

## THAKHO multipurpose project for sustainable hydropower and tourism development

### Doing the project right - example from the Mekong region: THAKHO project in Lao PDR



1. The Developer: an innovative partnership
2. Transparency in public consultation and information to stakeholders,  
Panel of Independent Experts
3. Project layout
4. Contribution to sustainable tourism development in Siphandone and Champassak  
Province
5. Reducing the environmental risks for Siphandone wetland and the LMB and reducing the  
investment risk

### **An innovative partnership for the planning and design of an hydropower project in LAO PDR:**

↳ EDL and CNR jointly applied for a MoU to the Lao Government and jointly develop the Thakho project

↳ EDL and CNR cooperate in the planning and design of the project and not only when feasibility studies are completed by a foreign developer

↳ Thakho project is planned and designed by owners and operators of hydropower plants used to closely work with local communities in their day-to-day activities

= a guarantee for a well balanced project design and technical-economical-environmental-social compromise

= a guarantee for Thakho project to meet the country's expectations and needs in the short, medium and long run





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## 2. Transparency in public consultation and information to stakeholders

⇒ Initial Environmental Examination (IEE) and terms of reference for the Environmental and Social Impact Assessment Study (EIA) conducted independently by WWF Greater Mekong Programme



⇒ Earth Systems Lao is in charge of the EIA Study



Earth Systems Lao

⇒ Panel of Independent Experts as a Developer's initiative for encouraging a community, government and stakeholders participation, and promoting transparency during the project planning and development stages, thus giving importance to public participation

Members: WWF Greater Mekong Programme, World Fish Center, the former VP of Lao National Tourism Administration and the VP of Lao Journalists Association

⇒ A Web site is operated by the Developer for presenting Thakho project to stakeholders:

[www.thakhosustainablehydro.com](http://www.thakhosustainablehydro.com)



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## Transparency in public consultation and information to stakeholders ..

### Thakho Multipurpose Project for Sustainable Hydropower



The Project	What is sustainable hydropower	Public participation and access to information	Who we are
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#### Pictures gallery

### Thakho Multipurpose Project for Sustainable Hydropower

The Thakho Hydropower Project is a low-head run-of-river hydropower project with no storage capacity and no dam.

It consists in diverting water from the Phapheng branch on the Mekong river upstream the Khone Phapheng waterfalls in Champassak Province, Southern Laos and releasing water downstream the waterfalls once the water head naturally created by the falls has been converted into energy.



International Conference « Sustainable Hydropower Financing in the Mekong River Basin », Bangkok, 24 Sept 2010

## Reports on MoU Execution to the Lao Government (CNR-EDL)

- Signing Ceremony MoU: [Signing ceremony\(2 juillet 2009\)](#)
- Reports n°1 & 2 (Pre-feasibility Study Report): [Reports n° 1 and 2 \(septembre 2009\)](#)
- Report n°3 : [Report n° 3 \(december 2009\)](#)
- Report n° 4 and Appendices: [Report n°4 \(avril 2010\)](#) [Appendix 1](#) [Appendix 2](#) [Appendix 3](#) [Appendix 4](#)

## Transparency in public consultation and information to stakeholders ..

### Initial Environmental Examination (WWF Greater Mekong Programme)

- Final Report IEE: [WWF Final report](#)

Extract from page

### Environmental and Social Impact Assessment Study (EIA/SIA, Earth Systems Lao)

- Meeting with WREA for ToR approval of EIA/SIA Study

Presentation by CNR: [WREA meeting ToR approval EIA SIA \(4 Feb 2010\)](#)

Presentation by Earth Systems Lao: [ESL WREA meeting Thakho EIA SIA methodology \(4 feb 2010\)](#)

- Inception Report:

[ESL Thakho Inception report EIA SIA](#)

## Public participation and acces to information

### Consultation Workshop on Progress Report of Feasibility and Environmental and Social Impact Assessment Study, Khong District, Pakse and Vientiane (27th to 31st May 2010)

- Feasibility Study (CNR): [Workshop Vientiane \(31 May 2010\)](#)
- Environmental and Social Impact Assessment Study (Earth Systems Lao): [Workshop Vientiane \(31 may 2010\)](#)
- Fisheries component of EIA/SIA (Dr Ian Baird): [Workshop Vientiane Dr Ian Baird \(31 may 2110\)](#)

### Panel of Independent Experts

- [Terms of Reference for the Panel of Independent Experts \(3 june 2010\)](#)
- [Report n°1 by International Expert in Sustainable Tourism Development](#) (Steven Schipani)
- [Report n°1 by International Expert in Tropical Fisheries and Fish Ecology](#) (Eric Baran, [World Fish Center](#))
- [Report n°2 by International Expert in Tropical Fisheries and Fish Ecology](#) (Eric Baran, [World Fish Center](#))
-  [Report n°1 by International expert in Sustainable Infrastructure and Integrated River Basin Management](#) 





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### 3. Project layout

The project: run-of-river water diversion from the left bank of the Phapheng channel of the Mekong River, about 300m upstream the Phapheng falls. Water is drawn into an intake structure then a diversion canal and is conveyed to a power plant and released to the river about 500m downstream the waterfalls .

No dam and no reservoir



02 New tourism amenities and services



01 New belvedere at the intake upstream Khone Phapheng waterfall



05 Ecotourism and sustainable tourism development as promoted by the Lao National Tourism Administration



03 Existing belvedere Khone Phapheng waterfall





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## 4. Contribution to sustainable tourism development in Siphandone and Champassak Province



International Conference « Sustainable Hydropower Financing in the Mekong River Basin », Bangkok, 24 Sept 2010

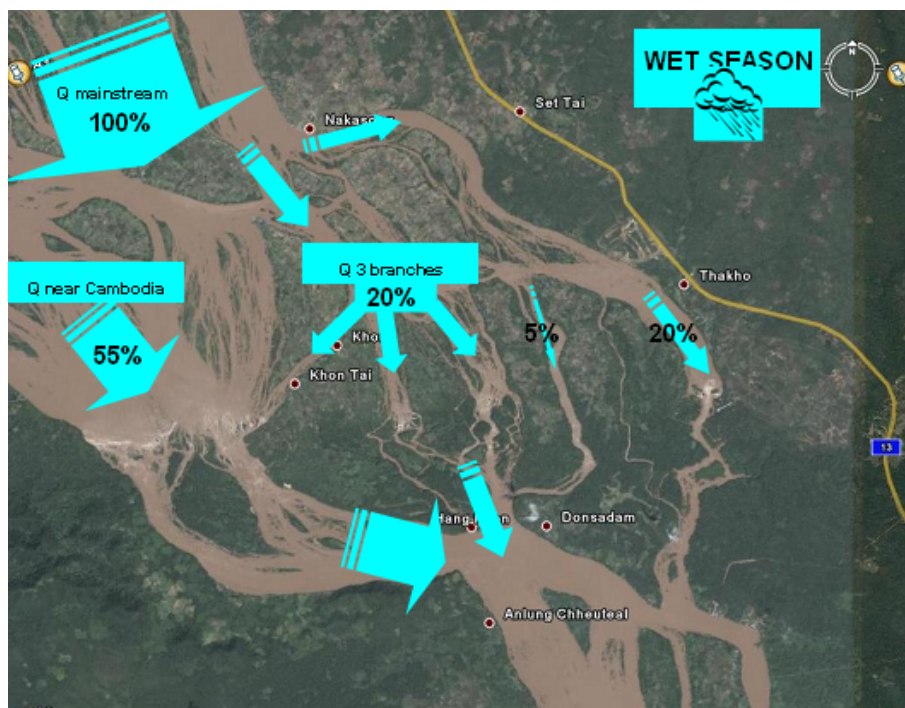




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## 5. Reducing environmental risks for Siphandone wetland and the LMB and investment risk

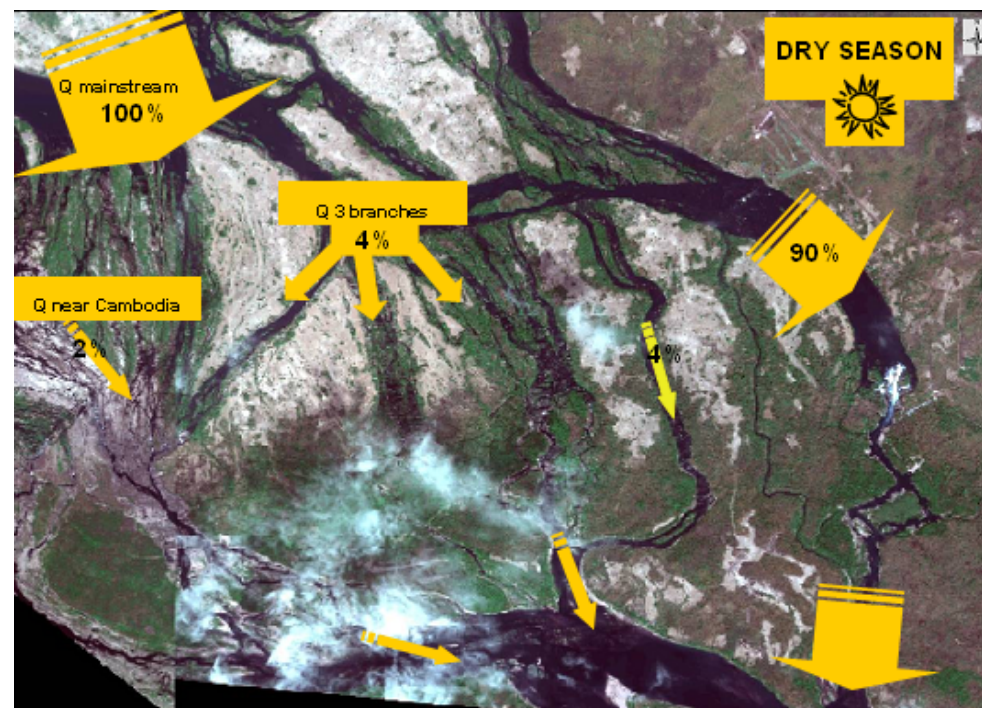
### Complex flow distribution in Siphandone wetland



Flow distribution wet season

If Q Pakse = 25.000 m<sup>3</sup>/s

Q Phapheng = 20% = 5.000 m<sup>3</sup>/s



Flow distribution dry season

If Q Pakse = 1.200 m<sup>3</sup>/s

Q Phapheng = 90% = 1.080 m<sup>3</sup>/s



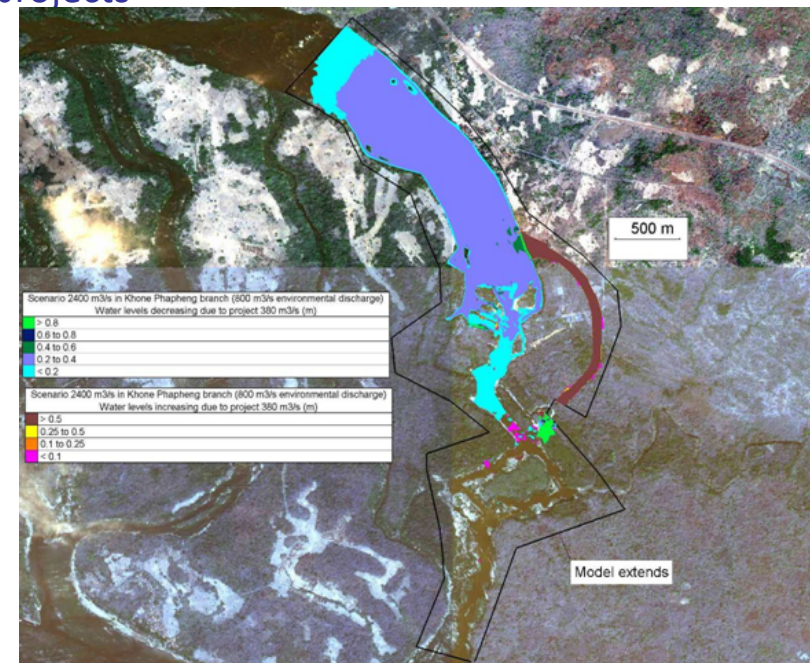
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## Reducing environmental risks for Siphandone wetland and the LMB and investment risk

Thakho is a Low Impact Hydropower project particularly with reference to important issues such as fish migration, fish biodiversity, hydrology, river morphology and sediment transport compared to traditional dams projects



Alternatives 1 (380 m<sup>3</sup>/s) and 2 (650 m<sup>3</sup>/s) do not impact flow/discharge sharing in Siphandone and have no impact downstream the power station, which is impossible with a traditional run-of-river dam project in Siphandone



water level impacts  
alternative 380 m<sup>3</sup>/s





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## CONCLUSION

### Reducing environmental risks for Siphandone wetland and the LMB and investment risk

⇒ Low risk on geology (no dam), floods (works out of river bed), delays and cost overrun during construction

⇒ Low risk on hydrology and impacts on the environment during operation

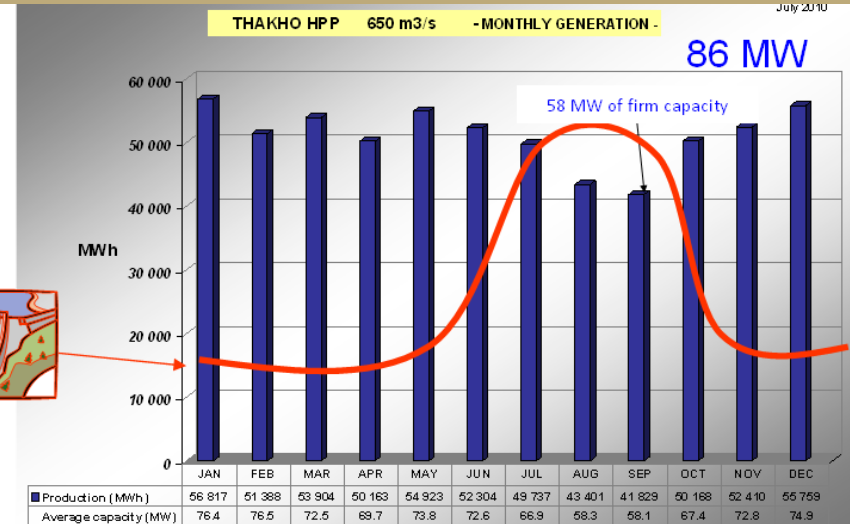
⇒ High economic return with a competitive cost of energy generation

⇒ Win-win situation with sustainable hydropower and sustainable tourism development

⇒ Anticyclical power generation profile and reinforcement of grid stability + reduction of power imports during dry season

Thakho  
no-dam project

Traditional  
dams'  
projects on  
Mekong  
tributaries



Thakho project	Alternative 1	Alternative 2	Alternative 3
Design discharge	380 m <sup>3</sup> /s	650 m <sup>3</sup> /s	1.300 m <sup>3</sup> /s
Environmental Flow	800 m <sup>3</sup> /s	800 m <sup>3</sup> /s	800 m <sup>3</sup> /s
Installed capacity	52 MW	86 MW	172 MW
Average annual energy	367 GWh/y	613 GWh/y	1.007 GWh/y
Construction cost	114 M\$	153 M\$	258 M\$
Cost of energy *	45,2 \$/MWh	35,9 \$/MWh	34,8 \$/MWh

\* cost of energy calculated at 10% discount rate and for 25 years of operation

Close to best economical-environmental compromise