

A photograph of the UNESCO-IHE building, a modern structure with a white tiled facade and large windows. A tall flagpole with a blue flag is visible in the foreground. The image is overlaid with a semi-transparent white banner containing text.

Participatory Integrated Water Resources Planning

PARTICIPATORY MCA and DECISION SUPPORT SYSTEMS

UNESCO-IHE, April 2013

Nora Van Cauwenbergh, PhD

UNESCO-IHE INSTITUTE FOR WATER EDUCATION

Learning objectives

This courses will assist participants in:

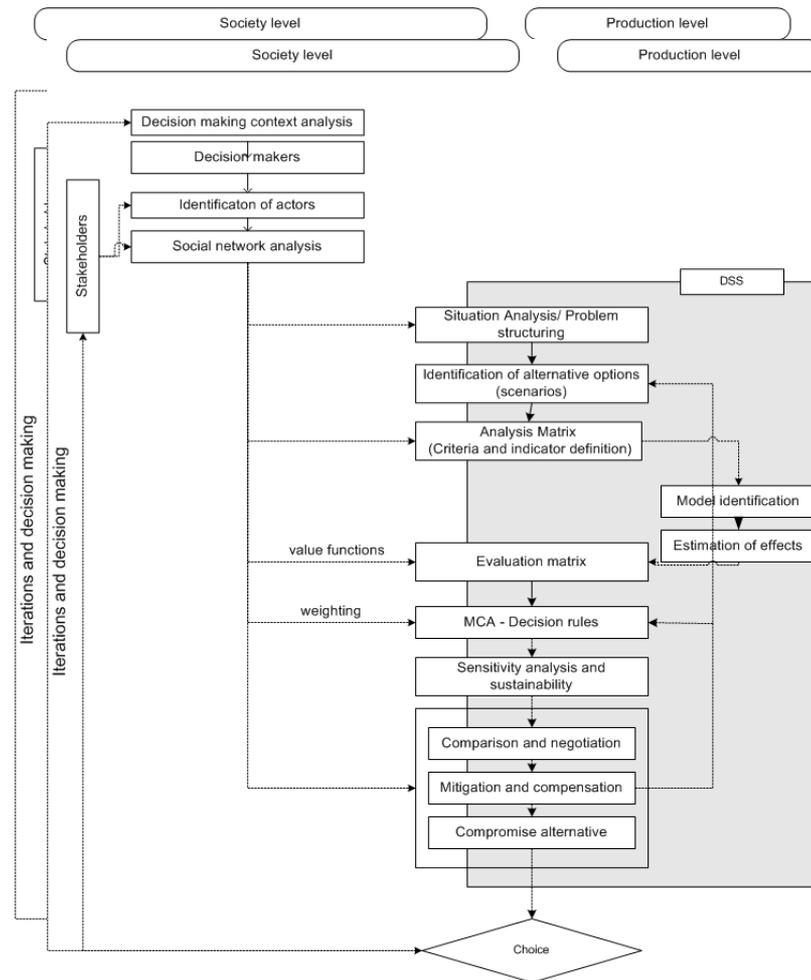
- Get acquainted with Participatory Decision Support Systems (DSS) for water resources planning
- Understand the rationale of participatory MCA-based DSS
- Understand design criteria for DSS systems and how design can be organized in a participatory way
- Understand the need to embed DSS in a broader communication platform



Contents

- Part 1 – Group discussion on MCA as (participatory) selection method between different action plans before implementation in WRP
- Part 2 – Theory and examples on MCA-based DSS for water resources planning
- Part 3 – Using a participatory DSS (Altaguax DSS)
- Part 4 – Discussion and final considerations

Evaluation of action plans for WRP



Part 1 – Group discussion

....thinking of the exercise on definition of action plans and evaluating sustainability of options

- Why decision support?
- What does a DSS system needs to offer
- How can we integrate it in the planning proces?
- Who will use it? What training is needed?
- Limitations? Opportunities? Challenges?

Part 2 – Review on MCA-based DSS in WRP

- DSS

A DSS is a set of elements, both physical (computers, peripherals) and logical (programs, data, procedures) that provide the adequate environment to take "rational" decisions on ill defined spatial problems. These decisions have to be taken by persons (or groups of persons) that aren't necessarily experts in computers nor informatics, yet have an in depth knowledge of the treated problem, and, therefore, use the DSS as an easy to use tool.

- Review on Rationale for MCA based DSS (Hajkowicz, 2007)

- Transparency and accountability
- Contribute to conflict resolution
- Provide a robust analysis tool
- Complement CBA as this has several limitations

- Limitations of MCA based DSS and way forward

MCA based DSS and transparency

- Provide transparency and accountability to decision procedures which may otherwise have unclear motives and rationale.
 - explicitly stating and weighting decision criteria.
 - the reasons for choice are made explicit and past decisions can easily be audited.
- ‘Logical’ and ‘well documented’ approach
- Remark: whilst transparency is typically seen as a strength of MCA it may be a deterrent for some.
 - Sometimes decision makers, either overtly or covertly, do not want to be too transparent (too ‘explicit:’)

MCA based DSS and conflict resolution

- Conflict resolution is a common reason for adopting MCA. It becomes an issue when multiple perspectives are applied to a single water management decision
 - Eg allocation of Jordan River water amongst Palestine, Israel, Syria, Lebanon and Jordan: “The negotiators need a decision tool based upon objective criteria or standards to reach equitable entitlements to shared water resources by all parties. A multi-criteria decision tool is a possible approach to the problem of allocating the waters of the Jordan River between all riparian parties.”
- Conflict resolution ~ transparency.
 - All parties are required to explicitly state their preferences through a structured process.
 - Identify areas of agreement and disagreement, thereby managing conflict.
 - Identify shared solution space from multiple perspectives

MCA based DSS and robust decision making complementing CBA

- Analysis is logical and robust (Use of formal axioms of decision theory to inform choice)
- Auditability (MCA model can be used to recreate decision problems at the time choices were made)
- Complementary to cost-benefit analysis which has 2 main limitations
 - Requirement for all outcomes to be expressed in monetary terms
 - Difficulties with achieving a fair distribution of resources amongst stakeholders
- MCA allows robust analysis whilst permitting non-financial and distributional issues to be incorporated

Limitations of MCA identified

- Limitations of MCA identified in 2007 review
 - Improving DM interaction with MCA models including better methods for preference indications (web tools to elicit stakeholder preferences over web)
 - Developing better means for incorporating multiple DM input to a single decision in resolving conflicts (MCA tends to average out the differences in opinions, while they can be incommensurable)
 - Improved ways for initial structuring of the MCA model, which involves selection of criteria and decision options
 - Better ways for handling risk and uncertainty in MCA models including means for incorporating decision maker risk preferences
- → Need to embed MCA in a broader participatory context
 - Australia, Straton et al, 2011
 - Spain, Van Cauwenbergh et al, 2011

Part 3 – Exercise

- Video
- Exploring the ALTAGUAX DSS and Q&A
 - By 2, login to the website
 - Go to “Tools” “Multicriteria analysis” – Create a new profile and choose to be a type of stakeholder
 - Go through the MCA (check for translations.....sorry-disculpa!!)
 - Try to change weights of indicators and see what happens
 - Explore additional information granted on the website (again, sorry for residual texts in Spanish!!)
- Group discussion on final step (comparison own results with the one of the grup)
- Consensus building

Surfing firefox or chrome

www.altaguax.org



The screenshot shows the altaguax.org website. At the top, there is a header with the altaguax logo and a navigation link "Go To Altaguax: Web Tools". Below the header, there is a main content area with a "Welcome to the ALTAGUAX website" message. The message includes a paragraph in Spanish: "El Portal del Proyecto ALTAGUAX es el punto de encuentro de los agentes sociales que participan en esta experiencia colaborativa. Es además el interfaz final de usuario del Sistema de Ayuda a la Decisión Espacial para la gestión del agua en el Andarax." Below this text is a photograph of a river flowing through a landscape. To the right of the main content area is a "Login" form. The form includes a "Username" field, a "Password" field, a "Remember Me" checkbox, and a "Login" button. Below the login form are links for "Forgot your password?", "Forgot your username?", and "Create an account".

- Firefox or Chrome
- Username = unesco-ihe email xxx@unesco-ihe.org
- Password = WRP13
- Go to “Tools” “Multicriteria analysis” - Create profile and choose to be a type of stakeholder)

Part 4 – Final considerations

- Group vs individual decision making
- Opportunities and challenges of MCA-based DSS systems
- Embedding MCA tools in a participatory context

Group decision making in WRP

- Need to see the differences in opinion to understand critical issues and common decision space
- DSS can offer objective and transparent information on the individual and group evaluation and provide a guidance in identifying the more sensitive issues (most different opinions)
- Consensus building is not done by the computer, it needs dialogue, understanding and learning
- Embedding of the decision making process in a dialogue from the early steps onwards can provide such a learning process

Embedding MCA tools in a broader participatory context

- Need to embed MCA in a broader participatory context
 - Design of options and criteria together with stakeholders, not only evaluation, gradual design of broadly acceptable management strategies that are progressively filtered down to compromise solutions
 - Organization of workshops
 - Linking to citizen juries
 - Training and capacity building
 - Learning process (it is not only about the output, it is also the outcome)

Design requirements for DSS systems (in WRP)

WRP decision support systems are considered useful if:

- The way the model works is **sufficiently clear**, I agree with underlying principles and assumptions and outcome is reasonable
- Model **helps to better understand** process/problems of the real world situation
- User interface is **attractive**
- **Organization** of information is clear and understandable
- **Easy to learn** tool
- Has the **functions** it is expected to have
- The system can have **added value** to the normal WRP process
- The model would **improve the communication** amongst people working in different disciplines

- *Efficiency, Comprehensive, Operational, Attractive, Easy to access, Allow for learning, Effective*

Checking the learning objectives

?? Did the lecture help you to:

- Get acquainted with Decision Support Systems for water resources planning?
- Understand how DSS design can be organized in a participatory way?
- Distinguish between good and bad examples of DSS use?
- Understand the need to embed DSS in a broader communication platform?





Thank you!

UNESCO-IHE INSTITUTE FOR WATER EDUCATION