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For sustainable development



Council Study

Progress Update – Climate Change
Scenarios for the Council Study



5th RTWG Meeting
Siem Reap, Cambodia
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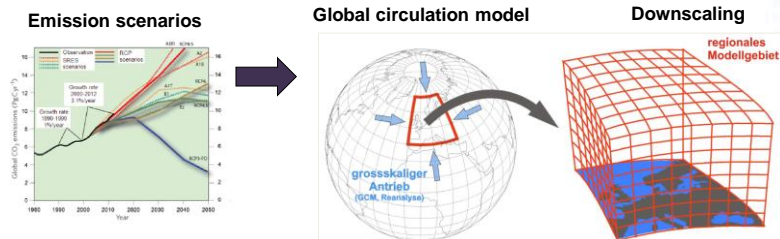
1. Approach to define climate change scenarios

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Climate change scenarios

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



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

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Approach to define climate change scenarios for CCAI



| No. | Step | Progress |
|-----|---|---|
| 1 | Review of climate change scenarios and downscaling approaches | Done, Report available |
| 2 | Selection and collection of climate change projections dataset and tool | Done, SimCLIM data set available |
| 3 | Selection of GCMs and analysis of scenarios uncertainty | Done, Report available |
| 4 | Propose and seek agreement of MCs on a set of climate change scenarios | 9 scenarios proposed, Consultation on-going |
| 5 | Document strengths and weaknesses of the proposed approach | Done, Report available |

Principle in selecting climate change scenarios for CCAI



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.



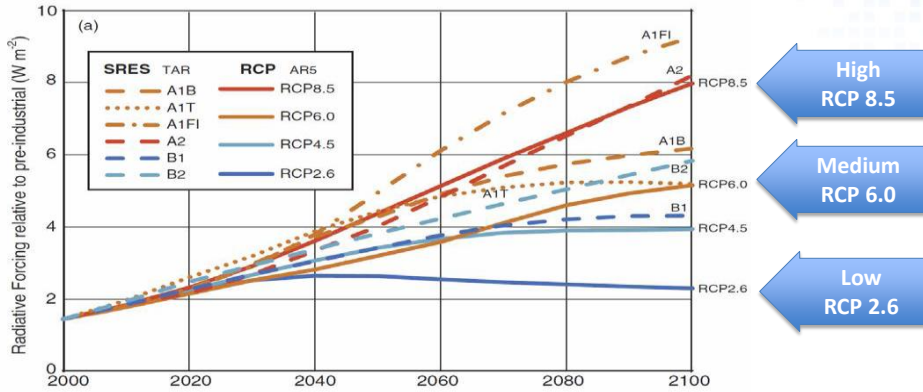
2. Selected climate change scenarios for CCAI basin-wide impacts assessment

Proposed climate change scenarios for CCAI

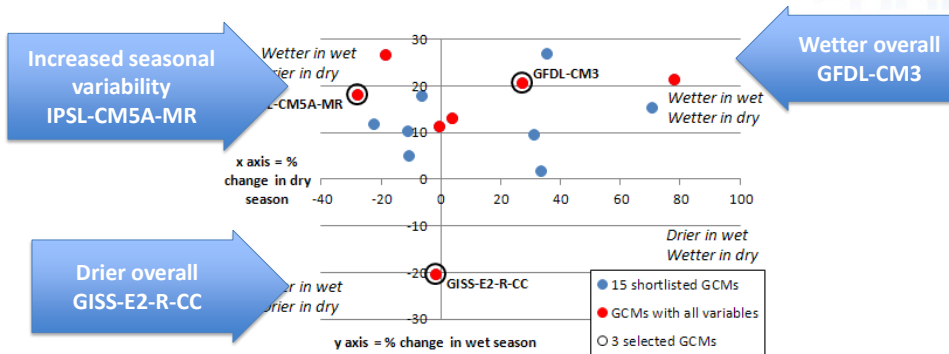


- **Nine (9) basin-wide climate change scenarios** have been proposed, which represent
 - i. Three (3) magnitudes of climate change due to low, medium and high future scenarios of carbon emission, and
 - ii. Three (3) patterns of precipitation change
 - Increase of precipitation in both dry and wet seasons (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 climate change



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



Nine (9) proposed climate change scenarios for CCAI



| 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 | |

Sea level rise scenarios for CCAI



| Sea level rise scenarios | 2030 | 2060 | 2090 |
|--------------------------|-------------|-------------|-------------|
| | (2021-2040) | (2031-2070) | (2081-2100) |
| | meter | meter | 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)

Results of consultations



- Cambodia, Lao PDR and Thailand: Agreed with the approach and proposed scenarios
- Vietnam: Agreed with the approach but proposed to include RCP 4.5 and cross-check the sea level rise scenarios of Vietnam

- Overall agreement is expected



3. Proposed climate change scenarios for the Council Study

Proposed climate change scenarios for Council Study



- Three (3) climate change scenarios (out of the 9 climate change scenarios of CCAI) are proposed to top up the 2040 Planned Development Scenarios. They represent
 - Medium magnitude of climate change RCP 6.0 (or RCP 4.5)
 - Three (3) patterns of precipitation change: GFDL-CM3, GISS-E2-R-CC, and IPSL-CM5A-MR
- Additional assessment on climate change impacts to certain sub-scenarios may be required.

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 / RCP 4.5 | 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 | |



- The Climate Change Assessment Team wish to receive comments, guidance and **agreement** from the RTWG on the proposed scenarios.

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Thank you

