**Integrated Urban Water Management**

**Financial and Economic Module**

**Simulation Game   
Script**

Version: Final draft

October 31, 2016

1. **OBJECTIVES OF THE GAME**

Objectives of the game are:

* To demonstrate what financial and economic assessment in IUWM entails
* To show how financial and economic assessment differ, yet both inform decision making on IUWM
* To experience what the trade-offs are in integrating urban water management interventions
* To show how financial and economic assessment help to select interventions in an IUWM program and to optimize the program

Objectives of the game are NOT:

* To demonstrate how an integrated approach is (always) better than an unintegrated approach to urban water management
* To experience how to technically integrate urban water management solutions

1. **GAME CONCEPT AND MECHANICS**

The game is a envisioned as a training tool for Integrated Urban Water Management. It has a planned duration of 2 hours.

The game is played in 2 rounds, with each round expected to have a duration of 1 hour in total, including instructions and discussion/evaluation. Training participants are divided into a number of groups (2 groups minimum) depending on the total number of participants.

Each group represents the task force of the municipal government responsible for investment decisions on water management. The groups assess alternative solutions to various urban water challenges of a fictive case, using a simple economic and financial assessment tool. They score these alternatives and make a choice. In the large group, the outcomes are compared with regard to their financial feasibility and economic assessment.

In Round 1, the teams:

* Receive information about the case and their assigned task related to the management of city’s wastewater.
* Receive different pre-defined wastewater management alternatives, with discrete characteristics and impacts (costs and benefits).
* Assess and compare the financial and economic feasibility of the given wastewater management options using a simple Excel tool.
* Select and submit their wastewater management alternative.

In Round 2, the teams:

* Receive new information and additional alternatives / add-ons to the discrete characteristics and impacts (costs and benefits), which come in the form of new requirements or new opportunities and objectives involving different stakeholders, including new funding sources.
* Depending on the group dynamics, the new information can be distributed to all team members or to only one of them.
* Also, ‘transaction costs’ of integrating solutions/ engaging with stakeholders are added to the game, the amount of transaction costs differing per ‘complexity’ of the solution.
* Use the Excel tool to assess and compare the financial & economic feasibility of new alternatives. In the second round, new fields are accessible in a round 2 version of the tool.
* Select and submit their wastewater management alternative.

The game is directed by preferably (but not strictly necessary) two trainers:

* + one taking on a ‘role’ that is linked to the case in the game, and
  + one facilitating the smooth course of the game, providing lessons learned and leading discussions after each round.

1. **GAME PREPARATION**

Necessary materials:

* 1 laptop per team
* round 1 and round 2 Excel tools (to be shared via either email or thumb drive)
* handouts for all participants
* script for all facilitators
* laptop and slide deck for facilitator
* identify locations where teams can work independently

Tips:

* talk through full simulation game with all facilitators involved
* try out the excel tool in order to be prepared for questions
* be very clear on facilitator’s roles, also identify facilitator 1 (incorporating ‘the department head’) and 2 (evaluating and reflecting upon the game)
* have all the materials ready for distribution
* prepare grouping of participants (minimum 3 and maximum 7 participants per team)
* know the password to protect and unprotect worksheets (“IUWM”)

1. **DETAILED AGENDA**

| **Time** | **Steps** | **Materials** | **Comments** |
| --- | --- | --- | --- |
| **0:00 – 0:05** | Organization of the participants into teams | N/A | * Ensure good mix of expertise per team |
| **0:05 – 0:10** | Instructions for Round 1 by Facilitator 1 | * Facilitator’s slide deck:  *Introduction Round 1* | * *Facilitator 1* steps into the role as the head of the water management investment program of Bay City and addresses the team as “his team” * *Facilitator 1* introduces the case and task (slides) * *Facilitator 2* explains game logistics * *Facilitator* 2 distributes materials * Direct teams to their work locations |
| **0:10 – 0:15** | Examination of the case in teams | * Handout “Case description” * Handout “Alternatives” * Handout “Economic Impact Assessment” * Scoring form Round 1 * Excel tool | * Participants read the materials and discuss in the teams * Participants familiarize themselves with the tool (only yellow cells to be filled) * Tip for participants: appoint one person in charge of the tool * *Facilitator 2* announces timing * *Facilitators* walk around to answer questions |
| **0:15 – 0:40** | Development of the plan |  | * *Facilitators* walk around for questions * Notify teams when there are 10 and 5 minutes left |
| **0:40 – 0:45** | Collection of teams’ scores and choices |  | * *Facilitators* gather scores and choices * *Facilitator 1* discusses choices with teams (postpone questions with regard to the tool to the transition break) |
| **0:45 – 0:50** | Feedback on Round 1 | * Facilitator’s slide deck:  *Round 1- Results* | * *Facilitator 2* presents overall results * *Facilitator 2* guides discussion on lessons learned, first by asking teams for their observations, then showing the prepared lessons learned |
| **0:50 – 0:55** | Transition to Round 2 | * Excel tool (on screen) | * *Facilitators* should be prepared to answer questions with regard to the tool during the break (preferable one-on-one instead of plenary) * *Facilitator 2* Introduces round 2 Excel tool |
| **0:55 – 1:05** | Instructions for Round 2 by the *Facilitator 1* | * Facilitator’s slide deck:  *Introduction Round 2* | * *Facilitator 1* steps into the role as the head of the water management investment program of Bay City and addresses the team as “his team” * *Facilitator 1* introduces the addendum to the case and task (slides) * *Facilitator 2* prepares first part of material for distribution (see below) |
| **1:05 – 1:35** | Development of the new (integrated) plan | * Handout “Case description addendum” * Handout “Letter from water utility” * Handout “Note from Blue Green Infrastructure Program” * Handout “Letter from developer” * Scoring form Round 2 | * Participants read the materials and discuss in the teams * *Facilitator 2* asks participants to open the round 2 model * *Facilitator 2* clarifies that participants can use the SWM button, mentions that additional transaction costs are already taken into account * *Option:* distribution of handouts to all team members or only 1 per team. * First distribution:   + Handout “Case description addendum”   + Handout “Letter from water utility” * Second distribution (after 10 minutes):   + Handout “Note from Blue Green Infrastructure Program” * Third distribution (after 20 minutes):   + Handout “Letter from developer”   + Scoring form Round 2 * *Facilitator 2* announces timing * *Facilitators* walk around to answer questions * Notify teams when there are 10 and 5 minutes left |
| **1:35 – 1:45** | Collection of teams’ scores and choices |  | * *Facilitators* gather scores * *Facilitator 1* discusses choices with teams |
| **1:45 – 2:00** | Feedback on Round 2 and discussion | * Facilitator’s slide deck:  *Round 2 – Results* | * *Facilitator 2* presents overall results * *Facilitator 2* guides discussion on lessons learned, first by asking teams for their observations, then showing the prepared lessons learned * *Facilitator 2* |
|  | OPTIONAL |  |  |
| **2:00 – 2:20** | In-depth brainstorm / discussion |  | * *Facilitator 2* also engages participants in a brainstorm / discussion on additional integrated solutions, including nutrient recovery / energy generation from waste water. * *Facilitator 2* asks more questions for a more in-depth discussion, such as:   + Why would real life be even more complicated?   + What is your experience with ‘transaction costs’?   + What could have been other integrated solutions?   + What demand management solutions, behavioral interventions and other non-hard-infrastructure measures contribute to overcoming water management challenges?   + What other stakeholder groups would be relevant?   + How can economic benefits be turned in financial revenues? |

1. **IUWM ROLE PLAY MATERIALS CHECKLIST**

|  | **Materials** | **Number** |
| --- | --- | --- |
|  | Laptop | 1 for facilitators |
|  | Script | 1 per facilitator |
|  | Slide deck with 4 parts: Introduction Round 1, Results Round 1, Introduction Round 2, Results Round 2 | 1 for facilitators |
|  | Laptop with round 1 and round 2 Excel tools | 1 per team |
|  | Handout: “Case description” | 1 per person |
|  | Handout: “Alternatives” | 1 per person |
|  | Handout: “Economic Impact Assessment” | 1 per person |
|  | Scoring form Round 1 | 1 per team |
|  | Handout: “Case description addendum” | 1 per person |
|  | Handout: “Letter from water utility” | 1 per person or  1 per team |
|  | Handout: “Note from Blue Green Infrastructure Program” | 1 per person or 1 per team |
|  | Handout: “Letter from developer” | 1 per person or 1 per team |
|  | Scoring form Round 2 | 1 per team |

1. **RESULTS**

Round 1

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Alternatives** | **fNPV** | **eNPV** | **Additional considerations** |
| Alternative 0 | **4.569** | **0** |  |
| Alternative 1 | **-345** | **1.542** | + Significant positive environmental effects:   * Improvements of aquatic ecosystems in ocean * Avoidance of eutrophication events that can lead to biodiversity loss) |
| Alternative 2 | **1.894** | **1.304** |  |

Round 2

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Alternatives** | **fNPV** | **eNPV** | **Additional considerations** |
| Alternative 3 | **920** | **3.287** | + Significant positive environmental effects (similar to alternative 1) |
| Alternative 1 + SWM1 | **-445** | **682** | + Significant positive environmental effects |
| Alternative 1 + SWM2 | **-1.058** | **3.284** | + Significant positive environmental effects |
| Alternative 2 + SWM1 | **1.794** | **443** |  |
| Alternative 2 + SWM2 | **1.180** | **3.045** |  |
| Alternative 3 + SWM1 | **620** | **2.226** | + Significant positive environmental effects (similar to alternative 1) |
| Alternative 3 + SWM2 | **107** | **4.928** | + Significant positive environmental effects (similar to alternative 1) |