



中国长江三峡集团公司
China Three Gorges Corporation

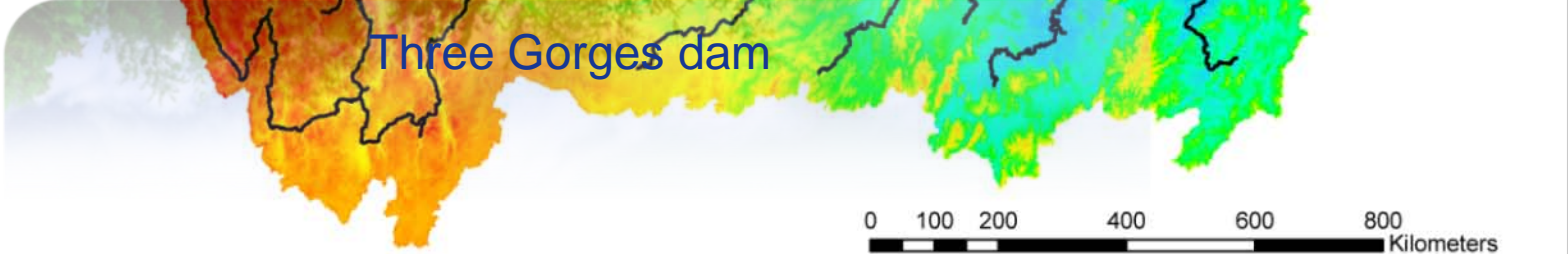
Green Economic Practices of TGP



Science & Technology and Environmental Protection Department
CTGPC



Basic information of the case





Basic information of the case



- the essential backbone engineering project for rectifying and developing the Yangtze River
- feasibility was studied vigorously for almost a century
- represents the highest level of China's existing technology development and integrated management expertise



Basic information of the case





CTGPC

Basic information of the case



1997



2003



2006



2008

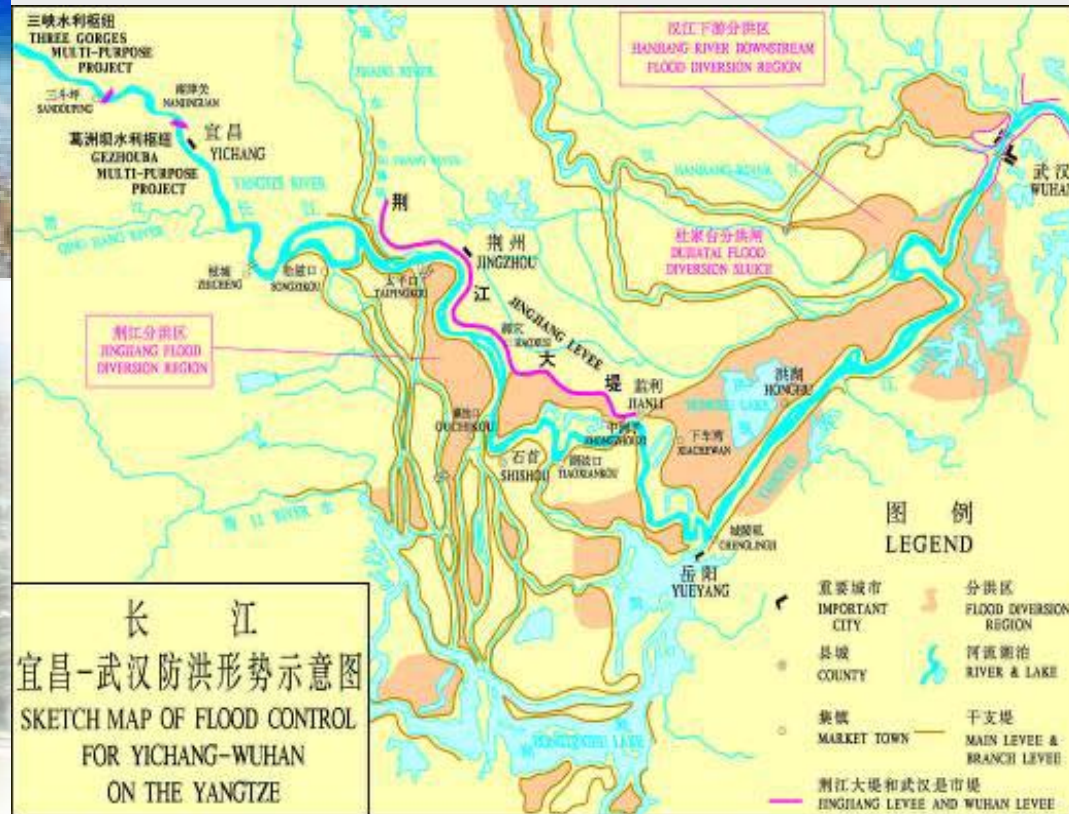


Green economy characteristic-benefits of TGP

➤ Social benefits-flood control and disaster reduction



flood control standard of the Jingjiang section arises from preventing 10-year flood to 100-year flood





Green economy characteristic-benefits of TGP

➤ Social benefits-flood control and disaster reduction

Since 2004, TGP carried out as a flood control project.

In 2010, TGP reservoir operated to control flood for seven times, cutting about 26.43 billion m^3 in total. During the process, the highest reservoir water level at the dam is about 161.02 m el.

On 20 Feb., 2010, in the process of controlling the $70000m^3/s$ flood peak, the max flood peak cutting volume is $30000 m^3/s$, cutting about 7.6 billion m^3 .



Green economy characteristic-benefits of TGP

➤ Social benefits-poverty reduction

Mean GDP per capita of countrywide and the TG reservoir during 1996 to 2009

	1996	2005	2009
Countrywide (¥)	5846	14185	25605
TG reservoir region(¥)	3723	10038	19518
Ratio(%)	63.7	70.8	76.2

Funding for the resettlement of residents relocated for the TGP, dedicated domestic air programs for the affected areas, and the facilitation of navigation along the Yangtze River have created opportunities for transforming the mode of economic growth in the reservoir area and for lifting local residents out of poverty and improving their living standards.



Green economy characteristic-benefits of TGP

➤ Social benefits-poverty reduction

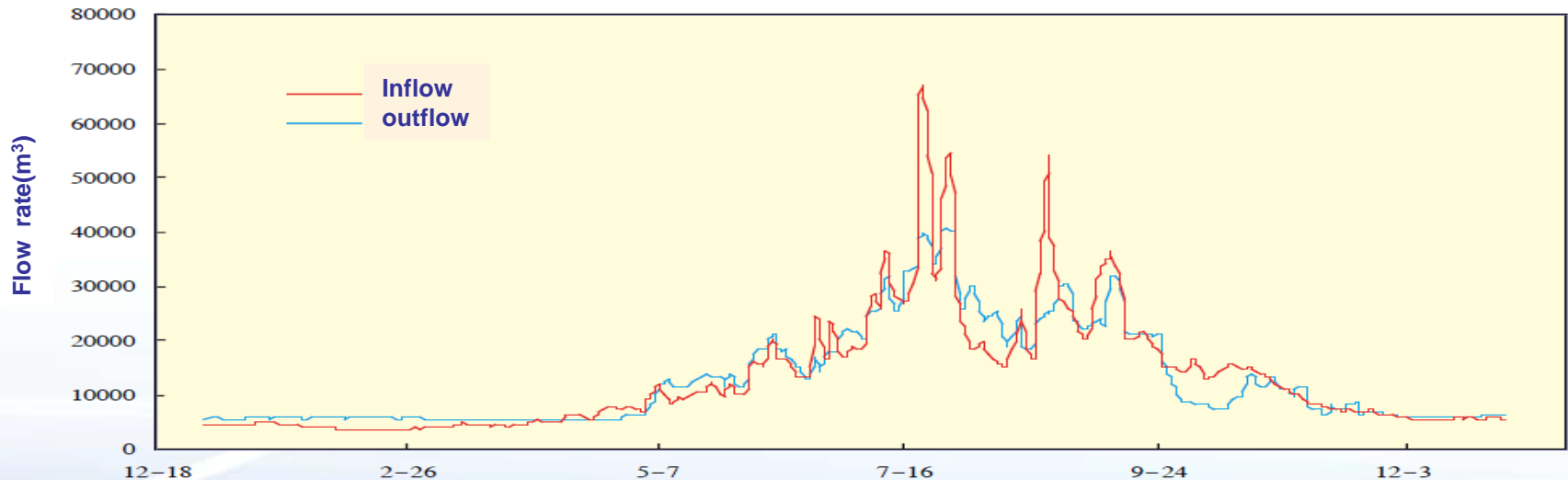
Before and after resettlement of three gorges reservoir area of economic index comparison table

Item		unit	Hubei area			Chongqing area		
			1992	2007	average annual growth rate	1997	2007	average annual growth rate
GDP	total	100 million RMB	19.63	139.48	13.97	208.22	702.70	12.93
	Per capita	RMB	1179.58	8841.62	14.37	2528.52	8006.50	12.22
Local financial revenue	total	100 million RMB	1.77	20.65	17.80	14.11	52.48	14.03
	Per capita	RMB	166.40	1309.21	14.74	171.38	597.91	13.31
Year end deposit balance of urban and rural residents	total	100 million RMB	5.62	100.74	21.22	92.93	558.47	19.64
	Per capita	RMB	337.84	6386.15	21.65	1128.54	6363.16	18.88
Urban per capita disposable income		RMB/capita	1557	8963	12.38	3609	10114	10.85
Rural income		RMB/capita	531	3115	12.52	1357	3027	8.35
Urban housing area		m ² /capita	26.66	39.08		17.75	28.9	
Rural housing area		m ² /capita	37.21	47.54		27.25	34.38	



Green economy characteristic-benefits of TGP

➤ Social benefits-water supply



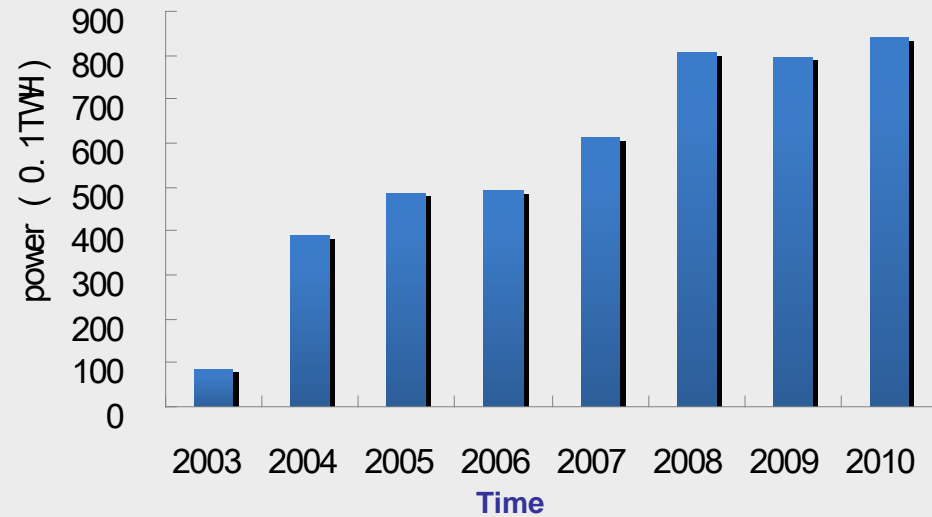
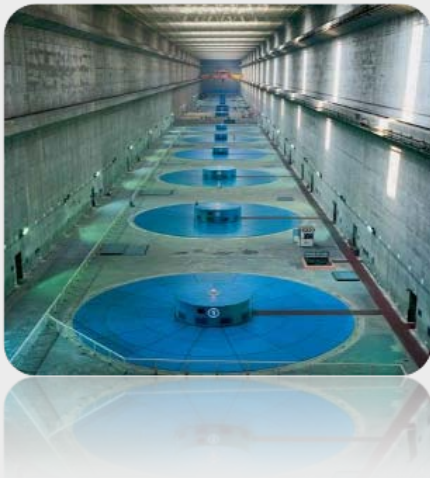
Comparison between reservoir inflow and outflow of the TGP in 2010

- ✓ From 2006 to 2010, the reservoir supply water above 1500 million m³ in total, the main effect of water supply operation is to improve the water quality and navigation condition, provide industry, agriculture and other ecological water demand for down stream.



Green economy characteristic-benefits of TGP

➤ Economic benefits-power generation

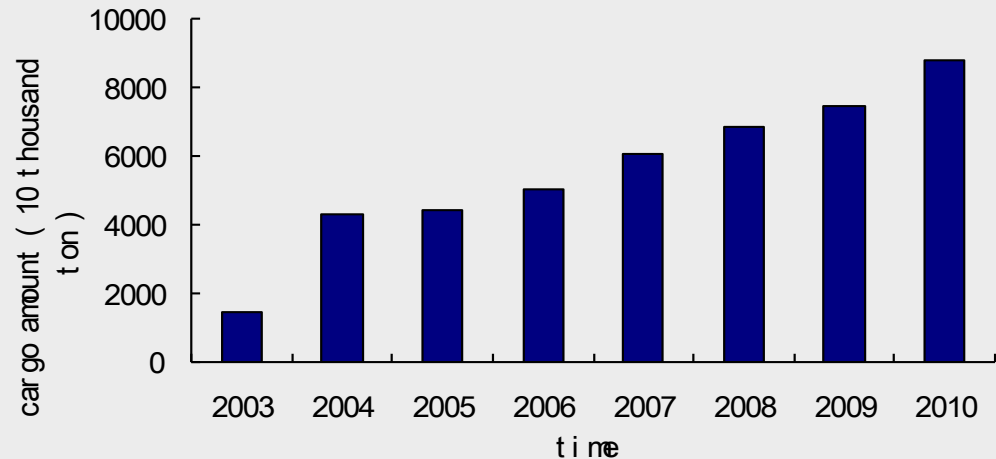


Since the first unit generates electricity on 10 July, 2003, to the last day of 2010, TG hydropower station has generated about 450 TWh, equivalent to one-tenth of China's total power production in 2009,



Green economy characteristic-benefits of TGP

➤ Economic benefits-navigation



TGP strongly facilitated navigation along the Yangtze River and the development of the regional economy.

After the impounding of TG reservoir, the navigation condition from Yichang to Chongqing is improved, the energy consumption per km reduce about 46%. And in dry season, the reservoir will supply flow to downstream, which will improve the navigation condition of down stream. From 16 June, 2003 to 31 Dec, 2010, the amount of cargo through TG site is above 44 million tons, which is more than two times of the total amount of cargo through the ship lock of Gezhouba dam in 22 years before the impoundment of TG reservoir.



Green economy characteristic-benefits of TGP

➤ Environment benefits-reduction of GHG emission



➤ Navigation improvement reduced the energy consumption, and reduce the emission of GHG.

In China's National Climate Change Programme, the hydropower is thought as an important countermeasure to develop China's energy structure to clean and low carbon energy, and is expected to reduce GHG emissions about 50% of the total reduce amount. Since the first unit generates electricity on 10 July, 2003, to the last day of 2010, TG hydropower station has generated about 450 TWH, equivalent to reduction GHG emission about 370 million tons.



Green economy characteristic-benefits of TGP

➤ Environment benefits-promote ecological conservation



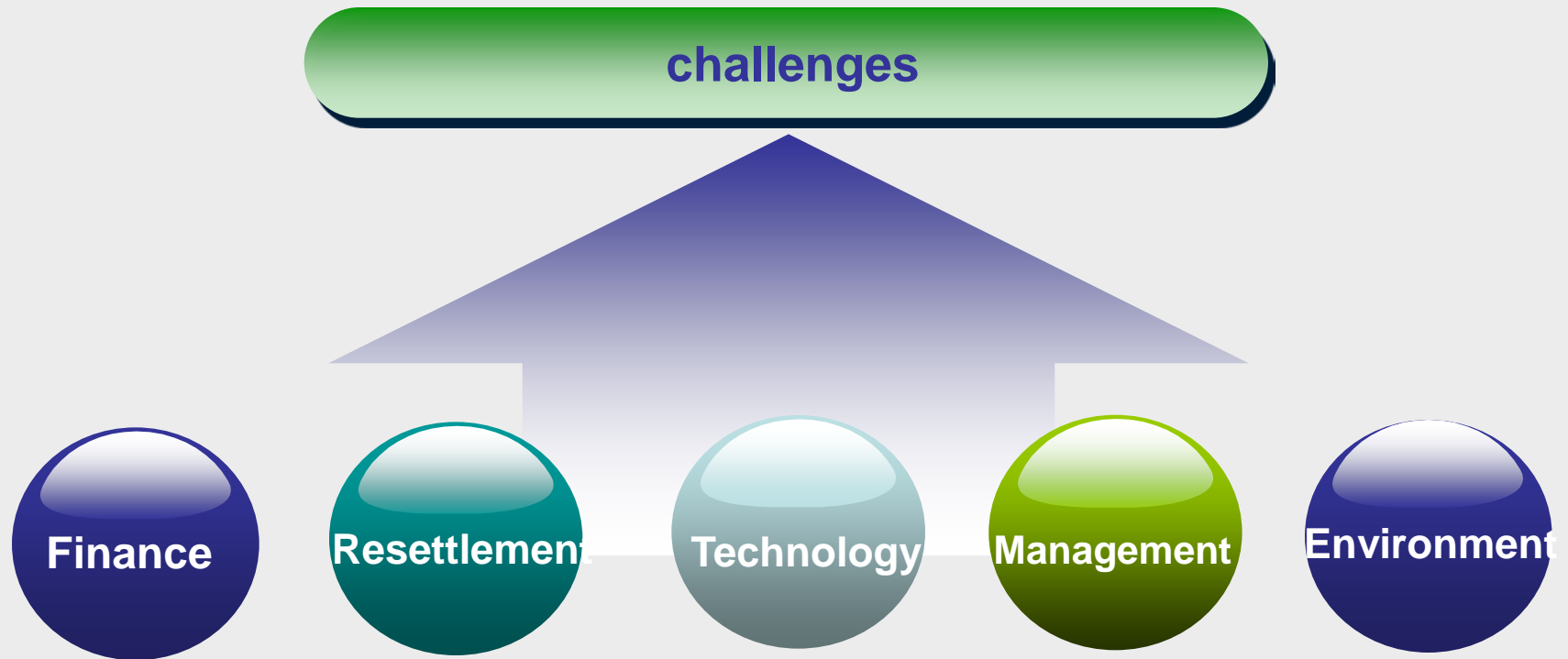
荷叶铁线蕨



中华鲟



The relevance of the challenge and objectives





The relevance of the challenge and objectives

- **Budget: ¥ 900.9 billion (static investment) , ¥ 2039 billion (dynamic investment).**

Diversified financing channel First phase (93-97) Second phase (98-03) Third phase (04-09)

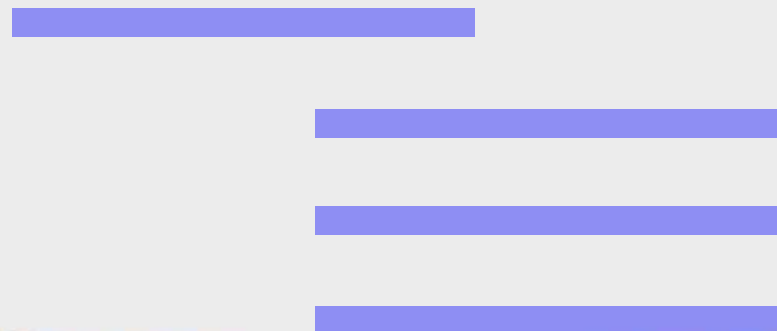
**Equity
Financing**

TGP construction fund
Gezhouba power plant
power generation returns
TG power plant generating
revenue and equity financing



**DEBT
FINANCING**

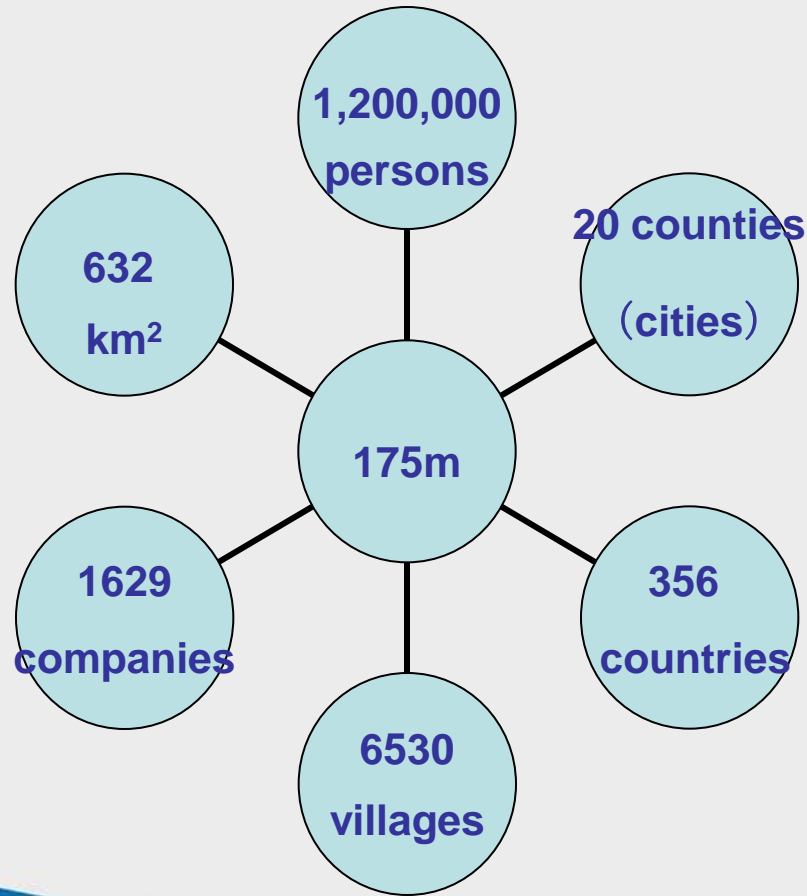
The state development
bank loans
corporate bonds
i foreign investment
Local commercial
bank loans





The relevance of the challenge and objectives

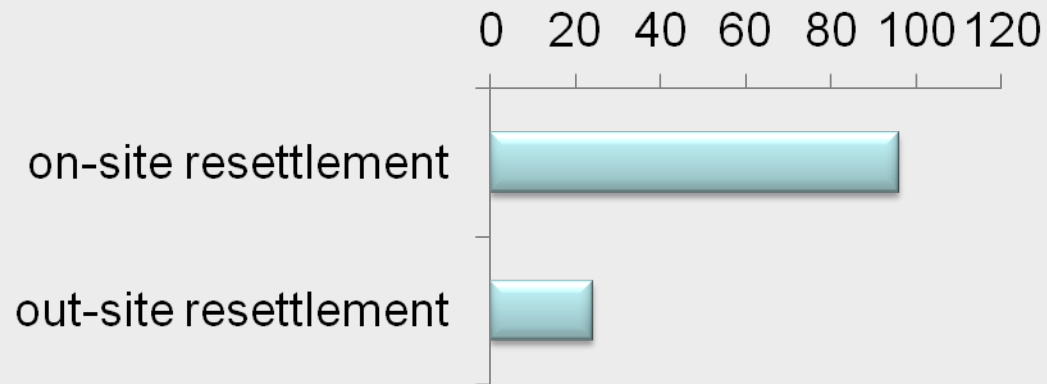
➤ Resettlement





The relevance of the challenge and objectives

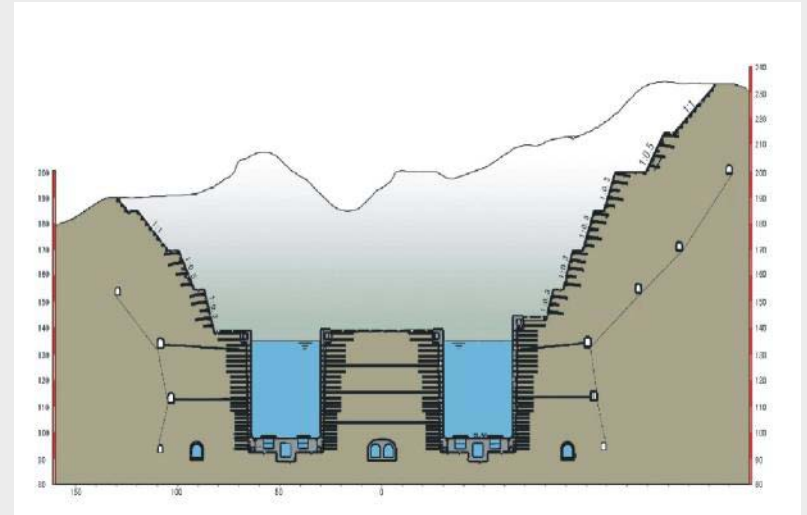
➤ Main resettlement way





The relevance of the challenge and objectives

➤ Technology





The relevance of the challenge and objectives

➤ Technology

**The introduction of large-scale hydropower unit digestion ,
absorption and innovation**

Technical
Route

The combination of technology and trade, technology transfer, joint design, cooperative production

Three
musts

- Bidder must joint with Chinese manufacturing enterprises design and manufacture.
- Must report to China enterprise comprehensive core technology transfer, training the Chinese technical personnel.
- China's manufacturing enterprise is not lower than the share 25% of the contract price, the last 2 sets of the 14 left units must be made mainly by China manufacturing enterprise



CTGPC

The relevance of the challenge and objectives

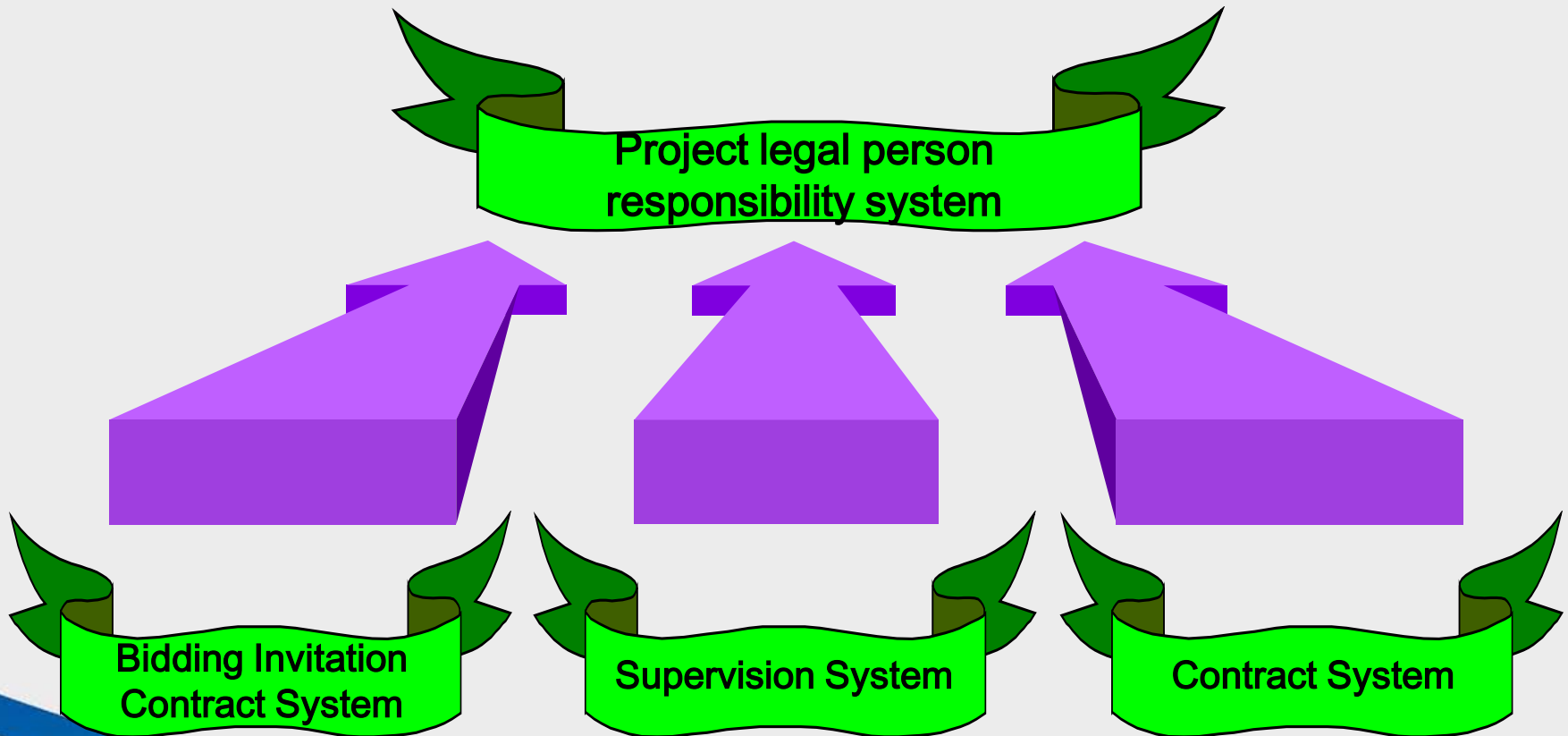
- **How to management the project hugest hydropower plant, largest number of resettlement and largest volume of work in the world?**





The relevance of the challenge and objectives

- **Project management system-Project legal person responsibility system**

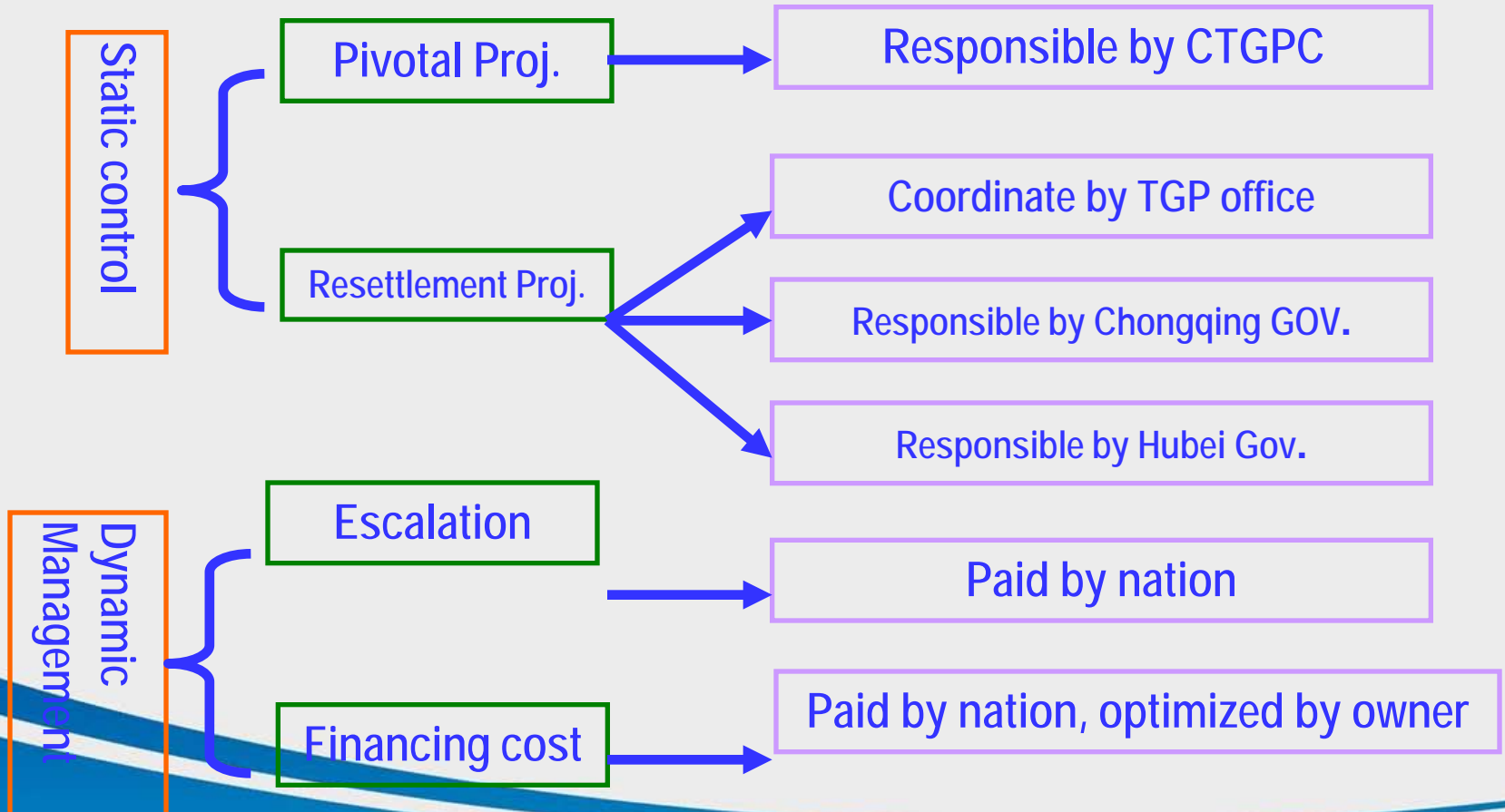


From planning economics to market economics



The relevance of the challenge and objectives

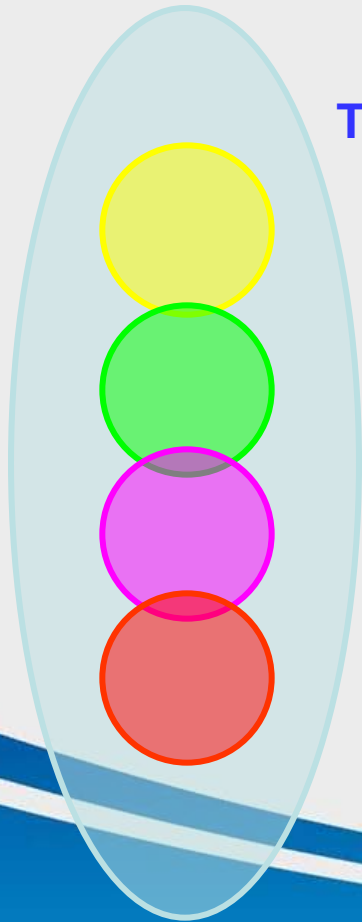
- **Invest management-** One mode : “static control, dynamic management”





The relevance of the challenge and objectives

- **Project quality management-**“4+1” five level quality management system



TGP Quality inspection group on behalf of gov

- Quality management office of TGP
- Sub-project management team
- Quality control by supervisors
- Quality control by contractors



The relevance of the challenge and objectives

Safety management

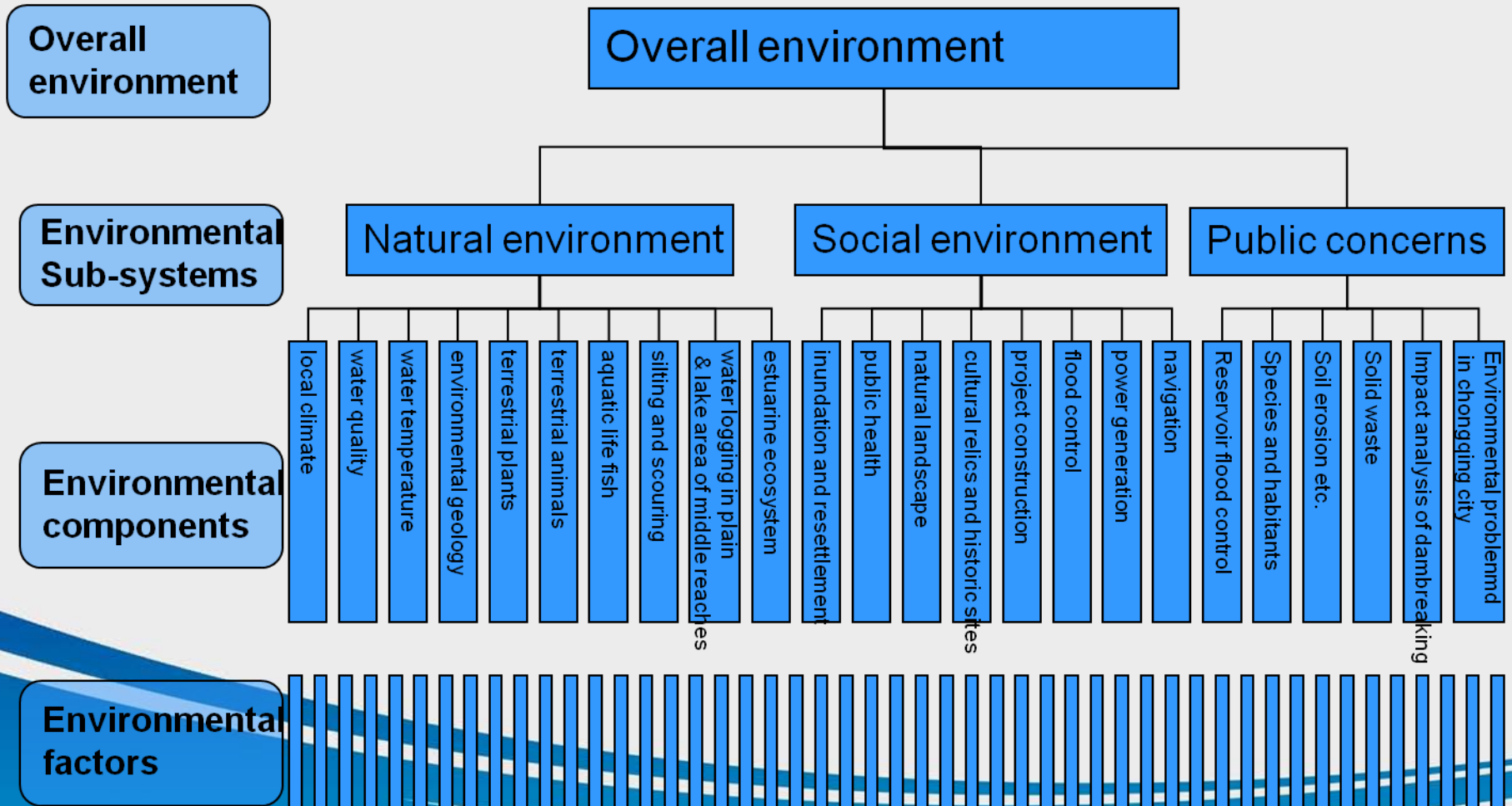
➤ Safety management Policies

- Human being first, keep all staff safety and healthy
- Focus on prevention from process risks during construction
- Enhancing supervision according to safety related laws and regulations
- Improving continuously to build first class enterprise in the globe



The relevance of the challenge and objectives

➤ Environmental protection and ecological conservation-EIA



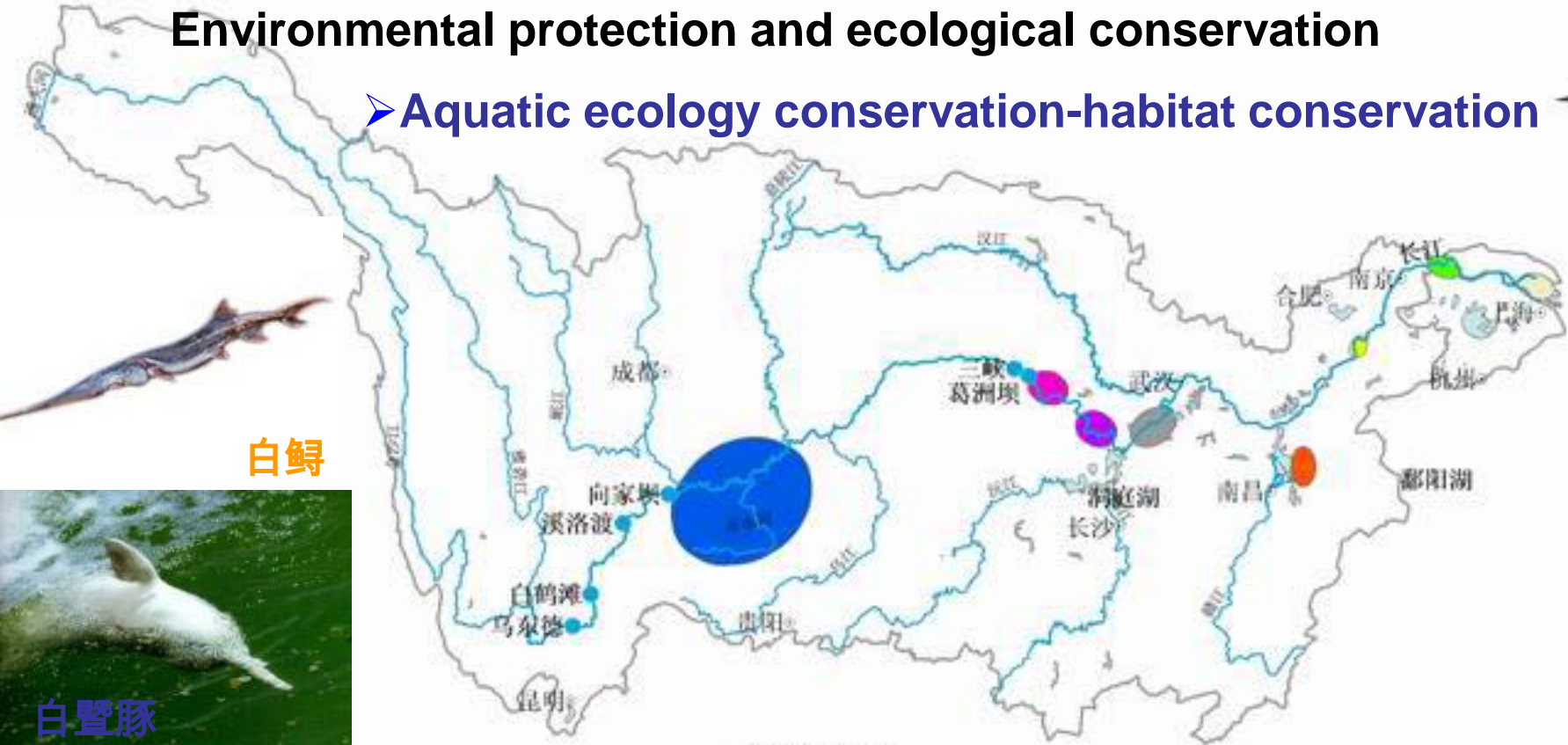


CTGPC

The relevance of the challenge and objectives

Environmental protection and ecological conservation

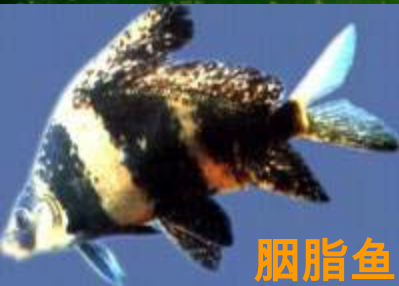
➤ Aquatic ecology conservation-habitat conservation



白鲟



白暨豚



胭脂鱼



长江鲟

自然保护区

- 上海市长江口中华鲟自然保护区
- 鄱阳湖长江江豚自然保护区
- 铜陵淡水豚自然保护区
- 镇江豚类自然保护区
- 长江上游珍稀、特有鱼类自然保护
- 长江天鹅洲白暨豚自然保护区
- 长江宜昌中华鲟自然保护区
- 长江新螺段白暨豚自然保护区





CTGPC The relevance of the challenge and objectives

Environmental protection and ecological conservation

➤ Aquatic ecology conservation-science base





Environmental protection and ecological conservation

➤ Aquatic ecology conservation-Research

✓ Researches on rare species conservation

A series researches about Chinese sturgeon, *Acipenser dabryanus*, Chinese river dolphin, Paddlefish, *Neophocaena phocaenoides asiaorientalis* Pilleri and *Myxocyprinus asiaticus* Bleeker, etc.

✓ Researches on reservoir operation considering the demand of the downstream aquatic system

Research on the demand of "four major Chinese carps " to the operation of TGP

Research on the change trend and countermeasures of Chinese river dolphin and *Neophocaena phocaenoides asiaorientalis* Pilleri after the impounding of TG reservoir.

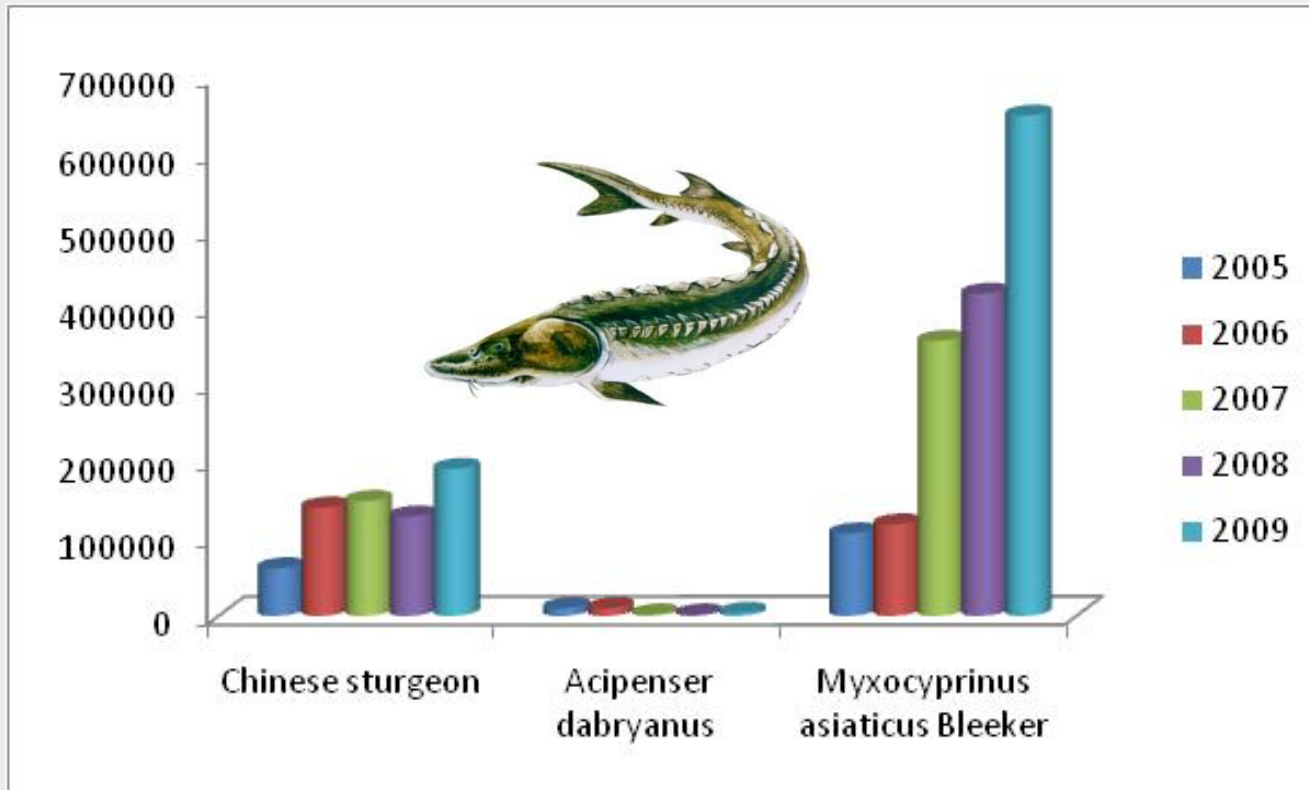
The primary research on the impact on relation of Yangtze river and Dongting and Poyang lake and the environment of these two lake from the impounding of TG reservoir





Environmental protection and ecological conservation

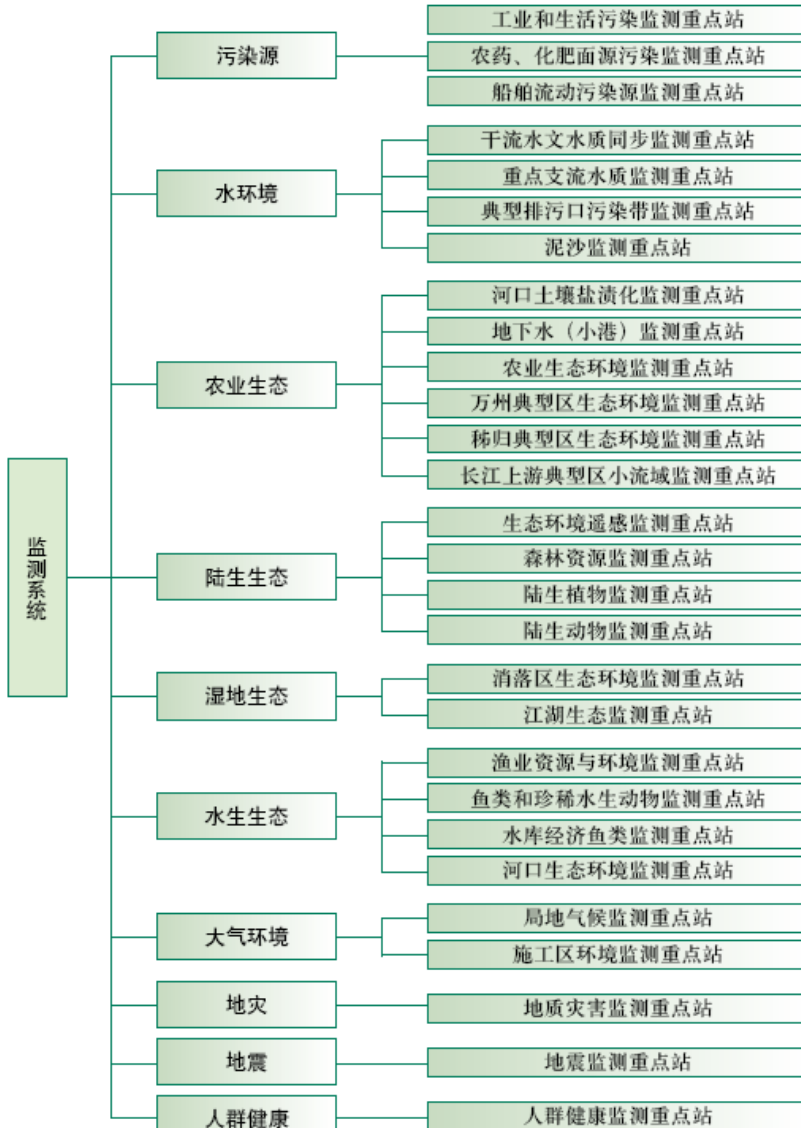
➤ Aquatic ecology conservation-Breeding and releasing





monitoring Environmental protection and ecological conservation

长江三峡工程生态与环境保护监测系统



The ecological and environmental monitoring system of TGP





Scaling up

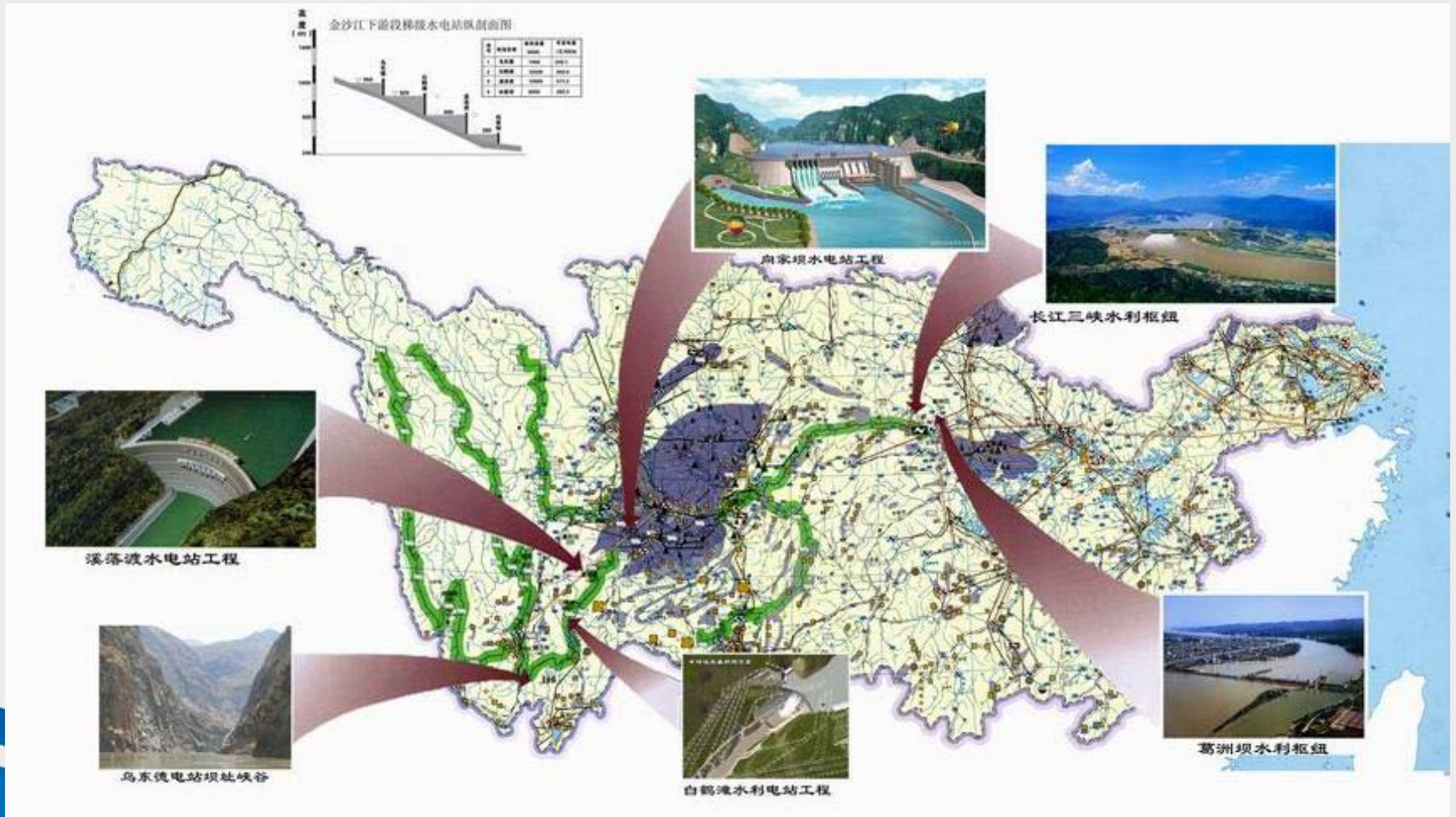
The goals of hydropower development

	2010	2015	2020
Goals of conventional hydropower projects	194,000MW	260,000MW	350,000MW
New capacity		66,000MW	90,000MW
Goals of pumped storage stations	17,000MW	30,000MW	70,000MW
New capacity		13,000MW	40,000MW
Goals of hydropower projects	211,000MW	290,000MW	420,000MW
New capacity		79,000MW	130,000MW

During the twelfth five-year period, hydropower projects with a total capacity of 140,000MW will be launched into construction, including pumped storage projects with a capacity of 40,000MW; hydropower projects with a total installed capacity of 80,000MW will be newly added.



Scaling up





Conclusion

Aside from fully harnessing hydro-energy resources, the TGP has also made painstaking endeavors to eliminate poverty, reverse ecological damage, preserve biodiversity, and reduce gashouse gas emissions, scoring remarkable achievements. It has explored paths to eco-friendly utilization of water resources for the green economy as well.



CTGPC

Thank you very much for your attention !

