

Proposal for Sustainability Index Assignment

Introduction

Because of the suggestion by Dr. Mansour to incorporate Sustainability Index (SI) in the assignment I made a proposal for this. In the study guide there is shortly described a plan to do this. I tried to make this plan more concrete and link-up with proposed literature on SI and multi criteria analysis (Task 1.6). Furthermore, assignment is following to a great extent the method used by Dr. Seghezzi in *Sustainability of anaerobic sewage treatment* as is provided in Task 1.6. It will moreover be very useful to give the powerpoint presentations by Dr. Seghezzi (see .ppt file in this folder).

Aim is to give more emphasize to interdisciplinary issues within the design of an urban water chain (present assignment) through the simulation of multi-stakeholder sessions. In these sessions stakeholders roles and needs are assessed before other and designed water chains are evaluated afterwards based on a multi criteria analysing method.

The first meeting is before the other assignments are made and consists of the following parts:

1.1 Identification and analysis of main stakeholders within Urban Water Chain (UWC)

1.2 Identification of criteria for Water Chain design and giving importance scores

The assignments under 1.1 can have a link with the Integrated Watershed Management (IWSM) course where ways to do stakeholder analysis are taught. Outcomes of this first meeting are a list of criteria and their importance according to the most important stakeholders within the UWC. This can be valuable if students take it as guiding principle in the UWC design assignments.

After finishing the assignments stakeholders come together in another stakeholder meeting and give a score of the *performance* of the different UWC designs as a whole. Ideally, a score should be given of the different elements within the chains. For practical reasons there is chosen to give only one score for each criterion for the whole UWC designs.

The score for *importance* and *performance* of the different criteria can be aggregated into a (SI) of the different designs. The scores of the different UWC designs could be added up in SI scores. In summary the second multi-stakeholder meeting consists of the following parts:

2.1 Performance score for different criteria

2.2 Aggregation of importance and performance scores in SI and discussion

In the following paragraphs different parts of the assignment are worked out.

1.1 Identification and analysis of main stakeholders within UWC

A. Individual assignment identification and analysis stakeholders

As preparation on the first multi-stakeholder meeting students are assigned to identify main stakeholders and make a short stakeholder analysis. Use can be made of parts in the IWSM course related to stakeholder analysis. Instructions that can help students:

- Identify stakeholders
- Describe necessities and objectives of different stakeholders
- Describe level of interest and power of stakeholders

- Indicate potential of stakeholders to influence other stakeholders and potential for coalition or cooperation
(Based on Valerie Belton and Theodor J. Stewart, 2003. *Multiple criteria decision analysis. An integrated approach*. ISBN 0-7923-7505-X)

B. Plenary meeting identification stakeholders

A group meeting (preferably not longer than 1 hour) is held where main stakeholders are identified. Teacher can guide this session by schematize on a blackboard.

After this session the students are divided in groups that represent one stakeholder. One group of students will be the ‘overall management group’ and should guide further multi-stakeholder meetings (eventually in cooperation with teacher(s)).

C. Groups meet to analyse stakeholder they represent

The different groups will now do a short stakeholder analysis for the stakeholder they represent (about 1 hour). The ‘overall management group’ has to prepare the next multi-stakeholder session where criteria are identified and importance scores are given by the different stakeholder groups.

1.2 Identification of criteria for Water Chain design and giving importance scores

Based on the stakeholder analyse criteria for the UWC design will be identified and giving a score for *importance* within a multi-stakeholder meeting.

A. Identification of criteria

Under supervision of the ‘overall management group’ a list of criteria is established which the UWC design should fulfil according to the different stakeholders.

Tips for the overall management group to guide the session:

- A useful start can be to identify different aspects of sustainability (proposed is to use technical, environmental, social and economical aspects) and split these up in different criteria.
- Schematise the criteria discussed by the different stakeholders on a blackboard.
 - It will be useful to put criteria under certain aspects
 - Add similar criteria up to one criteria
 - Try not to end with too many criteria (Criteria can for instance be left out if only few stakeholders mention it)

B. Give importance scores of criteria

The different stakeholder groups have to give a score for the *importance* of the different criteria identified. This can be done by giving a score to each criterion between 1 and 100 using the Excel document provided by Dr. Seghezzo (see .xls file in this folder). For practical reasons only different aspects are given a score (keeping different criteria belonging to this aspects into consideration). Eventually *importance* scores can be given in different rounds. In between there is discussed about outcomes of previous rounds and again scores are given for *importance*. Only the scores given in the last round are taken into account in the aggregation.

Tasks for the overall management group

- The groups should be provided with a paper on which they can give *importance* scores (use can be made of excel sheet by Dr. Seghezzo)
- By making use of the excel file the outcomes of the different groups should be aggregated

2.1 Performance score for different criteria

The different UWCs designed within the assignment are evaluated by the different stakeholder groups. Again the overall management group chairs the session.

Tasks for the overall management group

- Provide different groups with paper on which they can give *performance* scores
- Make use of excel file to aggregate the outcomes

2.2 Aggregation for importance and performance scores in SI and discussion

A. Aggregation into SI score for different UWC designs

The overall management group should by making use of the excel file aggregate *importance* and *performance* scores resulting in an SI score for the different UWC designs. Again use can be made of different rounds with discussions in between.

B. Discussion

A discussion (chaired by the overall management group) is held with the different stakeholders about the SI scores for the different UWC designs.

Discussion points can be:

- Are the voices of all the stakeholders coming back in the SI scores?
- Evaluation of the assignment: In how far are these stakeholder meetings representing real life situations?
 - What are differences?