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# Council Study

Reference Period  
Reference Scenario



Small Technical WorkGroup Meeting  
OSV, Vientiane, Lao PDR  
12 November 2015

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## BACKGROUND

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### Objective

- Discuss and confirm common understanding of the terms **reference period** and **reference scenario** and their use in the Council Study

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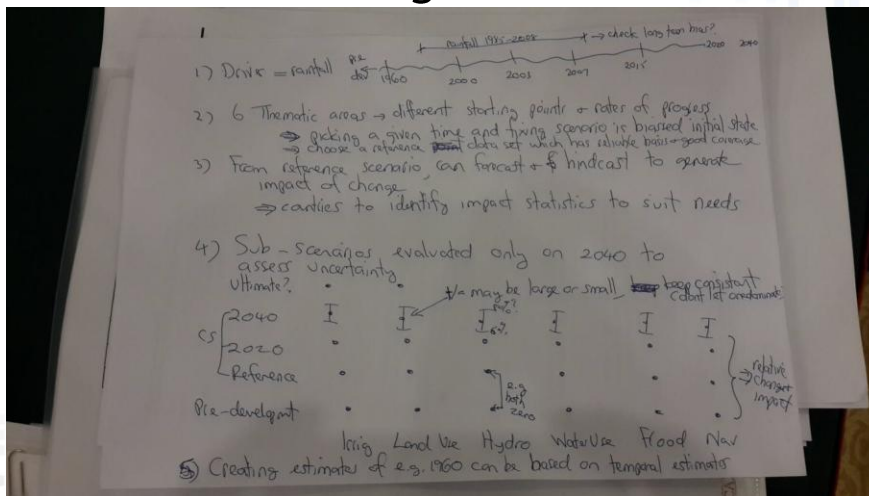
# Chronology of Key Events

- Technical Meetings (Small TWG and 11<sup>th</sup> TACT)
  - Discussed options for baseline for Council Study primarily between 2000 and 2007
  - No consensus
- 5<sup>th</sup> RTWG Meeting
  - Recommended to use the term **reference** instead of **baseline** to signify a different common understanding and its intended use in the Council Study
  - Instructed Secretariat to prepare a working paper to describe in detail the terms **reference period** and **reference scenario** based on the five elements agreed by the MCs during the special private meeting at the 5<sup>th</sup> RTWG Meeting

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# Five Elements Agreed During the 5<sup>th</sup> RTWG Meeting



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## Working Paper (Version 28/09/15)



- Defined the terms **reference period** and **reference scenario** (Chapters 3.1 and 3.2)
- Described how these terms will be used for the Council Study assessments (Chapters 4 and 5)
- Explained specifically how the 5 elements agreed during the 5<sup>th</sup> RTWG were addressed in the working paper

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## REFERENCE PERIOD

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## Definition



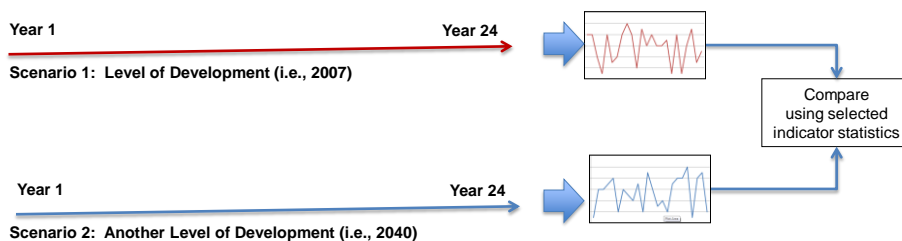
- Common hydrologic sequence used for modeling all development scenarios (**Element #1**)
- Selected time period for the hydrologic sequence: 1985 – 2008
- Represents a 24-year hydrologic sequence
  - To be more precise, it represents a 24-year sequence of rainfall, temperature, and other meteorological parameters that will be used for modeling all development scenarios
  - Requires the hydrologic sequence to represent long-term record (i.e., to represent the range of variability in flow) (**Element #1**)

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## Use

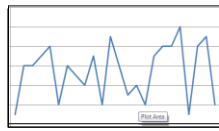
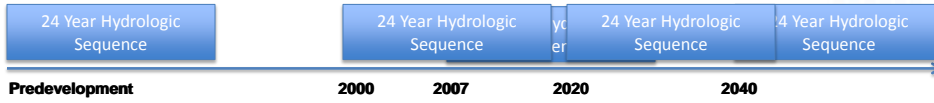


- A common hydrologic driver allows an apple-to-apple comparison of modeled conditions (in flow, sediment, and water quality) between two scenarios as a result of changes in basin physical characteristics (i.e., levels of developments)



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# Modeling Impacts of Levels of Development Over Common Hydrologic Sequence



Summary statistics of selected indicators of flow, sediment, water quality for a given location

Indicator	2000	2007	2020	2040	Predev
Indicator #1	*	*	*	*	*
Indicator #2	*	*	*	*	*
Indicator #3	*	*	*	*	*
...	*	*	*	*	*
Indicator #N	*	*	*	*	*

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## REFERENCE SCENARIO



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## Definition

- Scenario used as a reference for comparison with another scenario to determine changes in modeled conditions (i.e., impacts) between the two scenarios
- Forecast or hindcast from reference scenario to determine impacts (Element #3)
- Each thematic area may use a different reference scenario (Element #2)

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## Common Reference Scenario

- While not necessary, a common reference scenario is proposed to make scenario comparisons and reporting more manageable and less confusing
- However, in addition to the common reference scenario, thematic teams may still use another scenario (other than the common reference) as a basis for comparing all other scenarios (Element #3)

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# Development Scenarios

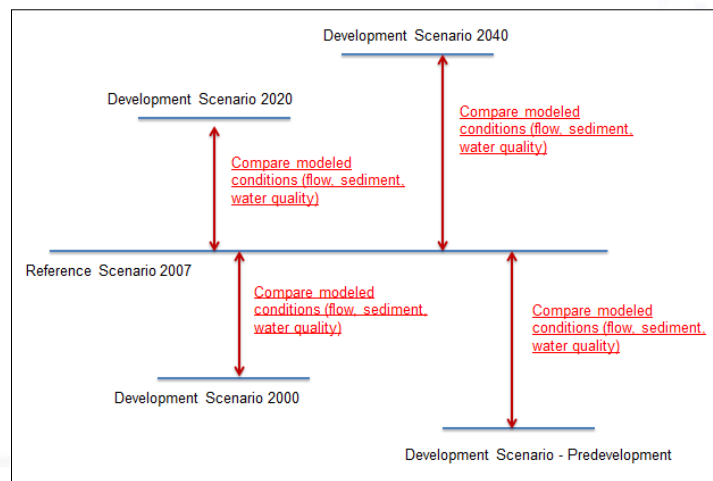
- Approved Development Scenarios from 4<sup>th</sup> RWTG
  - 2007, 2020, and 2040
- Additional Development Scenarios for Consideration
  - 2000
  - Predevelopment
    - can represent either no development, 1960, or any other selected year in the past representing natural flow and predevelopment conditions (**Element #5**)

**Reference Scenario will be chosen from one of the above development scenarios**

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## Comparison of Scenarios from a Common Reference Scenario

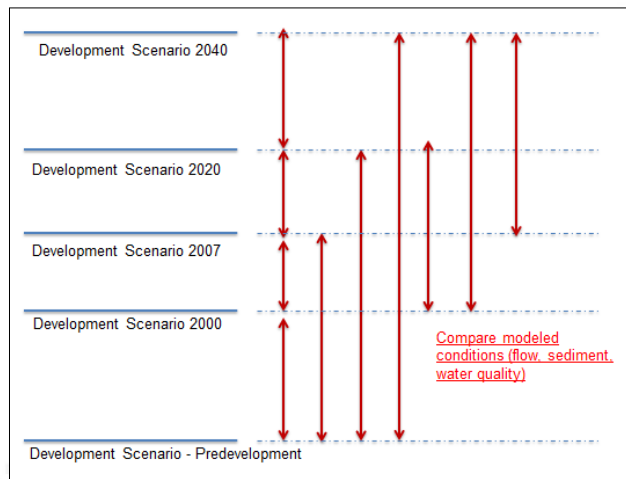


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## Comparison of Scenarios from a Thematic-Selected Reference Scenario



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## Proposed Common Reference Scenario

- Levels of Development = 2007
- Benefits:
  - Can be modelled and reported earlier because of availability of data and readiness of model
  - Convenient marker to forecast impacts of development scenarios in the future; and hindcast development situations in the past

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## RELATIONSHIP BETWEEN SCENARIOS AND REPORTS

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### Thematic Sub-Scenarios

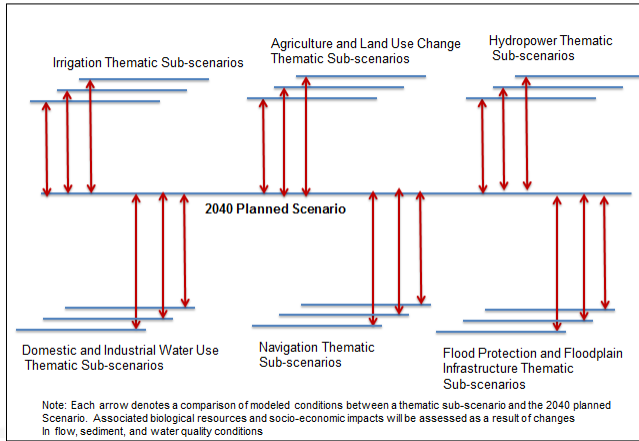
- Represent plausible deviations from the 2040 Planned Scenario in terms of level of development
- Allow sensitivity analysis of impacts by thematic areas
- Increase capability to explore options and alternative measures at the thematic levels to enhance positive cumulative impacts and mitigate/reduce negative impacts

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# Assessment of Thematic Sub-Scenarios

- Comparison against the 2040 Planned Development Scenario (Element #4)



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# Cumulative and Thematic Reports



- What modelled scenarios will be used in the report deliverables

Report Deliverable	Scenario Assessment
Cumulative Assessment	Pre-development, 2000, 2020, 2040 as compared against reference scenario (2007)  The assessment results of the thematic sub-scenarios (see below) can also be used to supplement the assessment results for the main development scenarios in identifying infrastructure and management measures that will enhance positive impacts and minimizing negative impacts
Thematic Report on Irrigation	Irrigation Thematic Sub-scenarios as compared against 2040 planned scenario
Thematic Report on Agriculture and Land Use Change	Agriculture and Land Use Change Thematic Sub-scenarios as compared against 2040 planned scenario
Thematic Report on Domestic and Industrial Water Use	Domestic and Industrial Water Use Thematic Sub-scenarios as compared against 2040 planned scenario
Thematic Report on Hydropower	Hydropower Thematic Sub-scenarios as compared against 2040 planned scenario
Thematic Report on Navigation	Navigation Thematic Sub-scenarios as compared against 2040 planned scenario
Thematic Report on Flood Protection and Floodplain Management	Flood Protection and Floodplain Management Thematic Sub-scenarios as compared against 2040 planned scenario

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## SUMMARY

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## Decisions Needed

- Does CS need to further analyze the rainfall and evaporation data for the reference period 1985-2008 to determine their long-term representativeness (Yes/No)?
  - IBFM Study (2004/05) has determined that flows in 1985-2000 period is representative of long-term
  - This analysis can be done in parallel and will not delay CS modelling
  - Potential work done with/by Australia Department of Meteorology

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## Decisions Needed



- Should CS use a common reference scenario (Yes/No)?
  - Noting that thematic areas has always the flexibility to select another development scenario as a basis for comparing other scenarios
- Should CS select Year 2007 as the common reference scenario (Yes/No)?
- Should CS include the following additional Development Scenarios
  - Year 2000 (Yes/No)
  - Predevelopment (Yes/No)
- Should the predevelopment scenario represent a modeled scenario with zero infrastructure in the model (Yes/No)

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Thank You



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