# MRC Council Study: Agendas

MONDAY 6th July

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter/Facilitator</th>
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<tbody>
<tr>
<td>8:00 AM</td>
<td>Welcome and Introductions</td>
<td>So Nam</td>
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<tr>
<td>8:10 AM</td>
<td>Presentation of AGENDAS FOR THE WEEK</td>
<td>Cate Brown</td>
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<tr>
<td>8:30 AM</td>
<td>BioRA Introduction</td>
<td>Cate Brown</td>
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<tr>
<td>9:30 AM</td>
<td>Water quality and geomorphology: Background and progress to date</td>
<td>Lois Koehnken</td>
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<td>Status and trends: Water quality and geomorphology</td>
<td>Bounheng Soutichak</td>
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<td>Toch Sophon</td>
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<td>10:20 AM</td>
<td>TEA</td>
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<tr>
<td>11:00 AM</td>
<td>Vegetation: Background and progress to date</td>
<td>Andrew McDonald</td>
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<td>Status and trends: Vegetation</td>
<td>Thananh Khpotpathoom</td>
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<td>11:40 AM</td>
<td>Macrinovertebrates: Background and progress to date</td>
<td>Ian Campbell</td>
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<td>Status and trends: Macrinovertebrates</td>
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<tr>
<td>12:20 AM</td>
<td>Fish: Background and progress to date</td>
<td>Prof. Ian Cowx</td>
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<td>Status and trends: Fish</td>
<td>Dr Chavalit Vidthayanon</td>
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<td>Dr Chea Tharit</td>
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<td>Chaiwut Grudpun</td>
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<td>Dr Kaviphone Phouthavong</td>
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<td>1:00 PM</td>
<td>LUNCH</td>
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<tr>
<td>2:00 PM</td>
<td>Herpetofauna: Background and progress to date</td>
<td>Hoang Minh Duc</td>
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<td>Status and trends: Herpetofauna</td>
<td>Pich Sereywath</td>
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<tr>
<td>2:40 PM</td>
<td>Birds and mammals: Background and progress to date</td>
<td>Anthony Stones</td>
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<td>Status and trends: Birds and mammals</td>
<td>Dr Phaivanh Phiapalath</td>
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<td>3:20 PM</td>
<td>TEA</td>
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<tr>
<td>3:50 PM</td>
<td>Links and relationship to MRC Indicators</td>
<td>All</td>
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<td>5:00 PM</td>
<td>Close for the day</td>
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<tr>
<td>Time</td>
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<tr>
<td>8:00 AM</td>
<td>Explanation of activities for the day</td>
<td>Cate Brown</td>
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<tr>
<td>8:10 AM</td>
<td>Photographs and hydrology for FA1 and FA2</td>
<td>Team discussion</td>
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<tr>
<td>9:30 AM</td>
<td>Explanation of DRIFT DSS Navigation</td>
<td>Alison Joubert</td>
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<td>10:00 AM</td>
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<td>10:30 AM</td>
<td>Hand-out of DSS</td>
<td>Alison Joubert</td>
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<td>10:40 AM</td>
<td>Discipline-specific Response Curves – FA 1/2.</td>
<td>All</td>
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<td>12:30 PM</td>
<td>LUNCH</td>
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<tr>
<td>1:30 PM</td>
<td>Discipline-specific Response Curves – FA 1/2.</td>
<td>All</td>
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<td>3:20 PM</td>
<td>TEA</td>
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<tr>
<td>3:50 PM</td>
<td>Discipline-specific Response Curves – FA 1/2.</td>
<td>All</td>
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<tr>
<td>4:00 PM</td>
<td>Hand-in work to date</td>
<td>To Alison Joubert</td>
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- Each team organise themselves
- Data projectors
- Flip charts
Objective of BioRA

To provide clear and comparable information on the impacts of proposed thematic developments on the aquatic resources of **main-stem** Lower Mekong River, inclusive of the Tonle Sap Great Lake and the Mekong Delta.
Main steps in BioRA

1. **Step 1: Scenarios**
2. **Step 2: Focus areas**
3. **Step 3: Model hydrology, hydraulics, sediments, WQ**
4. **Step 4: BioRA Indicators**
5. **Step 5: Status and trends**
6. **Step 6: Knowledge capture**
   - Set up DRIFT all sites
   - Create response curves
7. **Step 7: Calibration**
8. **Step 8: Analysis**
   - Run DRIFT for all scenarios and generate prediction of change
BioRA
Focus areas (FAs)

Reference data set
Reference data sets (modelled time-series)

- 1985-2008
- Measured data:
  - Hydrology relatively ‘natural’
  - Sediments, WQ and others changed
- Prediction horizon = 24 years
- Scenarios will model different levels of development on 1985-2008 period
- Reference set in DSS:
  - 2007 Level of Development

Flow time-series

- DRIFT divides each hydrological year into seasons based on flow thresholds:
  1. Dry season
  2. Transition season 1
  3. Flood season
  4. Transition season 2
- DRIFT calculates values for about c. 60 flow indicators for each site and scenario:
  - Onset of wet season
  - Volume in wet season
  - Duration of dry season
  - Minimum 5-day dry season flow
- Generates a time-series of annual values for each indicator
Definition of seasons – Adamson (2004)

Analysis of flow time-series
Sediment and WQ time-series

• DRIFT uses the hydrological seasons:
  1. Dry season
  2. Transition season 1
  3. Flood season
  4. Transition season 2

• Calculates:
  – Mean
  – Min
  – Max
  – Variations

• Generates a time-series of seasonal values for each indicator

• Lois will discuss further

Knowledge Capture

• Response curves are the ‘brains’ of the DRIFT Model
• They are constructed by specialists
• They are created for each link
• A scoring system is used to capture the direction and magnitude of each response
• Some response curves address connectivity and/or other pressures, e.g., hunting pressure:
  – Will use status and trends results
  – Not included yet
• 200-400 response curves per site
Example of a response curve – the response of one indicator to minimum dry-season flows in a year.
Severity rating | Severity change | Equivalent Loss or gain
---|---|---
5 | Very large | 501–∞ (to pest proportions)
4 | Large | 251–500
3 | Moderate | 68–250
2 | Low | 26–67
1 | Negligible | 1–25
0 | None | No change
-1 | Negligible | 0–20
-2 | Low | 20–40
-3 | Moderate | 40–60
-4 | Large | 60–80
-5 | Very large | 100–80
DRIFT operation

External modelled time series

Transformed into time series of DRIFT driving indicators

Scenario: Dry season minimum discharge for each year

www.mrcmekong.org

DRIFT operation

External modelled time series

Transformed into time series of DRIFT driving indicators

Each responding indicator

DRIFT prediction of change for each year

30 years of record = 30 values

Curves combined using multi-criteria decision analysis procedures

www.mrcmekong.org
**DRIFT predictions of change**

Time series per indicator per site per scenario

End value of indicator abundance

End value of indicator integrity - 1.2 = moderately modified

End value of discipline integrity

End value of Ecosystem Integrity

Reference condition
Main specialist outputs of OSV July Meetings

- Revised BioRA indicator and links list
- Links to MRC indicators
- Trends and Status assessments
- Preliminary response curves and motivations: FA 1, 2 and 3:
  - Calibration sequences

Thank you