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For sustainable development



# Council Study

Progress Update Presentation  
Hydrologic Assessment/Modeling  
Team

5<sup>th</sup> RTWG Meeting  
Siem Reap, Cambodia  
13-14 August 2015

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# BACKGROUND

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## Role of Modeling Team



Conduct the hydrologic, hydraulic, sediment transport, and water quality modeling required to support impact assessment:

- *Model setup, calibration, and validation for baseline conditions*
- *Prepare, update input data and model for the development scenarios*
- *Run model and analyze results of scenarios*
- *Prepare technical modeling reports*

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# Modeling Approach



## Zones 1 - 3

*Hydrology and Hydraulics*

**SWAT → IQQM → ISIS**

*Sediment*

**SWAT → Source → ISIS**

*Nutrients*

**SWAT → Source → ISIS**



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# Modeling Approach



## Zone 4 - Tonle Sap Lake and Floodplain

*Hydrology and Hydraulics*

**SWAT + IQQM → ISIS**

*Sediment*

**SWAT → EIA-3D (WUP-FIN)**

*Nutrients*

**SWAT → EIA-3D (WUP-FIN)**

*Agriculture and aquaculture impacts*

**WUP-FIN mapping tools**



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# Modeling Approach



## Zone 5 Viet Nam Delta and Cambodia Floodplain

*Hydrology and Hydraulics*

**IQQM → ISIS**

*Salinity*

**ISIS**

*Flooding*

**ISIS**

*Agriculture and aquaculture impacts*

**WUP-FIN mapping tools**



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# Modeling Approach



## Zone 5 Viet Nam Delta and Cambodia Floodplain

*Sediments and nutrients*

- Proper modelling of sediments and nutrients requires coupled 1D/3D model for channels and floodplains.
- The Delta 1D/3D model is proposed to be implemented in the CS Second Phase.
- In the First Phase sediments and nutrients will be estimated using combination of DSF and WUP-FIN tools, monitoring results and Delta Study results.



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# Key Milestones and Events



Working Paper on "**Modelling Approach** in Support of the Council Study" , 15 Jan 2015 (**Approved by 10<sup>th</sup> TACT Meeting**) and was approved by RTWG

## Small RTWG (21 Apr 2015)

- Working Paper on "**Baseline Selection** for the Council Study Modelling Support", 14 Apr 2015 (need further modelling work to compare 2000 and 2007)
- **Modelling Workplan** for the Council Study", 13 Apr 2015 (for MCs to consider), Then revised and share with country on 13 May 2015

## 11<sup>th</sup> TACT meeting (14-15 July 2015)

- Working Paper Supplement "Baseline Selection for the Council Study Modelling Support – Further Information on 2000 and 2007 flow" on 9 June 2015 (need further supporting work)
- New revision of working Paper Supplement "Baseline Selection for the Council Study Modelling Support – Further Information on 2000 and 2007 flow" on 9 June 2015 (**for MCs to make decision in 5<sup>th</sup> RTWG**)

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# DSF STATUS

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## Flow, Flood and Salinity



Task	Status
SWAT and IQQM: re-calibration	Completed
ISIS upper Pakse calibration	Completed
ISIS/downstream: calibration, flood mapping and salinity simulation:	Mid-Aug
ISIS/downstream : Provide output to use for WUP-FIN	Aug
Knowledge Base for Flow, Flood and Salinity	End -August

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## Sediment



Task	Status
Data collection and preparation	Completed
Data analysis and quality control	Mid-Aug
SWAT calibration	End of Aug
ISIS upper Pakse : calibration for sediment	Aug-Sep
Knowledge Base for Sediment	End of Oct

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## Nutrient



Task	Status
Data collection and preparation	Completed
Data analysis and quality control	Mid-Aug
SWAT calibration	End of Aug
ISIS upper Pakse : calibration for Nutrient	Aug-Sep
Knowledge Base for Nutrient	End of Oct

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## E-WATER SOURCE STATUS

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## Rationale for E-Water Source Modeling to Support Council Study



- IQQM has limited capacity for sediment and water quality modelling
- eWater Source will be used to complement IQQM for sediments and water quality

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## E-Water Source Modeling to Support Council Study



- Customization of Source and integration with the DSF
- Technical Assistance in Modelling Sediment and Water Quality
- Capacity Building for MRCS and Member Countries

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## Status of E-WATER Source



Tasks	Status
Flow model conversion from IQQM to Source	Completed
DTT configuration (flow) and KB Utility	Completed
DTT configuration (aggregate SWAT loads)	Aug
Plug-in : reservoir trapping and link routing of sediments algorithm	Sept
Plug-in : reservoir trapping and link routing of nutrient algorithm	End of Sept
Calibration of overall balance for both Sediment and Nutrients is done within SWAT – so Source calibration will mostly be around the reservoirs and some factoring in the links	Oct

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## Status of E-Water Source



- Capacity Building
  1. *In-house Training for Key Modeller ,National Modeller/ Assistant Modeller (at OSP), 17-19 August 2015*
  2. *Regional training course to finalise the integration work of eWater SOURCE into the DSF (OSP), October 2015*

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## WUP-FIN STATUS

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### Rationale for WUP-FIN modelling



- Complementing DSF in Zone4 and Zone5 for impact assessment
- Focus on water quality and productivity (agriculture, aquaculture, fisheries).
- Capacity building for MT and National team

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## Status of WUP-FIN Model



Tasks	Status
<b>Impact modeling for Tonle Sap (Great lake) and Mekong Delta (EIA-3D)</b>	
<b>Tonle Sap (Great lake)</b> :Sediment, water quality and fisheries model testing using EIA-3D	Jul-Aug
<b>Delta</b> :sediment, water quality and productivity model approaches under testing - WUP-FIN/DSF integration - Model construction	Aug – Sep Aug – Oct

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## Status of WUP-FIN Model



- **Capacity Building**

1. *In-house Training for Key Modellers and National Modellers (Oct)*
2. *Involvement from MCs ( 4 national WUP-FIN assistant modellers will be invited to support)*

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# CHALLENGES

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## Challenges

- National Modeling Team not yet full team (only 5 persons to date), hence, water quality for SWAT, SOURCE and ISIS might be delivered behind schedule.

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## Next Step



- Will finalize Salinity Mapping for the Vietnam Delta
- Will finalize Data Analysis and Quality Control
- Will continue working on Sediment and Nutrient Calibration (DSF, eWater Source and WUP-FIN)
- *Will prepare, update input data and model for the Development Scenarios, Result Analysis and Report Writing*

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## The RTWG is specifically requested to:



- Take note of the progress of each modelling package
- Provide guidance the overall work
- Kindly consider to send the National and Assistant Modellers to come to support MT as soon as possible

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Thank You



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