Sustainable Hydropower Development: The Middle-lower Lancang River Case

ZHU Qiang
National Energy Administration
1. Updates of Hydropower Development in the middle-and-lower Lancang River

- The hydropower development planning for the middle- and lower- Lancang River was approved by China government in 1987. Eight cascades hydropower stations were planned. The development tasks are: giving priority to power generation, while combining benefits such as navigation, flood control and water supply.

- Under Construction:
  - Nuozhadu
  - Ganlanba

- Canceled:
  - Mengsong

Built and put into operation:
- Gongguoqiao (2012.6)
- Xiaowan (2010.8)
- Manwan (2007)
- Dazhaoshan (2003)
- Jinghong (2009)

1. Updates of Hydropower Development on the Middle-and-lower Lancang River

• The latest progress of the hydropower development of its middle and lower reaches is as follows:

1) **Gongguoqiao** Hydropower Station
   
   Construction work started in May 2005, and initial impounding started in September 2009.
   
   First generation unit put into operation: October 2011. All generation units: June 2012.
   
   Annual generation: 4.191 billion kWh

2) **Xiaowan** Hydropower Station
   
   
   First generation unit put into operation: May 2009. All generation units: August 2010.
   
   Active reservoir capacity: 9.895 billion m³. Annual generation: 18.89 billion kWh

3) **Manwan** Hydropower Station
   
   
   Annual generation: 7.8 billion kWh

4) **Dachaoshan** Hydropower Station
   
   
   Annual generation: 7.02 billion kWh
1. Updates of Hydropower Development on the Middle-and-lower Lancang River

5) **Nuozhadu** Hydropower Station

- Construction work started in April 2004, and initial impounding started in November 2011.
- First generation unit put into operation: August 2012. All generation units: 2014.
- Active reservoir capacity: 11.335 billion m³. Annual generation: 23.912 billion kWh

6) **Jinghong** Hydropower Station

- Construction work started in July 2003, and initial impounding started in April 2008.
- Annual generation: 7.62 billion kWh

7) **Ganlanba** Hydropower Station

- Development task: Counter-regulation for downstream navigation, Generation, City landscape
- Annual generation: 0.87 billion kWh
- Current Status: feasibility study

8) **Mengsong** Hydropower Station

- the last hydropower station on the middle-and-lower Lancang River, canceled.
2. Constraints and Challenge in HP projects

- Environmental protection constraints
  - Bio-diversity Protection technology
  - Ecological red line, The top limit line of resources using, Bottom line of environmental quality and Environmental negative list
    ("Three lines and one list")
2. Constraints and Challenges in HP projects

- HP construction immigrant challenges
  - Culture difference
  - High cost problem
The following management procedures have been strictly applied for hydropower development in the middle-lower Lancang River.

**3. Best practices of Environment Protection Measures in the Middle-Lower Lancang River**

- **Hydropower planning**
  - SEA of the planning
  - Review and approval of SEA

- **Pre-feasibility Study**
  - Project Preliminary EIA

- **Feasibility Study**
  - Review and approval of the planning
  - Review and approval of EIA report

- **Construction**
  - Examination and approval of the project

- **Operation and management**
  - Operation and management of environmental protection
  - Post-EIA and improvement of environmental protection measures
  - Project completion and acceptance
  - Project EIA
  - Monitoring and management of environmental protection

**Review and approval of the planning**

**Review and approval of EIA report**

**Examination and approval of the project**

**Post-EIA and improvement of environmental protection measures**

**Project completion and acceptance**
3. Best Practices of Environmental Protection Measures

As an upstream country in the Lancang—Mekong Basin, China has been adhering to the sustainable development strategy, paying equal attention to development and conservation, and taking account of the interests of both China and downstream countries in exploiting the hydropower resources of the Lancang River. Environmental protection measures have implemented as planned.
Environmental Protection Measures in Nuozhadu Hydropower Station

① Stratified Water Intakes
② Rare Plant Protection Garden
③ Production
④ Resettlement Town
⑤ Fish Protection Station
⑥ Construction

Note: All pictures taken on August 25, 2011
Fish Protection Activities along Lancang River

- On September 26, 2010, the Department of Agriculture of Yunnan Province and the Government of Xishuangbanna Dai Autonomous Prefecture carried out a campaign named "Enhancement and Releasing of Fishery Resources in the Lancang-Mekong River in 2010". More than 80,000 channel catfish fries were released into Lancang River.

- Nuozhaodu Fish Enhancement and Releasing Station was completed, and put into operation in April 2010. And on July 26, 12,000 channel catfish with a length of 6-10cm were successfully released in the Lancang River.
Thank you!