THREE GORGES DAM

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Specifications

- Dimensions:
  Length: 7,661 Ft.
  Height: 331 Ft.
  Width (at base): 377 Ft.

- Location:
  Sandouping, Yichang, Hubei, China

- Impounds the Yangtze River
Project Overview

- Construction time: 1992 – 2011
- Construction Cost: Est. $29 billion
- 32 Generators: Capacity of 700MW EA
- Total electric generating capacity: 22,500 MW
Materials Used/Excavated

- 35,600,000 yd.\(^3\) concrete
- 463,000 tonnes of steel
- Moved 1.342 \(\times 10^8\) yd.\(^3\) of earth
Technical Innovations

- River Close-off and Cofferdam in deep water
- Concrete placement on the TGD
- High Slopes outside the Three Gorges Ship lock and Metal Structures
Technical Innovations

• Main Generators
  - Weight: 6000 tonnes
  - Outer diameter of stator: 21.4m (70.2 ft.)
  - Power produced: 700 MW
  - Generator Efficiency: 94% - 96.5%
Finance

- Cost of Construction
  ¥ 64.6 Billion  =  $ 9.5 Billion
- Cost for Relocation of Affected Residents
  ¥ 68.6 Billion  =  $ 10 Billion
- Cost for Interest of Financing
  ¥ 15.2 Billion  =  $ 2.3 Billion
- Total Cost (2008)
  ¥ 148.4 Billion  =  $ 21.8 Billion
Source of Funds

- Three Gorges Dam Construction Fund
- Profits from the Gezhouba Dam
- Policy Loans from the Chinese Development Bank
- Loans from domestic and foreign commercial banks
- Corporate Bonds
- Revenue from the Three Gorges Dam before and after it is fully operational
How is Three Gorges Dam good for China’s economy?

- Three Gorges Dam, (TGD) will substantially benefit China’s economic development.
- TGD improves navigability of upstream waterways.
- TGD benefits tourism in China.
- TGD will help citrus production.
Construction of Three Gorges Dam has:

• Greatly improved Hubei's economic growth, as well as other provinces surrounding TGD.
• Sparked 1,344 projects supporting the dam in the Hubei reservoir area.
• Created huge demands for steel, wood and concrete.
Social Benefits (1/3)

First Target of Three Gorges Project is Flood Control:

- Protection of 1.5 million hectare of farmland and towns, and 15 million of people from flood damage

- 10-year flood → 100-year flood

- Prevention of mass damages or injuries even in a 1000-year flood

- Avoidance of social problems such as environmental deterioration and epidemics related to the flood
Social Benefits (2/3)

- **Direct** reduction of air pollutant and greenhouse gas emission:

366 grams of coal is used to generate 1 kWh of electricity, therefore the dam will reduce (per year):
- The coal consumption by 31 million tonnes
- Emission of 100 million tonnes of greenhouse gas
- Millions of tonnes of dust
- 1 million tonnes of sulfur dioxide
- 370 thousand tonnes of nitric oxide
- 10 thousand tonnes of carbon monoxide
Social Benefits (3/3)

Reduction of greenhouse gas due to navigation:

198 million tonnes of goods passed through the dam ship locks (2004-2007)

→ Saved fuel is equivalent to 4,100,000 tonnes of standard coal comparing to highway transportation

Other Benefits:

- Improvement of the weather in the area
- Improvement of water quality
- Increase in river shipping from 10 million to 100 million tonnes annually
- Transportation cost cut by 30 to 37%
Social Impacts

- **Relocation:**
  - 1.24 million local residents were relocated until June 2008
  - Accusations of corruption over money sent for the purpose of relocation for 13,000 farmers

- **Impacts on the fauna:**
  - Siberian Crane
  - Baiji

- **Impacts on local culture:**
  - The 375 mi long reservoir has flooded or will flood some 1,300 archaeological sites
  - It covers some undiscovered relics
Any Questions/Comments Appreciated

Thank You!