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Council Study

Progress update of climate change assessment including technical reports

6th RTWG Meeting
Phnom Penh, Cambodia
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Contents

- Objective, scope and progress
- Technical report on climate change scenarios for the Council Study (Phase 1)
- Climate change assessment report (Phase 2)

Objective of climate change assessment

Identify the risks and opportunities that climate change provides in the context of developments in the six (6) thematic areas of the Council Study (irrigation, agriculture, domestic and industrial use, flood protection, hydropower and navigation)

Scope of climate change assessment and progress

No.	Tasks	Progress	Outputs
1	Selection of future climate change scenarios	Finalised	- Data sets for assessment - Technical report
2	Assessment of climate change impacts under the 6 development themes	Not yet started, to be done in phase 2	- Climate change assessment report
3	Identification of additional risks and opportunities caused by climate change in the context of the 6 development themes		
4	Formulation of recommendations to mitigate impacts and maximize opportunities of future climate change		
5	Providing data and information used in the assessment to enrich the MRC knowledge base	Not yet started	- Data sets - Analysis results
6	Capacity building and transferring knowledge and technology to the Member Countries	Not yet started	- Training - Technical workshops

Technical report on climate change scenarios for the Council Study

I. Background

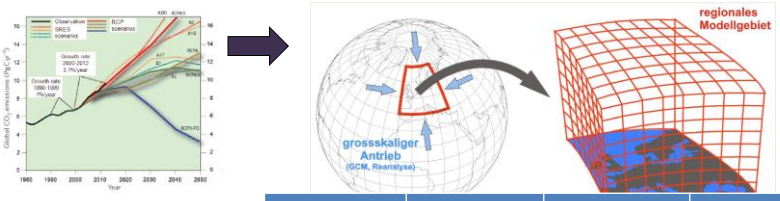
1. The work to define future climate change scenarios for the LMB was conducted by the CCAI in 2 years from 2013 to 2015.
2. Nine (9) climate change scenarios were defined and proposed to be used for the CCAI basin-wide assessment of climate change impacts on water and water related resources and sectors in the LMB. Member Countries agreed with the proposed scenarios in the last CCAI RTWG meeting in August 2015.
3. A sub-set of three (3) out of these 9 scenarios is proposed to be used for the Council Study.

II. Approach

GCM-based climate change scenarios

Each climate change scenarios is a GCM output corresponding to an emission scenarios and a climate sensitivity coefficient.

Emission scenarios | **Global circulation model** | **Downscaling**



	Emission scenarios	GCMs	Climate sensitivity	Total number of scenarios
IPCC 4th Assessment report	6	22	3	396
IPCC 5th Assessment report	4	40	3	480
			Total	**876**

Steps to define plausible climate change scenarios for the LMB

1. Review of climate change scenarios and downscaling approaches
2. Selection and collection of climate change projection dataset and tool (SimCLIM)
3. Selection of GCMs and analysis of scenarios uncertainty
4. Propose and seek agreement of MCs on a set of climate change scenarios
5. Document the strengths and weaknesses of the proposed approach

Principles in selecting climate change scenarios for the LMB

1. The selected climate change scenarios should represent plausible future climate conditions of the LMB.
2. The selected climate change scenarios should cover the range of climate change projections produced by multiple emission scenarios and GCMs.
3. The number of selected scenarios must be restricted to a minimum necessary to meet with time and resources constraints as well as to avoid scenarios fatigue.

III. Selected scenarios

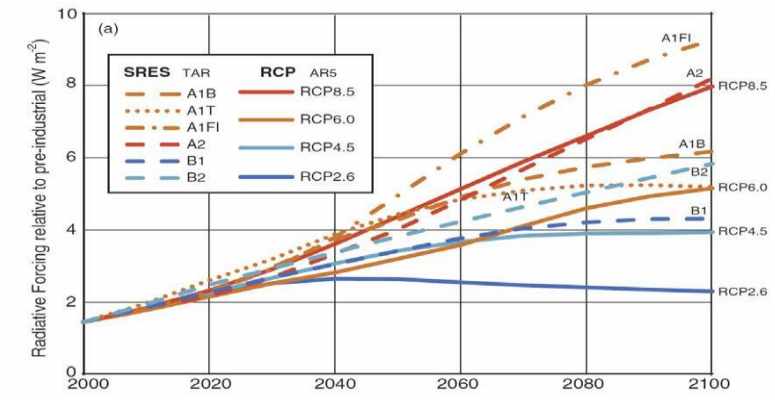
Nine (9) basin-wide climate change scenarios were proposed for the CCAI basin-wide climate change impact assessment and agreed by MCs, which represent

i. Three (3) magnitudes of climate change due to **low, medium and high** future scenarios of carbon emission, and

ii. Three (3) **patterns of precipitation change**

- Increase of precipitation in both dry and wet seasons (wetter overall),
- Decrease of precipitation in both dry and wet seasons (drier overall), and
- Increase of precipitation in wet season but decrease in dry season (increase of seasonal variation)

Three (3) magnitudes of change



High RCP 8.5

Medium RCP 6.0

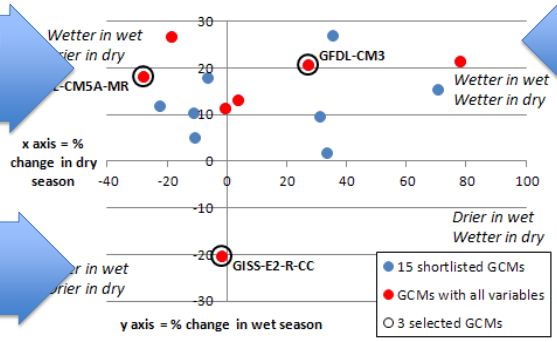
Low RCP 2.6

Three (3) patterns of precipitation change from three (3) selected GCMs

Increased seasonal variability IPSL-CM5A-MR

Wetter overall GFDL-CM3

Drier overall GISS-E2-R-CC



Nine (9) proposed climate change scenarios for CCAI basin-wide assessments

No.	Type of scenarios		Emission scenarios	GCM	Climate sensitivity
	Level of change	Pattern of change			
Low climate change scenarios					
1	Low	Wetter overall	RCP2.6	GFDL-CM3	Low
2		Drier overall		GISS-E2-R-CC	
3		Increased seasonal variability		IPSL-CM5A-MR	
Medium climate change scenarios					
4	Medium	Wetter overall	RCP6.0	GFDL-CM3	Medium
5		Drier overall		GISS-E2-R-CC	
6		Increased seasonal variability		IPSL-CM5A-MR	
High climate change scenarios					
7	High	Wetter overall	RCP8.5	GFDL-CM3	High
8		Drier overall		GISS-E2-R-CC	
9		Increased seasonal variability		IPSL-CM5A-MR	

Three (3) proposed climate change scenarios for Council Study

No.	Type of scenarios		Emission scenarios	GCM	Climate sensitivity
	Level of change	Pattern of change			
Low climate change scenarios					
1	Low	Wetter overall	RCP2.6	GFDL-CM3	Low
2		Drier overall		GISS-E2-R-CC	
3		Increased seasonal variability		IPSL-CM5A-MR	
Medium climate change scenarios					
4	Medium	Wetter overall	RCP6.0	GFDL-CM3	Medium
5		Drier overall		GISS-E2-R-CC	
6		Increased seasonal variability		IPSL-CM5A-MR	
High climate change scenarios					
7	High	Wetter overall	RCP8.5	GFDL-CM3	High
8		Drier overall		GISS-E2-R-CC	
9		Increased seasonal variability		IPSL-CM5A-MR	

Three (3) sea level rise scenarios for CCAI basin-wide assessments

Sea level rise scenarios	2030 (2021-2040) meter	2060 (2031-2070) meter	2090 (2081-2100) meter
Low (RCP 2.6)	0.13	0.30	0.46
Medium (RCP 6.0)	0.15	0.33	0.57
High (RCP 8.5)	0.16	0.40	0.75

Results are also consistent with the official Vietnam sea level rise projections (MONRE, 2011), which are: 0.10 – 0.15 metres by 2030, 0.25 – 0.40 metres by 2060 and 0.45 – 0.85 metres by 2090 (with the range due to different emission scenarios). Moreover, the results are close to the sea level rise projections of 0.17 metres by 2030 and 0.30 metres by 2060 under B2 scenarios that were previously used in assessment of basin-wide development scenarios (MRC, 2011)

One sea level rise scenario for Council Study

Sea level rise scenarios	2030 (2021-2040) meter	2060 (2031-2070) meter	2090 (2081-2100) meter
Low (RCP 2.6)	0.13	0.30	0.46
Medium (RCP 6.0)	0.15	0.33	0.57
High (RCP 8.5)	0.16	0.40	0.75

Climate change assessment report (1)

Executive summary

I. Introduction

Objectives, expected outputs, structure of the report, linkages to other thematic and assessment reports

II. Scope of assessment

Geographical and temporal scope, indicators for environmental and socio-economic risks and opportunities

III. Climate change and development scenarios

Description of the climate change and development scenarios considered in the assessment, approaches and sources of data for scenarios development, uncertainties associated with the scenarios

Climate change assessment report (2)

IV. Methodology

Methodology for qualitative and quantitative analysis of environmental and socio-economic risk and opportunities

V. Climate change risks and opportunities

Identification of additional risks and opportunities caused by climate change in the context of the six (6) thematic areas of the Council Study (irrigation, agriculture, domestic and industrial use, flood protection, hydropower and navigation)

VI. Recommendations

Recommendations to mitigate risks and maximize opportunities of future climate change

References

Annexes

The Climate Change Assessment Team wish to receive comments and guidance from the RTWG on the expected contents of the Technical Reports.

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Thank You