Council Study

BioRA setup and response curve development for the DRIFT-DSS for LMB

6th RTWG Meeting
Phnom Penh, Cambodia
17-18 December 2015

Contents

• Objective of BioRA
• Progress and reports
• BioRA setup
• Preliminary calibration
Objective of BioRA

To estimate the ecological responses to hydrological, sediment and water quality changes that are caused by water resource developments in each thematic area and cumulatively – i.e. changes in key biophysical indicators.
BioRA Interim Technical Report

Interim Technical Report (20 December 2015)

- **Specialist reports:** 7 disciplines, for each discipline:
  - Description of Focus Areas
  - Indicators and links: characterisation and reasons for selection
  - Status and trends assessment
  - Evidence-based explanations for Response Curves

- **Results of preliminary calibration**

- **Technical Specifications and User’s Guide of BioRA DRIFT DSS of the LMB**
DSS SETUP AND CALIBRATION

Focus Areas

FA1  Mekong River upstream of Pak Beng
FA2  Mekong River upstream of Vientiane
FA3  Mekong River upstream of Xe Bang Fai
FA4  Mekong River upstream of Stung Treng
FA5  Mekong River upstream of Kampong Cham
FA6  Tonle Sap River at Prek Kdam
FA7  Tonle Sap Great Lake
FA8  Mekong Delta
### BioRA Indicators

72 indicators

1. Geomorphology
2. Vegetation
3. Invertebrates
4. Fish
5. Herpetofauna
6. Birds
7. Mammals

### Links in BioRA

- **Geomorphology**
- **Fish**
- **Mammals**
- **Birds**
- **Vegetation**
- **Macroinvertebrates**
- **Herpetofauna**

### Indicator Groups

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<th>Taxa Focus Areas</th>
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**Modelled time-series from the DSF**
Set-up and preliminary calibration completed for 5 FAs: 1, 2, 3, 5 & 7

Except FAs 4, 6 and 8

Data use for preliminary calibration

The hydrological time-series modelled data obtained by using:
- 1985-2008 climate (rainfall) data;
- 2007 level of infrastructure development;
- 2003 level of landuse;
- a daily time set.

The hydraulics were supplied by IKMP using a combination of the DSF models (ISIS-ID) and WUP-FIN models, excepting FA4 (Stung Treng), FA6 (Prek Kdam) and FA8 (Delta)

For water quality and sediment the preliminary calibration time-series were derived using the results from the Water Quality Monitoring Network, for the period 1985 – 2008.
Response curves

RCs complete for 5 FAs: 1, 2, 3, 5 & 7:

- 67 indicators of 7 disciplines (1. geomorphology, 2. vegetation, 3. macroinvertebrates, 4. fish, 5. herpetofauna, 6. birds, and 7. mammals)
- 1,520 response curves

The BioRA DSS can be used for testing and training, but will require additional calibration once the full suite of Reference Scenario 2007 sediment and water quality data become available from IKMP modelling team before it can be used to assess the Council Study scenarios.
This will involve the following:

• Obtain hydrology, hydraulic, water quality and sediment modelled outputs for the Reference Scenario 2007 for calibration for all FAs
• Recalibrate the DSS for FA1, 2, 3, 5 & 7
• Develop response curves and calibrate the DSS for FA4, 6 and
• Update the specialists’ report
• Rewrite the calibration report
• Obtain modelled data for the cumulative and thematic development scenarios for all FAs
• Run the development scenarios
• Write up the cumulative and thematic reports based on the outputs of the DSS for these development scenarios.

Way forward (2016)

1. Training workshop to test the BioRA DSS developed to date for LMB (six days in February 2016)

DAY 1: Guide to using the DSS and concepts
DAY 2: Introduction to calibration scenarios, computations, review and testing
DAY 3: Test/review of response curves
DAY 4: Test outcomes for FA 1, 2; adjustments as required
DAY 5: Test outcomes for FA 3, 5 and 7; adjustments as required
DAY 6: Revision of adjustments and way forward
2. Completion of the BioRA tasks:
   • Response Curves and calibration for remaining FAs (c. June 2016)
   • Scenario assessment
   • Final report preparation

The RTWG is requested to:
   • Take note of the progress
   • Provide feedback on proposed MC DSS testing workshop in February
   • Provide overall feedback and guidance at this time when necessary
Thank You