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# **Approach and Methodology for Technical Review of the Pak Beng Hydropower Project - Navigation Ship Lock Review -**



*Regional Stakeholder Forum on the Council Study  
and the Pak Beng Hydropower Project  
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# Overview (1/2)

## Background:

- Hydropower development can pose a barrier to navigation
- It also can lead to more reliable and consistent water levels across the year
- Construction of navigation locks as most cost-effective and appropriate compromise

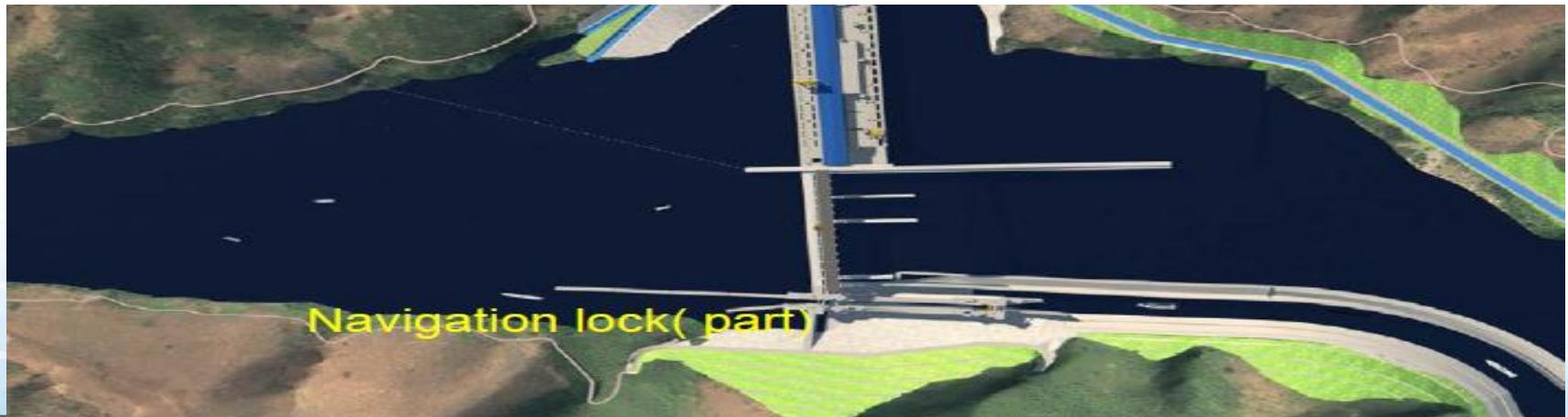
## Important to consider:

- Long-term nature of planning and investment for navigation locks
- Lock dimensions must accommodate traffic increases in view of a 50 year timeframe
- The preliminary design guidance (2009) offer an initial, although still limited, reference for both governments and developers

# Overview (2/2)

## Measures proposed by the developer:

- The developer adheres to Article 9 of the 1995 Mekong Agreement (freedom of navigation along the Mekong River, not to pose an additional obstacle) and provides for the construction of navigation locks
- Long-term nature of planning and investment for navigation locks is considered with a view of up to 50 years
- Ship locks are to be capable of raising transiting vessels in all periods of authorised navigation on the Mekong River



# Overview (2/2)

## Measures proposed by the developer:

- Lockage time will be kept to a minimum, consistent with safe operation, safe movement of vessels in and out
- Straight alignment to allow for the safe entry and exit of vessels
- The emptying/filling system is designed to conform to requirements for maximum transit times
- The dimensions of lock chambers have been followed, EXCEPT the provision for future doubling of the locks



# Technical Review Approach

The review looks at the following issues and verifies if:

## (1) Ship lock

- Space is reserved for expanding the locks (if traffic increases)
- Durability and maintenance requirements are reduced to lowest practical level
- Each lock complex provides for lockage of vessels in a safe and efficient manner, without causing structural damage to vessels or lock facilities
- entry and exit is safe
- Lock gates and their manoeuvring devices are protected with water projection systems in case of a fire inside the chamber
- Operation system (operation at least 12 hours a day, every day)
- Maintenance schedule (not more than 9 days/year)

# Technical Review Approach

## (2) Accessibility and others:

- Access to ground structures for maintenance and operation, access for emergency response is considered
- Passage of small craft and family boats is considered
- During the construction, the suspended time and additional cost to waterborne transportation is minimized
- All design work reduce the environmental impact of possible breakdowns or failures and include measures to mitigate any such impact
- Hydraulics (currents), river morphology (sedimentation) and wind exposure take into account when determining the location and alignment of locks (using a simulation model)
- Solutions for fine material sedimentation

# Methodology

- Feasibility Report review with particular focus on Navigation ship lock and assess channels.
- Discussion with relevant Pak Beng Hydropower Dam Designers and Government officers
- Site visit
- Comparison with similar cases, best practices (as to compile recommendations)

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# Thank you !

