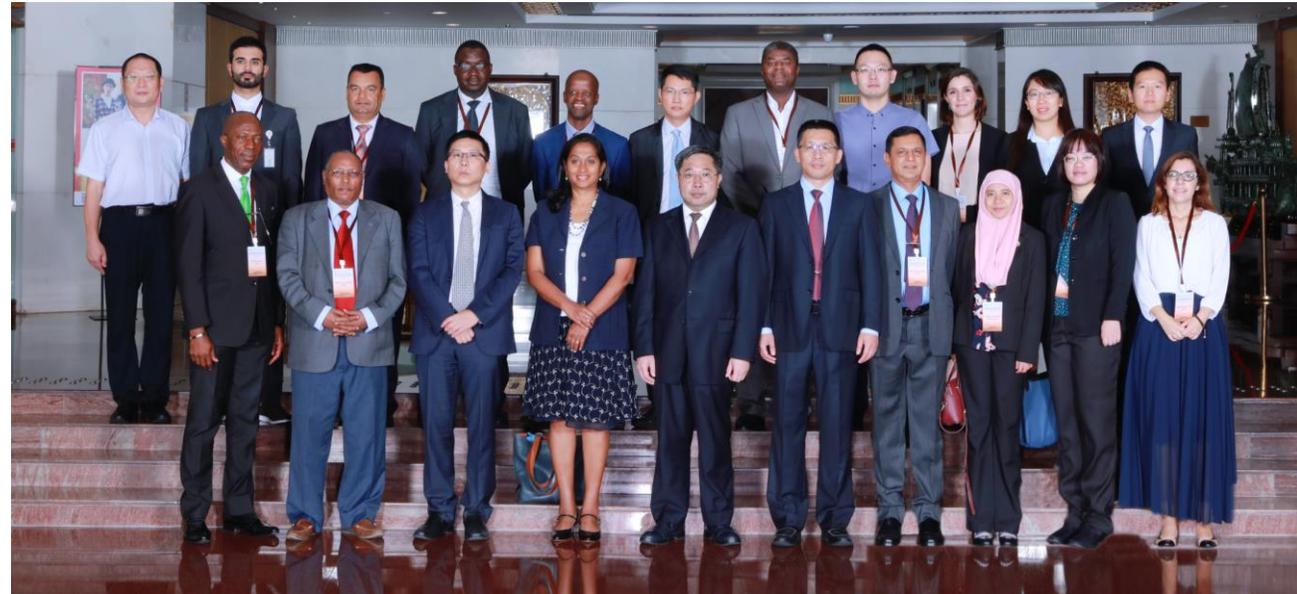


Training Sessions on STI Capacity Building for Sustainable Development UNCSTD and MOST (China) Co-Hosted

 Co-Host by UNCSTD and MOST (China)

 34 Government Officials and Policy Experts from
21 Developing Countries

 2018~2019, 2 Sessions





Training Sessions on STI Capacity Building for Sustainable Development MOST and GDST Self-funded Programs Hosted in Guangdong



FUND: MOST and GDST Granted 7 Training Sessions on STI Capacity Building Regarding Sustainable Development in 2018.



STI Entities (Host): 7 in Guangdong



195 Trainees from **30 Countries**, including:

India, Laos, Myanmar, Pakistan, Sri Lanka, Thailand, Uganda, Vietnam, Malaysia, Brazil, Fiji, Cambodia, Romania, Georgia, Azerbaijan, Kenya, Ghana, Morocco, Nigeria, Bangladesh, Mongolia, Cameroon, Iraq, Lebanon, Sudan, Philippines, Egypt, Singapore, Nepal



Training Sessions on STI Capacity Building for Sustainable Development

GDST Self-funded Program



CASE: 2019 China (Guangdong)-B&R Countries

Training Session on Science, Technology and Innovation (STI)
Incubation System



HOST: Guangdong Science and Technology Cooperation Center



OBJECTIVES: Enhance capacities of constructiong STI incubation system, and help forging STI cooperation between Guangdong and the Belt and Road Countries (B&R Countries)

Training Sessions on STI Capacity Building for Sustainable Development GDST Self-funded Program



15 Government Officials
and Policy Experts from
Belt and Road Countries



2019, 10~23 November





CONCLUSION

- PART.03 -

Conclusion



Sustainable development is the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services based upon which the economy and society depend.



To achieve 2030 SDGs, STI should play a key role and serve as a crucial force to propel world economic and social development and act as a powerful tool to tackle challenges as poverty, hunger and climate change.



Guangdong is willing to strengthen STI cooperation with different countries to achieve the goals in 2030 Agenda.



**THANKS FOR
YOUR ATTENTION!**