

Lancang River's Hydropower Plan and Power Grid Connection within China

Kevin Yuk-shing Li

Consultant, IRN China Program

Email: kevinsli@yahoo.com

(Image Courtesy: Green Watershed)

1. Introduction

- Transboundary water resources conflicts have become the global and regional in the 21st century, especially on the Lancang-Mekong River between China and Southeast Asia...

International Rivers in China



Yunnan's hydropower potential: ~90,000MW
Lancang River (middle and lower reaches): 15,650MW

Nu River: 23,320MW
Jinsha River: 59,080MW (shared with Sichuan Province)

Lancang
Manwan, Daochaoshan completed
Xiaowan being built
Jinghong being prepared
Nuozhadu being planned



Benefits

- Guangdong's GDP shares over 10% of national total, being the top in China
- Guangdong's GDP grows at 14% per year
- Central government's target: GDP will double by 2010, and quadruple by 2020.
- Guangdong's GDP target: 233 billion USD by 2010, 466 billion USD by 2020
(Thailand's GDP in 2004 is 163 billion USD)

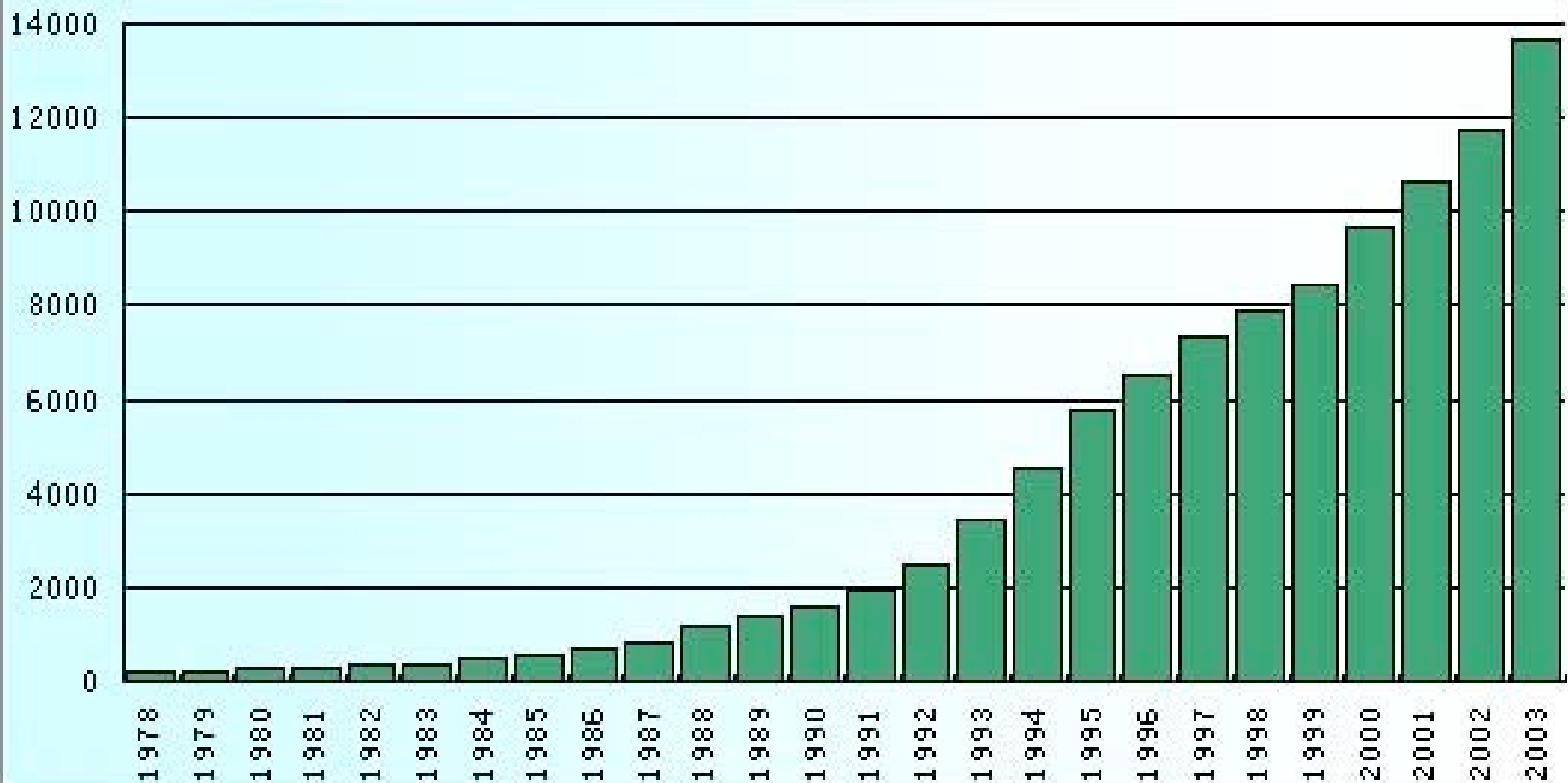
Benefits (2)

- National GDP growth rate: ~7-9%
- Guangdong's GDP growth rate: ~13-15%
- Rapid economic expansion generates huge electricity demand. Guangdong Province is thirsty for electricity. Yunnan's electricity has a huge market.
- Guangdong lacks 4,500MW, while Yunnan lacks ~1100MW in 2005. Guangdong's power demand may reach 71,000MW in 2010, and 121,000MW in 2020.

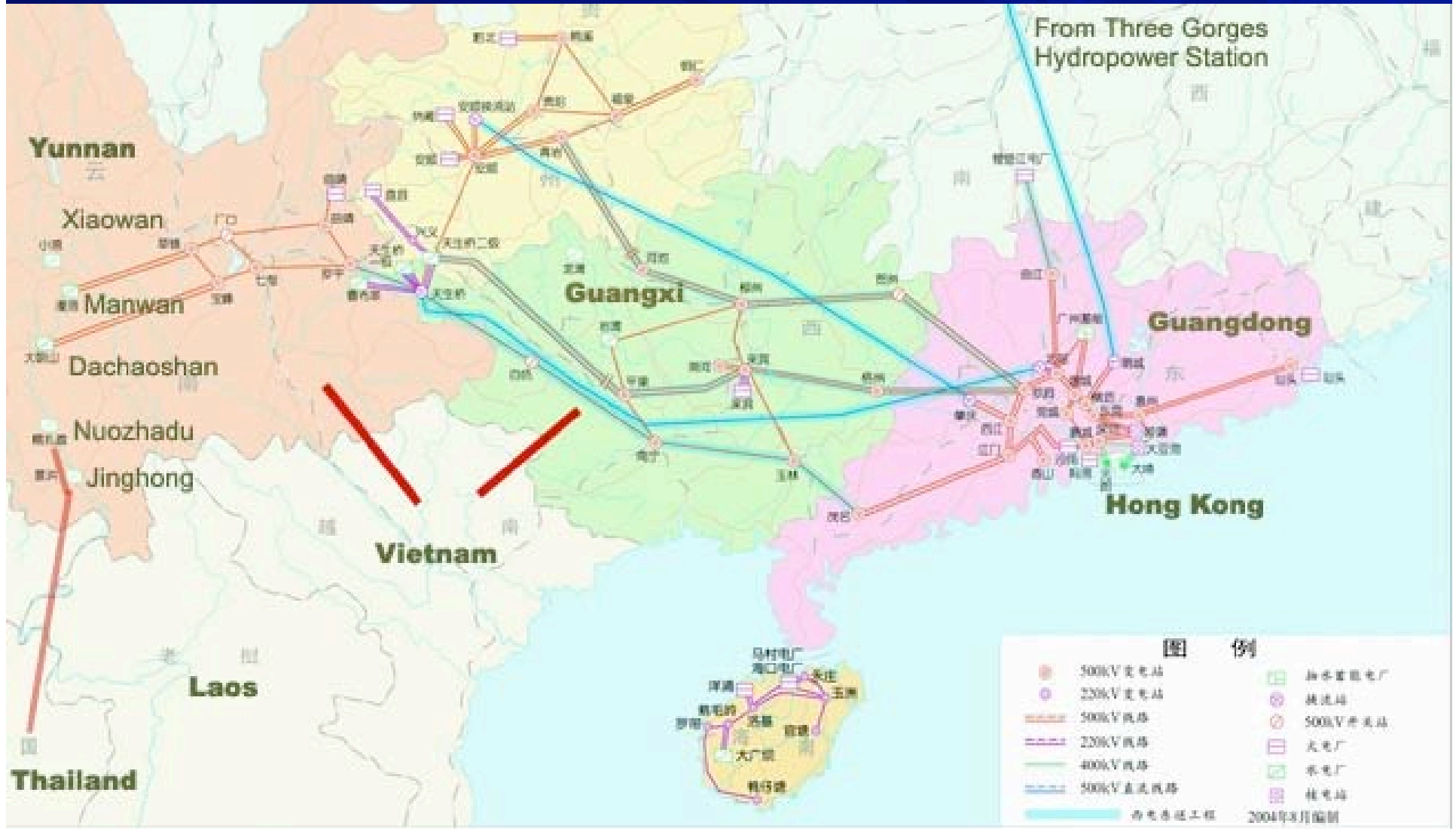
Guangdong Province's GDP since 1978

x 0.1billion yuan

1978年以来广东省生产总值



China's Southern Power Grid



China's Southern Power Grid

- Part of the Pan-Pearl River Delta Regional Cooperation and Development Initiative
- Guangdong's electricity source:
- Guangdong itself (~32,000MW)
- South-western provinces: Yunnan, Guizhou and Guangxi (~15,800MW)
- Three Gorges Dam (~3,250MW)
- Hong Kong (~900MW)

Benefits (3)

- Besides Guangdong, Yunnan's electricity has other markets, such as Vietnam and Thailand.
- Mekong countries' GDP annual growth rate: ~6%; GDP per capita annual growth rate: ~3.5%
- Vietnam bought 100MW from Yunnan in 2004, which increases to 400MW in 2005.
- Thailand signed Power Trade Agreement with Jinghong, Nuozhadu hydroelectric stations: transfer 1,500MW in 2013, and 3,000MW in 2014.

Increase the ratio of hydro

- Hydro only shares 8% of total power generation; increased to 15-20% expected
- Power grid helps increase the hydro share, and reduce the coal/fossil fuel share
- Probably replace the old coal plants with hydro
- An economic growth that avoids further greenhouse gases emissions; take care the global environment

Concerns

- Environmental issues:

Soil erosion and sedimentation, garbage pollution, water quality, change of river flow, fish species...

- Social issues:

Resettlement, corruption, poverty, ethnic minority, livelihood- drug trafficking, theft crime...

- Political issues:

Information exchange, water governance, upstream-downstream cooperation...

2. Issues to be addressed

Manwan dam



The backside of Manwan dam

Rapid Ecosystem Changes Due to Infrastructure Interruption



Soil Erosion



Manwan resettlement villages





**Landslides
destroyed a primary
school and many
houses in Manwan
reservoir area**



Water polluted in the reservoir



**Resettlement
villages do not
have enough
water for drinking
and irrigation**



Manwan dam migrants picking valuables from garbage dumpsite for survival



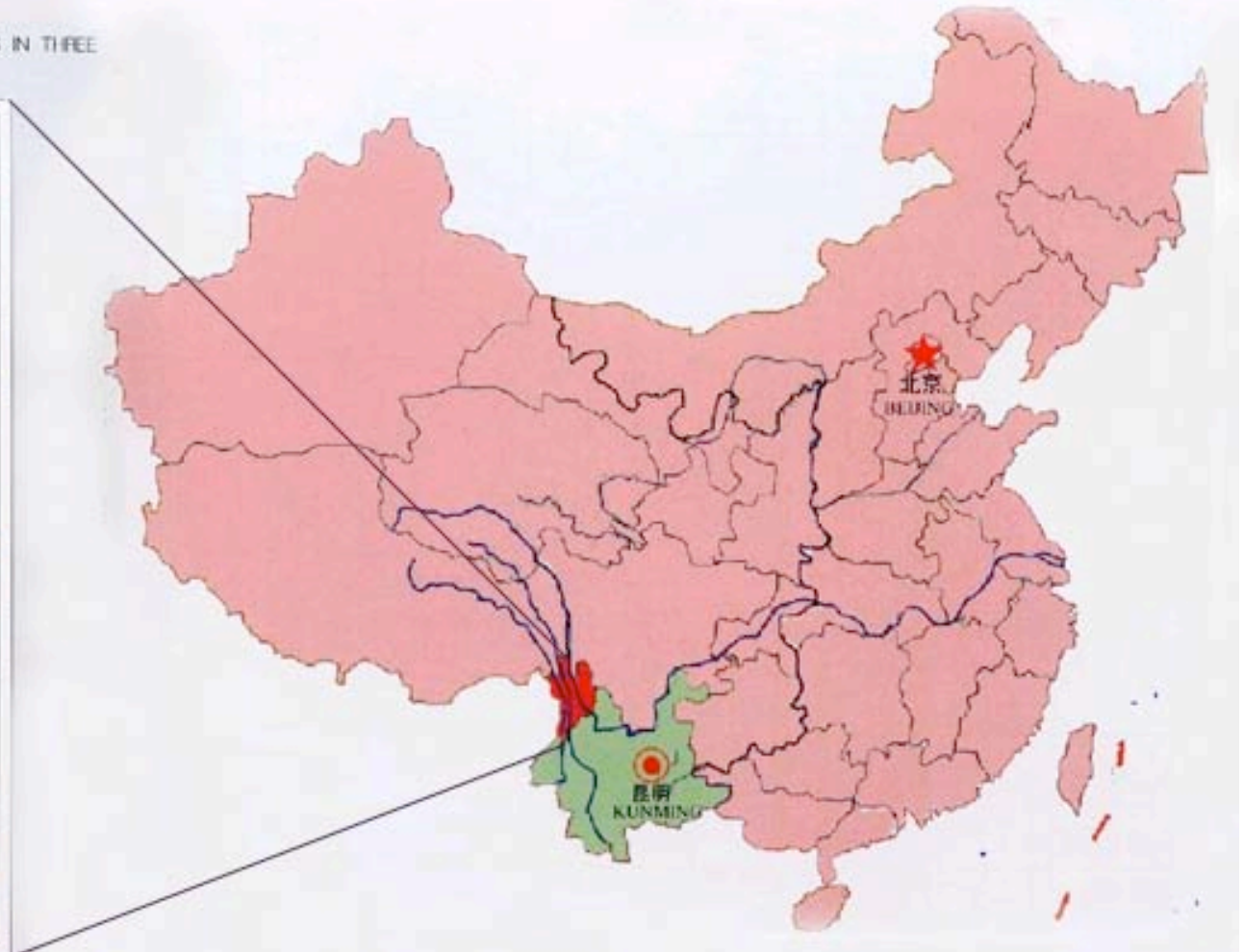
Trade activities and Rapid blasting



UNESCO World Heritage site: Three Parallel Rivers

“三江并流”景区、自然保护区示意图

THE SKETCH MAP OF SCENIC AREAS AND NATURE RESERVES IN THREE PARALLEL RIVERS NATIONAL PARK



Other concerns:

- Infertile farmland in resettlement villages
- Inundation of valuable hot springs
- Adversely affect the scenery of Three Parallel Rivers World Heritage site
- Change the water temperature and climate of snow mountain (local wisdom)
- Navigation activities seriously affected
- Fisheries no longer active
- Clean water supply becomes a problem



Public awareness activities: Photo Exhibition



■ Rights-based approach:

Workshops to educate the dam-affected communities their own rights

■ Use of media and communications:

Run stories in newspapers and TV programs to gain sympathy and support from general public

Run web sites to deliver timely information of the dam development to the concerned people

3. Conclusion and Recommendations

- China is the headwaters of major transboundary rivers in Asia, the reasonable utilisation and conservation of its abundant transboundary water resources will greatly affect regional water utilisation and regional security. It is currently being protected by law.
- Water systems in Yunnan present distinct changes which are closely related to human activities and global climate changes

- Human activities such as dam cascade building is disturbing river ecosystems and worsening water quality.
- China has been working for further cooperation in transboundary water resources management with downstream countries, through the platforms of ADB's GMS and MRC.
- China set up the “Coordinating Group in Lancang-Mekong pre-development research” in 1994

- China's position on GMS development: share the benefits of development with riparian countries, and create "win-win" situations
- China has shared the hydrological data of Lancang River with Mekong River Commission since the flood season of 2002
- China took the lead in Lancang River's sustainable development research, using ADB's funding.

Trust-building

- Change people's mind-set: Transboundary river is not owned by one country, but shared by all riparian countries.
- Enhance information disclosure, data access and transparency
- Involve all stakeholders in downstream countries over China's upstream dam plan
- Improve hydrological monitoring networks in the international rivers of Yunnan

Policy recommendations

- Develop other renewable energies than large hydro, such as wind, solar, geothermal and biomass
- Develop demand side management (DSM) strategies in both electricity and water resources sectors, such as energy-saving constructions, improving power transmission efficiency, and water-saving irrigation techniques

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