

Foundations for Strategic Lower Mekong Hydropower and Water Resources Management

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Improving Hydropower Sustainability in the Mekong Region

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Presentation Outline

- Background
- Phase 1: Fact Finding & Evaluation Overview
- Phase 2: Technical Training on Hydropower and Water Resources Management Overview
- Phase 3: Assessment and Implementation of Technology and Operations Systems



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Objectives

This project is supported under the U.S. Department of State's engagement in the Lower Mekong Region. The project aims to help equip the Mekong River Commission (MRC) to:

- Institutionalize operation and maintenance of monitoring stations
- Guide standardized data collection
- Serve as centralized organization for data collection and regional sharing

To help assess hydropower needs, DOE and ORNL will:

- Train five Mekong countries to use tools for hydropower scheduling, forecasting, and optimizing
- Guide discussions for sustainable basin planning and decision making

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Background

History of Lower Mekong Engagement

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Examples of past DOE and ORNL Technical Assistance in the Lower Mekong Region

- Provided expert technical assistance focused on increasing efficiency at two hydropower facilities in Thailand under DOS Smart Infrastructure for the Mekong Program.
- Technical assessments of hydropower projects in South East Asia, including analysis of hydropower operational and performance data and the identification of potential opportunities for performance and efficiency improvement;
- Facilitation of technical discussions with dam operators, power system operators, maintenance engineers, and state-owned utility executive management teams;
- Hands-on tools and software training;
- Documented information exchanges, best practices development, and procedural recommendations that can be used by project participants to train additional LMI member countries.

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Phase I

Fact Finding & Evaluation Overview

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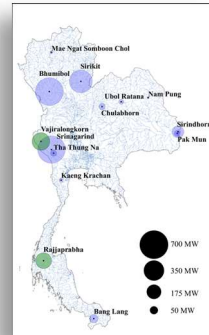
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Phase I Purpose

PHASE I – Fact Finding & Evaluation Overview

Assess Water Resource & Hydropower Needs

- Needs and Gaps Assessment
- Lessons Learned
- What Tools are Available?



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Important Considerations

Integration of Thermal Plant to Energy Mix

- Dependence on Water as Multi-use Resource
- Environmental Compliance / Regulation

River Health

- Food Source
- Irrigation & Water Supply

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Critical Goals

Successful Coordination & Communication Among Ministries Needed

- Identification and Appreciation of Respective Needs
- Commitment Yields Mutual Benefits



Sustainable & Optimized Approach Needed

- Optimizing Monitoring System for Optimal Benefit and Minimal Cost
- Maximizing Hydropower, Irrigation, and Water Supply with Minimum Water Usage while Meeting Environmental Regulations

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Phase II

U.S. Based Technical Workshop on Hydropower and Water Resources Management

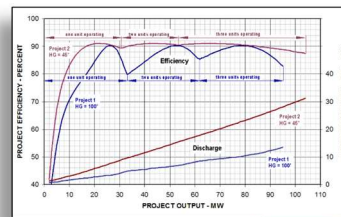
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Phase II Purpose

- Delegation members examine and assess how the U.S. utilizes methodologies to manage and control Hydropower and Water Resource Operations
- Discuss the importance of collaboration for managing and optimizing a complex, transboundary, multipurpose water resource system



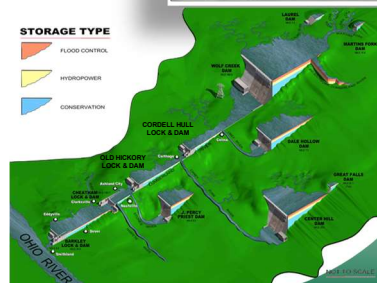
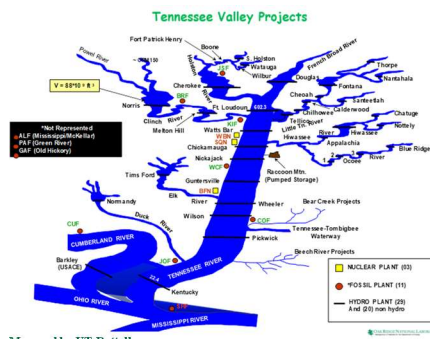
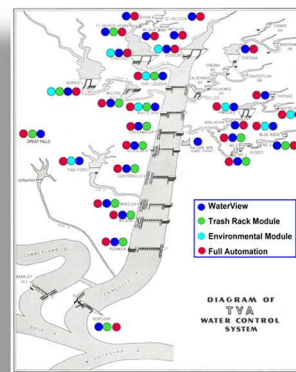
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Important Considerations

- Meeting Multipurpose Objectives with Coordination
- Hydropower and Energy Systems Scheduling and Operation
- Decision Support Tools
- Multi-Agency Collaboration
- Energy Generation Maximization while Preserving River Health Under Operational Constraints



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Example: Three Agency Technical Competency

➤ Oak Ridge National Laboratory (ORNL)



➤ Tennessee Valley Authority (TVA)



➤ United States Army Corps Of Engineers (USACE)



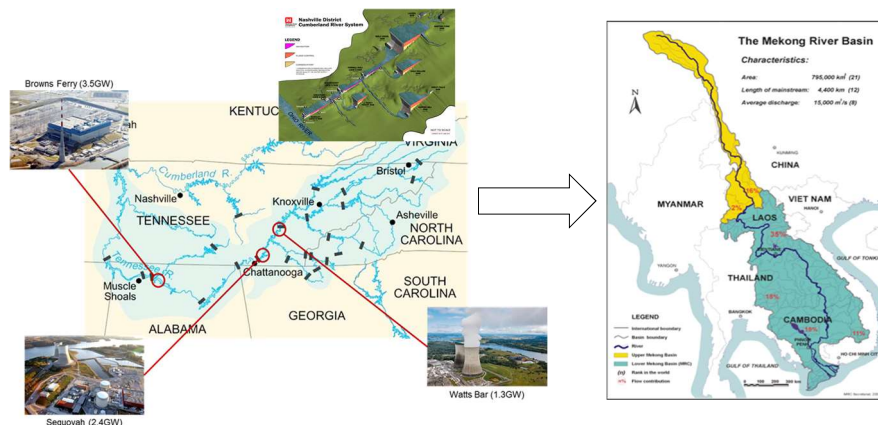
US Army Corps
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Example: TVA & USACE Systems Coordination



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Phase III

U.S. Assessment and Implementation of Technology and Operations System

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Phase III Purpose

Meet with the LM (Lower Mekong) Countries' Representatives to:

- **Facilitate Detailed Evaluation of Existing Tools, Methodologies, etc.**
- **Identify Potential for Employing Readily Available Technology**
- **Discuss Goals, Priorities, and Policies to Develop a Regional Vision and Collaborative Plan Forward**

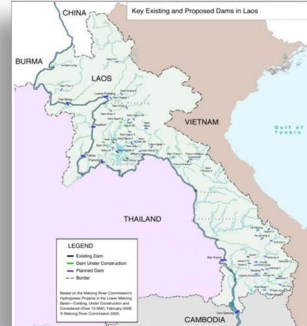
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Important Considerations

- Specific Assets
- Scheduling, Dispatch, Maintenance, & Decision Support System and Tools
- Methodologies for making *transboundary* and *trans-basin* decisions with respect to multiple stakeholders
- Hydropower Development Expectations, Water Resources Management Objectives, Hydropower Operation & Optimization, and Environmental Impacts & Regulations



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Timelines & Deliverables

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Timelines & Deliverables

	Phase I Fact Finding & Evaluation Overview	Phase II Technical Workshop	Phase III Assessment and Implementation
Timeline	<u>Done:</u> - December 2018 - March 2019	June 10 to June 14, 2019	Within 6 months of Phase II Completion
Deliverable	Report of Current Status & Phase II Plan <u>Done:</u> - Two travel reports - Sent all invitations	- Pre-Eval Survey - Post-Eval Survey - Recommendations Report	Final recommendations based on Phase II Results

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Conclusions

THANK YOU
Discussion and Questions
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