

## **Trung Son Hydropower**

### **Project Overview and Description**

*(As of February 2011)*

#### **Overview and Objective**

The Trung Son is a \$ 411.57 million medium-sized hydropower and development project located in the Hoa Binh, Son La and Thanh Hoa Provinces provinces in Northwest Vietnam that will supply least-cost electric power for domestic consumption in an environmentally and socially sustainable manner and will contribute to improvements in dam safety in the power sector in Vietnam. The project will also contribute to the Climate Change agenda in Vietnam by avoiding CO2 emissions of about 1 million tonnes per year, net, taking into account the additional low emissions from its reservoir.

Trung Son will enable Vietnam to develop an additional 260MW of electricity-generating capacity to service power expansion and the energy demands of the Vietnamese society as the country continue improving its economic growth path of over 7 percent over the past several years while ensuring key conditions like energy security and climate change are contemplated. The project responds to and is circumscribed into the integrated hydrological basin studies conducted in occasion of developing the Energy Master plan for Vietnam and its subsequent revisions and is part of a broader World Bank energy assistance to the country.

Trung Son hydropower project is scheduled to be considered by the IBRD/IDA Board of World Bank Executive Directors on April 26<sup>th</sup> , 2011 and it will represent the first World Bank investment project under IBRD lending conditions to the Government of Vietnam. The World Bank, will provide financial support in the form of a loan of \$330 million payable with a 27 year maturity and a grace period of 6 years.

[Back to top](#)

#### **Project Developer**

Trung Son hydropower project's implementation is being undertaken by the Trung Son Hydropower project management board (TSHPMB), a unit under Vietnam Electricity (EVN), the national electricity utility. It is responsible for ensuring the entire project is implemented according to both government and World Bank requirements. EVN will create the Trung Son Hydropower Company (TSHPCo) as a One-member Company from the former TSHPMB. TSHPCo will remain a wholly owned subsidiary of EVN into which all the assets of Trung Son Hydropower Plant (TSHPP) will be placed. Staff currently at TSHPMB will also transfer to TSHPCo.

TSHPMB maintains a dedicated web site – <http://www.trungsonhp.vn> - where publicly available information is routinely placed.

[Back to top](#)

## **Project Description**

Trung Son hydropower project includes the development, construction, and operation of a run of river power plant that would use water from the Ma River and release it into the same basin. The proposed project site is located in the Son La, Than Hoa and Hoa Bin provinces in North-Western Vietnam, with the plant in the territory of Trung Son commune, Quan Hoa district, Thanh Hoa province, about 10 km south of the Lao border following the course flow of the Ma River. The main features of the project include:

- a 84.50 meter-high dam on the Ma River.
- a 13.13 -square-kilometer reservoir.
- a powerhouse containing four (4) 65 MW Francis turbines (260 MW installed capacity) each designed for a maximum water head of about 72 m
- a 65 kilometer-long, 220-kV transmission line to the Vietnamese national grid.
- a 20.4 kilometer access road connecting the road system to the project site
- Social, environmental and community relations programs to mitigate project anticipated and unanticipated impacts to a directly or indirectly impacted population of about 10,600 persons, representing 2,327 households. Of these 7,012 people (1516 households) are impacted by the main project's area.

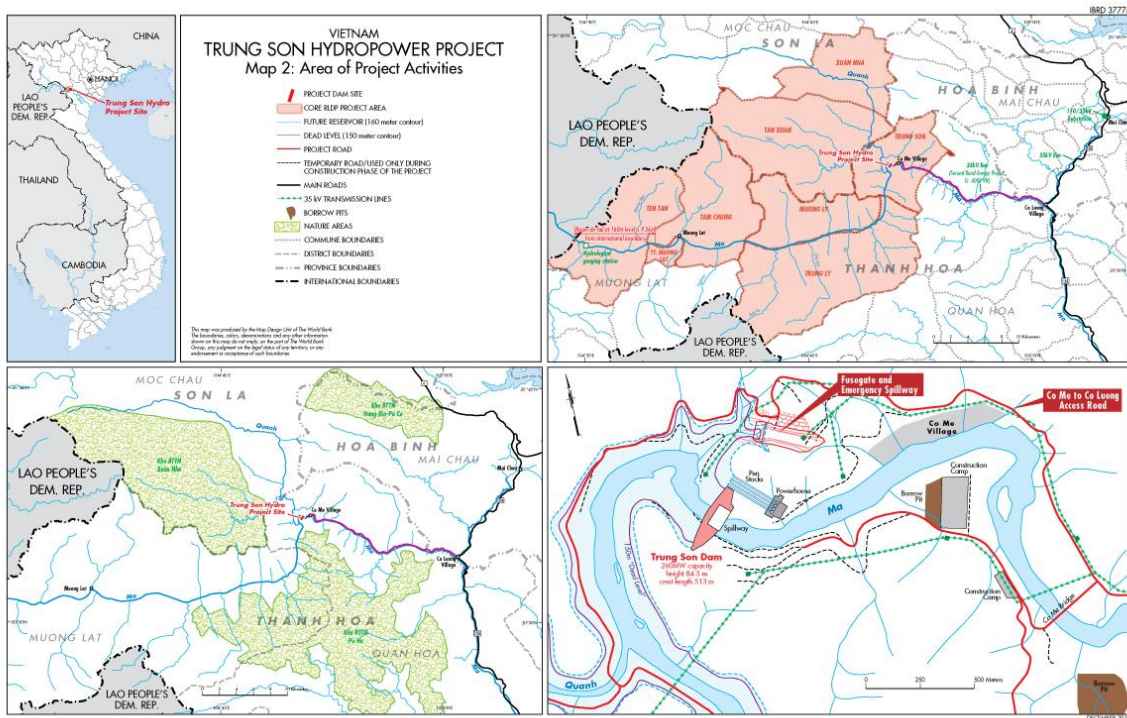


Figure 1- Location of Trung Son hydropower project as well as construction layout and facilities

The project is composed of four components and the IBRD funding allocation is distributed as follows.

- The Dam and Ancillary Construction Component, providing the basis on which least cost electric power is generated. The total cost is estimated at \$262.86 million, of which IBRD will provide \$233.76 million.
- The Transmission Line Component is the means by which the power generated is moved to electricity consumers. The total cost for this component is \$18.61 million, of which IBRD will provide the full amount.
- The Social and Environment Impact Mitigation Component ensures the environmental sustainability and socially responsible construction and operation of the Trung Son Hydropower Plant. The total cost for this component is estimated at \$35.47 million, of which IBRD will provide \$16.53 million.
- The Capacity Development and Scale-up Component scales up the impact of the environmental sustainability and socially responsible construction of the plant by leveraging the knowledge gained to other projects in Vietnam. The total cost is estimated at \$3.0 million, of which IBRD will provide the full amount.

An estimated amount of \$58.1 m has been included for physical and price contingencies as well as front end fees and other unallocated expenditures.

[Back to top](#)

## **Project calendar**

As of February-March 2011 the project has been appraised, which means that:

- ✓ Consultation with project affected population has taken place
- ✓ Civil society consultation has also taken place
- ✓ A review of all safeguards triggered by the project has been accomplished
- ✓ The Bank has invited Vietnam to negotiate the loan
- ✓ The loan is being negotiated during March

Following the Negotiation stage, the timeline of the project for after World Bank's Board of Executives Director's approval is estimated as follows:

- Bank consideration for approval: April 26th, 2011
- Project signing: May 2011
- Project effectiveness: August 2011
- Project implementation: May 2011 onwards

The following is the best estimate detailed timeline of implementation in the project as currently scheduled

	Start	Finish
Resettlement compensation for road	February, 2009	December, 2010
Access road and bridge construction	January, 2011	February 2013
Reservoir area compensation	December, 2010	February, 2012
Community Livelihood Implementation Plan (CLIP) activities	January, 2011	May, 2016
River diversion	June, 2012	
Construction of main dam and auxiliaries	June, 2012	September 2016
Construction of transmission line	March, 2014	October 2016
Impoundment of reservoir	September, 2016	
First turbine operation		November, 2016
Full operation		May, 2017

Activities initiated before the project's approval are being done under IBRD retroactive financing conditions and in an amount not expected to exceed \$20 million.

[Back to top](#)

## **Monitoring and Evaluation of results**

Trung Son will have a results monitoring and evaluation framework consisting of monitoring and evaluation entities as well as a results framework with pre-established project development indicators.

The entities are:

1. **Dam Safety Review Panel/ Project Technical Advisory Panel (PTAP)** to advise on technical construction, operations, and dam safety issues. At the request of TSHPMB/TSHPCo the Dam Safety Review Panel which has been provide broader engineering advice, will be absorbed by a Project Technical Advisory Panel (PTAP) which will be tasked to provide- in addition to meeting the requirements of the Bank Safeguard OP 4.37 *Dam Safety-*, with more general project technical and engineering advice during the construction phase of the project.
2. **Panel of Environmental and Social Experts (POE)**, reporting to the Government and being financed via the IBRD loan, to advise on environmental and social issues. In addition to these oversight roles the Panel will be involved in the independent grievance process The POE normally will visit Vietnam once or twice per year (or more often at the Government's request). The latest visit took place in March 2010. POE reports are available to the public on [www.trungsonhp.vn](http://www.trungsonhp.vn) and [www.worldbank.org/vn/trungson](http://www.worldbank.org/vn/trungson)
3. **Independent monitoring consultants (IMC)**, reviewing activities by both contractors and /TSHPCo and reporting independently to EVN and the World Bank.
4. **Regular supervision by staff of the World Bank**, in the form of site visits and management and technical missions. The World Bank's decentralized nature ensures that there are staff based in the Hanoi office able to provide guidance in real time on most aspects of project implementation from technical, fiduciary, social and environmental safeguards perspectives, among others. In particular and as the Financial Management risk is assessed as Substantial, the supervision of project financial management will also be performed in real time, along as the other aspects of implementation.. The results framework with pre-identified key development indicators is described in the table below. For intermediate results, deriving from the four (4) project components, a complementary set of indicators has been formulated. The set can be found at the Project Appraisal Document, to be made public around Board distribution.

The results framework with pre-established project development indicators is the following:

**Project Development Objective (PDO):** To supply least-cost electric power in a safe and environmentally and socially sustainable way.

PDO Level Results Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values		Monitoring			
				MTR (Q4, 2014)	Completion (Q2, 2017)	Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
<b>Indicator One:</b> Amount of electrical energy and peaking capacity provided by the Trung Son Hydropower Plant	<input type="checkbox"/>	GWh/year MW	Year: 2010; measure: 0		1,019 GWh/year 43.5 MW	Once, at dam commissioning	Project operating reports	TSHPCo	Measures increase of supply
<b>Indicator Two:</b> Economic and financial cost of electricity from Trung Son Hydropower Plant	<input type="checkbox"/>	Economic: ERR, NPV  Fncial: VND/ kWh (real, 2010)	n/a	Economic: 17.1%, \$797 million  Financial: VND 546/kWh	Economic: 17.1%, \$797 million  Financial: VND 546/kWh	Twice in project, on signature of main contracts and on completion	Contracts and financial economic reports, analysis	TSHPCo	Measures whether power supply is least cost; to be expressed as % of avoided cost of shoulder power as benchmarked by ERAV
<b>Indicator Three:</b> Livelihoods of those affected by project at least maintained at pre-project levels	<input type="checkbox"/>	Living standards score	Year: 2010; measure: 100	Living standards score not less than 100 for 100% of all DPs	Living standards score not less than 100 for 100% of all DPs	Six monthly	Independent Monitoring Consultant Review  At MTR and completion, a quantitative consumption and assets survey, as benchmark	IMC and TSHPCo	Percentage of affected households with living standards improved at start of dam operation, compared with pre-project, and satisfaction with maintenance of cultural identity
<b>Indicator Four:</b> Evidence of satisfactory compliance with the Environment Management Plan	<input type="checkbox"/>	Pending cases of non- compliance	Year: 2010; measure: no impacts	No pending cases	No pending cases	Six monthly	Independent Monitoring Consultant Review	IMC and TSHPCo	Measures extent to which environmental impacts are minimized

.Source: World Bank Trung Son HP Project documentation.

[Back to top](#)

## Reporting Arrangements

World Bank: under the new Access of Information policy, the World Bank will be releasing project information about Trung Son's development. A specific example of document to be released will be the World Bank document called "Implementation Status Report" (ISR). The ISR will contain a quantitative and qualitative report on progress of the results framework performance indicators. The first ISR is expected to be prepared by April-May 2011. In addition, the project has made available a number of documents that have been either received or created by the World Bank. Interested individuals and groups are invited to access these documents via the World Bank Trung Son dedicated web site (<http://www.worldbank.org/vn/trungson/documents>), the World Bank's documents repositories online or at the Infoshop and VDIC centers in Washington DC and Hanoi, respectively. The TSPMB dedicated website also contains project information.

Additional Reports: The POE and the PTAP/DSRP are expected to make regular visits and to issue reports following each visit. The findings and recommendations are and will be taken into account for implementation and adaptive management purposes by the project developers and for supervision by the World Bank.

[Back to top](#)

## More Information

For more information please visit: [www.worldbank.org/vn/trungson](http://www.worldbank.org/vn/trungson) or contact any of the people listed below:

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More detailed aspects of the project in all sections and components described above can be found in the Project Appraisal Document, publicly available after the IBRD/DA World Bank Board of Executive Directors' approval.