



Cost-benefit analysis of multiple-use services (MUS)

Report of expert meeting and workshop

22-24 February
Leiden, the Netherlands

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Background

In the past five years, various organisations, under the umbrella of the MUS Group, have been working on so-called Multiple-Use water Services (MUS). It starts from the widely observed practice that people use single-use designed systems for multiple purposes, whether formally allowed or not. The MUS approach aims to take people's multiple water needs as starting point of planning and design of new infrastructure or rehabilitations, and adapt the design and management accordingly. In this way, it is expected, more livelihood benefits from investments in water development can be realised and a contribution can be made to sustainability of services.

Much effort has gone into both the conceptualization of MUS, as well as in developing operational models for applying this approach. Following discussions among MUS Group members, amongst others at the sessions on MUS at the World Water Forum (see www.musgroup.net/page/1076) and a meeting of the MUS Group held in August 2009 (www.musgroup.net/page/1136). A key issue that still merits more work is a better understanding of performance indicators of MUS, particularly those related to the return on investments of MUS approaches. This question is important to consolidate and improve the MUS approach. Moreover, further insight also allows better framing of advocacy messages and policy dialogue.

It is realised that this is not easy to address in a generic way, as MUS is an approach that can be applied at different levels of scale and from different entry points; besides the eventual results are very contextual. Various studies (e.g. Renwick et al., 2007) have tried to address this issue, by looking at incremental costs and benefits for different service levels, starting from conventional single-use domestic systems and irrigation systems ('domestic-plus' and 'irrigation-plus'). Yet, more work is needed to further expand this work. Elsewhere, a third entry point for MUS: communities with multiple users, needs, and sources as entry point, has emerged ('community-based MUS'), which claims further effectiveness of investments for sustainable livelihood benefits.

It is with this background in mind, that the MUS Group has organised a series of meetings in the week of 22 – 26 February 2010 in Leiden (the Netherlands), which aim to share and develop ideas, methods and tools to gain better insights into the analysis of costs and benefits of MUS. This series consisted of the following:

- A preparatory "expert meeting" on 22 February
- Workshop on cost-benefit analysis for MUS on 23 and 24 February
- Regular MUS Group meeting on 25 February
- Launch of Topic Working Group on MUS with those preparing to work on MUS in the 2nd phase of CPWF on 26 February

This report synthesises the discussions of the preparatory meeting and the workshop proper. The minutes of the MUS Group meeting are available on <http://www.musgroup.net/page/1199>.

Aim, structure and modality of the event

The overall aim of the three days was to get new insights, based on both conceptual perspectives and case experience, into approaches for assessing cost and benefits of MUS.

Both MUS Group members and other interested participants from other NGOs, government agencies and research institutes were invited. In the end, the meetings brought together 39 participants. For further details, see Annex 1.

Various guiding elements were used to structure the three days. First, a “grid” of guiding points was used, which can be summarised as follows:

- How are MUS conceptualised from different entry points, based on different perspective and experiences?
- What are the implications of this conceptualization for the operationalisation of cost-benefit analyses of MUS?
- What is the empirical evidence or hypothesis on the cost-benefit analysis?
- What are the most promising opportunity areas and priority areas for MUS in research, design and implementation?
- What is the way forward to address these?

These guiding questions were used both in the expert day and the workshop proper. The expert day was more focused on conceptual discussions and approaches, whereas the workshop focused on the analysis of case evidence and the discussion on the way forward. The more conceptual deliberations of the expert day were used to further structure the analysis of case work. In preparation, invited experts were asked to write “expert notes” with perspective and ideas on these guiding questions. These expert notes were distributed to all participants prior to the meeting. Even though these are thought pieces and reflect very much work in progress, they can be downloaded at <http://www.musgroup.net/page/1204>. Key elements and messages from these papers are taken up in the discussions and hence will be reflected in this report. The case presentations are available on the MUS Group site at www.musgroup.net/page/1184.

A final guiding element in the event was to distinguish the three main entry points to MUS: domestic-plus, irrigation-plus and community-scale MUS approaches. It is recognised that, even though MUS provides an overarching philosophy, the practical implications of this approach are quite different depending on the entry point, as are implications for cost-benefit approaches. Hence, the first guiding question deals with this point. Both the expert presentations and the case studies were grouped as much as possible according to these entry points, so as to focus the discussions and tease out implications of different approaches.

The detailed programme then consisted of both presentations of the expert notes and case studies, as well as group and plenary discussions to analyse the presentations. See Annex 2 for the detail agenda, including titles of presentations and names of speakers.

This report will not provide a chronological overview of the event, but rather provide a synthesis of the discussions, following the structuring elements of the event.

Synthesis of the discussions

Conceptualizing MUS from different entry points

In line with the first guiding point, a main point of discussion was how MUS can be conceptualised and understood coming from different entry points. The discussion transpired a number of key points of commonality, some of which were already discussed at the MUS symposium in 2008 (see www.musgroup.net/page/746).

First of all, it was agreed that MUS is a **demand-centred livelihood** approach. It is based on the premise of taking people’s livelihoods, needs and practices as starting point for service delivery. Under the MUS approach the focus is on making these needs and practices visible and trying to meet these. That in turn means understanding MUS as **service-oriented** approach. MUS are conceptualised as a way of providing water services, as opposed to systems only. So, in essence, MUS is a service-oriented approach, which aims to meet multiple demands.

Then, this approach of providing a service (supply) which meets demands can be applied at various levels of **scale**: homestead, community or water system. However, which levels of scale are the main focus of service delivery, depends on the entry point chosen. The three main entry points are given in figure 1, which was developed during the workshop:

- Domestic-plus approach: this is an approach of aiming to provide more water for small-scale productive uses at the homestead, beyond the merely domestic ones. Or, to put it differently: “increasing the pipe”.
- Community-scale MUS approach: this is an approach which looks at all needs at different sites within a community, and aims to meet these in an integrated way, often by using multiple sources of water. “Developing various pipes” would be the catch-phrase to describe this approach.
- Irrigation-plus approaches: under this approach, one looks into the different ecosystem services (provisioning, regulating, supporting and cultural services) can be provided by irrigation systems, within their command area. These can be direct services (e.g. making access for cattle in irrigation canals) or indirect ones, such as the use of seepage water for domestic wells in a command area. This type of approach was depicted as an “overflowing irrigation canal”, thereby supporting other levels.

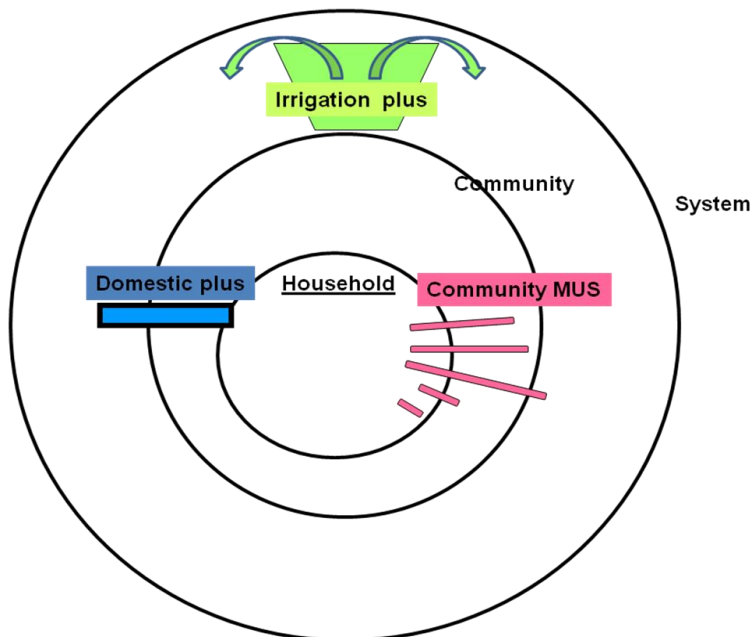


Figure 1: diagramme representing different levels and entry points for MUS

Finally, accepting MUS as a service-delivery approach, requires defining the **attributes of services**. These would include the quality and quantity of water, the reliability or continuity with which this is provided at a certain site, and the physical and social accessibility of these. Other service attributes would be flexibility and equity. The relevance of each of the service attributes may differ between the entry points. For domestic-plus approaches, quantities of water will be an important one, whereas under irrigation-plus approaches, attributes of year-round access and reliability may be more relevant.

The service attributes can be grouped into service levels, even in the form of a service delivery ladder. This has been developed particularly for domestic-plus approaches (see Van Koppen et al., 2009). However, for community-scale and irrigation-plus approaches such a generic ladder is more difficult to conceive. An alternative which seems feasible for irrigation-plus approaches are scoring systems which indicate to what extent multiple-use services are addressed in management of the

irrigation service. An example of that was given in the presentation by Trinh Ngoc Lan from Vietnam. Table 1 provides an idea of how such a ladder was developed in an irrigation system in Vietnam, as part of the MASSMUS (Mapping Systems and Services for Multiple Uses) methodology.

Table 1: Scoring table for assessing management for MUS in irrigation systems in Vietnam

Indicator value	Management attitude	Manager attitude [as stated]	Local level operators and local practices [as observed in the field]
0	Ignoring or denying MUS and/or its magnitude	“There is only one single use for irrigation”	
1	Blind eye on MUS practice by users	Manager is aware of some MUS related practices but do not consider them as part of his job.	No intervention to reduce direct pumping from canals No particular concerns about groundwater pumping No intervention to prevent use of canal for waste disposal.
2	Positive marginal practices to support MUS		Local operators accommodate in their day to day practices the other uses of water, e.g. keeping leakages unfixed when water is used by downstream people/villages. Letting unauthorized gate flowing into nearby small tanks or drainage.
3	Integration of other services concerns into the operation	Manager knows and organises the management to serve other uses or to ensure that operation for irrigation do not penalize the other uses.	Bulk water deliveries to villages tanks Main canal filled with water after irrigation season to provide water to people in the GCA. Local reservoirs managed to account for other uses. Minimizing period of canal maintenance.
4	Integration of Multiple Uses Services into the management and governance.	MUS is fully integrated in the Management Operation and Maintenance. Governance is made on the basis of multiple services with multiple users/stakeholders.	Each service well defined. Users well identified, they pay for the services, they have a say on decisions on the system management.

Implications for analyses of costs and benefits

With this background in mind and looking also at the experiences from the case studies, implications for analyses of costs and benefits were discussed. Thereby, generic issues for costs-benefit analyses were discussed as well as specific implications for each of the three entry points.

Costs

The discussion made clear that one needs to be clear on what costs are referred to and which ones are relevant. For example, one should distinguish between:

- Fixed and annual costs
- Direct costs and opportunity costs. Direct costs are the expenditures to implement a project, and can be described relatively easily in a cost accounting framework. A wide range of cost categories was developed for this. In addition there may be opportunity costs, which reflect that benefit that could be gained through an alternative allocation or investment.
- These two concepts are closely related to the financial and economic costs, where the latter also include direct and indirect costs to the society as a whole, not only to the one who makes the financial investment.
- Particularly relevant to MUS is the difference between the full costs and the incremental costs. The full costs include all costs of a new development, whereas the incremental costs refer to the addition of one component of a project, for example of adding an additional pipe for a larger quantity of water.
- Life-cycle costs refers to all the costs needed to be incurred during the full life-cycle of a service, starting from the initial capital investments to operation and maintenance and rehabilitation costs as well as the support costs needed for this. This concept is not often managed as main focus is on initial investment costs only.

Depending on the focus of the analysis, one needs to define which cost category is most relevant.

Benefits

The review of benefits helped identifying various benefit categories, such as income, production (crops, fish, livestock, hydropower, jobs, etc), health or nutrition status. A MUS project typically produces impacts in various benefit categories. This means that there are more variables and in order to compare and sum them, there is need for common units, such as the monetary value per unit of input (e.g. US\$ benefit per US\$ of input, or US\$ per drop of water). It is not always easy or feasible to define such values, particularly where more process benefits are identified, such as increased community cohesion. Making benefits visible is often an important first step. The work by Trinh Ngoc Lan showed the value of the benefits of other uses in irrigation systems, as did the analysis of small-scale productive uses by Stef Smits in Honduras. There may also be situations in which financial benefits alone are sufficient.

Benefits can also be expressed at system level, for example in the form of a longer life-span of a service, or in the form of less break-downs. This in turn will affect the discount rate on the cost side as well.

Benefits are closely linked to the service level provided. An analysis of benefits therefore needs to be linked to service levels. The water service ladder, where relevant, can be a useful tool in this. In fact, the ladder provided by Van Koppen et al. (2009) links the type of uses to water levels; this can be easily extended to include benefits.

Within a water system, the benefits will often differ a lot between different user groups. Hence, there is a need to differentiate between them. This was for example done in the cases presented by Ian Smout from Nigeria and Stef Smits from Honduras.

Implications for cost-benefit analysis

From the above, a number of conclusions was drawn. First of all, in the case of MUS, a full cost-benefit analysis is not always pertinent. It is often an analysis of incremental costs and benefits that matter. That requires, though, defining what the incremental steps are. For the case of domestic-plus approaches, the water ladder is then a useful tool. One would then need to define the changes needed to move from one service level to another, and then the costs and benefits associated with that. This approach has for example been followed by Renwick et al (2007) in her review of MUS cases. Also the presentation by Zemedu Abebe and Marieke Adank from Ethiopia followed a similar

methodology. In irrigation-plus and community-scale MUS such incremental steps may be less clear, and an analysis of incremental costs and benefits may be less relevant. Sometimes, the incremental costs are not infrastructure-related, but come in the form of transaction costs of achieving changes in management practices.

Secondly, it would be important to consider opportunity costs. This means that one would need to look into investment alternatives. For example, would it be better to invest in measures that allow people to climb the ladder, or to invest in access for those who are not yet on the ladder; or, would it be better to invest in jumping the ladder in one go, or to climb the ladder step by step.

In view of the above, in looking into costs and benefits, one needs to be clear on the unit of analysis: the household, the system or society at large, and who bears the costs. Depending on the unit of analysis, there will be differences.

The discussions also showed that cost-benefit analysis is but one method. Other analyses such as cost-effectiveness analysis, pay-back periods, financial analyses, analyses of life-cycle costs or analyses of cost minimization are as important when considering investments in the water sector. These may also help in identifying who pays. As Daniel Renault's presentation states, one can identify the share of benefits, the share of water use, and thereby having a share in the contribution to the costs of providing a service. It was emphasized that carrying out cost-benefit analyses is not always easy or cheap. The more precise data will be collected the more expensive and complicated the exercise will be. Hence, full economic cost-benefit analyses may only be feasible to do a couple of times in a generic way, whereas simpler financial analyses can be done on a project or case basis.

Once it is clear which type of analysis is best to be used, one can define which tools or methods to apply. In that, use can be made of a range of existing methods (direct measurements, indirect measurements, contingency valuation, etc.).

Evidence base on costs and benefits

Having defined the above conceptual and methodological points, participants looked at what some of the current empirical case evidence is, based on the various cases presented. The following was reflected.

Case evidence that was presented (e.g. by Zemed Abebe and Marieke Adank from Ethiopia, Ian Smout from Nigeria and Renwick et al from a global study) showed positive cost-benefit ratios in terms of cost-benefit ratios and their period of return on investment. These are all cases of domestic-plus approaches where incremental improvements in access are made, and where this is used for productive uses. The case from South Africa by Marna de Lange also showed the potential of roofwater harvesting as a complementary source of water to make this possible. However, also some important question marks were made to the case evidence:

- Some of the data seems unreliable. This is partially due to the difficulties in collecting some of the data, but also due to lack of uniform data collection tools, e.g. in terms of the time period under consideration, or the way in which software costs are defined. At the same time, even if the benefits are overestimated and costs are underestimated, the resulting figures would look very positive.
- The actual resulting cost-benefit ratios are highly contextual. That makes it dangerous to extrapolate them to other countries or contexts.
- None of the cases looked into opportunity costs of the investments made, nor into the economic cost-benefit analysis; only into financial analysis.
- It is not clear how to attribute benefits. In the case of cattle for example, water is just a minor input and hence will easily result in a high benefit per drop of water. Deepening the attribution

may require following costs and benefits further along the chain, as discussed in the presentation by Jorge Merino in a case from Nepal. This obviously will make the analysis more complete, but also more expensive to carry out.

Taking cognisance of these limitations, it was also felt that it is probably not possible to come up with one uniform methodology. The extent and methodology of the evaluation will depend on its objectives. Rather, the recommendation was made that any valuation should make its boundaries and indicators of analysis explicit.

Case evidence from community MUS projects (such as the ones presented by Jacob Kalle and Mary Renwick from India and Niger, and the one by Barbara van Koppen from Southern Africa) showed a range of benefits. However, it is difficult to define incremental costs and benefits, as the baseline is difficult to define: it would be comparing non-integrated local-level planning with integrated planning. One area of benefits that looks promising in this field is on the economies of scale.

The cases also show that simpler methods than a full cost-benefit analysis may already be adequate. For example, the work by Trinh Ngoc Lan just showed the value of non-irrigation uses in a command area, and used that as basis for discussion on management; a similar approach was followed by Stef Smits in Honduras. Also the use of other proxy indicators can be relevant as a way of prioritizing where further work or research is needed.

There is no conclusive case evidence that the positive cost-benefit ratios translate into an improved payment of services. Both the cases from Nigeria (by Ian Smout) and Honduras (by Stef Smits) made this clear. Probably this is due to the fact that these have all been cases of unplanned de facto MUS. It would be important to look into this issue in planned MUS.

Way forward in application of cost-benefit analysis

The workshop ended with a discussion on how to start applying cost and benefit analyses in advocacy, research, implementation and policy efforts. The following recommendations transpired.

Defining the purpose and use

Before anything it is important to define what the purpose and use of financial and economic analyses is. The extent (and hence the costs) of these analyses can be large or small, depending on the purpose. Therefore it is important to define purpose and use. Mr. Minta Aboagye from the Ministry of Water Resources, Works and Housing in Ghana articulated this clearly in his key note presentation. He mentioned the interest from his policy maker's perspective in the possibility that MUS may help increasing sustainability of rural water supply through an improved ability and willingness to pay. He needs evidence on MUS practices, livelihood impacts and sustainability from his country. Hence, he called for contextualising MUS and the surrounding evidence at country level. This need for contextual information was echoed by others as well.

Secondly, the discussion focused on the need to differentiate between information needs and methodologies in different steps of decision-making. Case studies may be useful to create awareness, while a fuller economic analysis may be merited when it comes to national investment strategies. An overview of information needs and possible methodologies was summarised in the table below. Going through this table, may be of support in coming to a comprehensive national MUS strategies.

Table 2: cost-benefit information needed and methodologies for different steps in decision-making

Category	Information needed	Methodology to collect info	Research	Implementation	Policy	Advocacy
Assessment	National level	National level scenario	X			X

[Describe the pie]	case studies making MUS visible Case evidence on planned MUS	analysis (stepwise approach or jump to different level of the ladder); look into different investment scenarios				
Bargaining [Decide how to share the pie]	Hard hitting facts of the type “for x investment, get y impact” or “for investment x, sustainability will increase by y%”. Must be rigorously obtained and trustworthy information	More economic kind of analysis; what is good for society as a whole; ex-ante CBA			X	X
Codification [Enable pie slicing]	Policy analysis to see what is limiting mus.	Policy analysis/assessment to see why rules are there;	X		X	
Delegation [Assign the authority/give instruction]	Interaction with the managers; information on process; management information	Stakeholder involvement processes			X	
Engineering [Make it happen]	How to make it happen	Financial analysis; local level scenario analysis; look into different investment scenarios Experiences from other countries		X		

Strengthening evidence base at country and global level

Following up from the previous point, it becomes clear that in each step of this process other evidence is needed. However, most of this evidence can be obtained only in-country. This will require action-research methodologies in which data collection on the evidence base is closely linked to implementation. The output of such research would be proven guidelines and tools for implementation. The focus should then be on the “how to”. This in turn means that one must also work closely with the existing institutional set-up, as also the case of South Africa showed.

The need for contextualised information doesn’t mean that further building of the global evidence base is not important. Decisions at country level are often influenced by global players such as donors or UN bodies. Advocacy efforts should be directed at them, making use of country evidence.

Tools and methods

Undoubtedly, still a lot of work remains to be done in further developing tools and methods. Still, a generic recommendation was provided on how to carry out financial and economic analyses. In any analysis, the following steps would need to be taken:

- Defining of the interventions (service levels) to compare
- Define comparison method

- Define costs and benefits to include, taking into account attribution issues and the purpose and use of the analysis
- Define primary and secondary data collection and measurement tools, including for valuation methods for intangible
- Define calculatory values, such as discount rates and life spans
- Transparency in data input
- Estimation of outputs, where needed
- Evaluation of uncertainty
- Presentation and interpretation
- Peer review
- Answering research and policy questions

It was recommended to go through the rigour of this exercise in every case, as it helps bringing uniformity to cost-benefit analyses. Eventually, this framework can be used to formulate a set of appropriate tools and methods for practitioners and researchers involved in MUS.

Lowering costs of water supply options for MUS

One area of work that came up in response to the discussion on costs and benefits of MUS, was the need to continue reducing costs of water supply by the use of low-cost technologies. Much of the advocacy on MUS will be able to go hand-in-hand with advocacy on low cost options. The following recommendations were made on this:

- There is need to increase the availability of low-cost technologies (including point-of-use treatment technologies), as well as of trained local private sector staff who are able to provide this.
- This needs to go accompanied by appropriate payment options, and advocacy for the recognition of self-supply as an important financing option.
- Further research is needed alongside demonstration and pilot projects, on aspects such as supply chains and the costs and benefits of low-cost technologies for MUS.
- A big advocacy effort is needed on low-cost options, particularly in the context of self supply.

Conclusions

The overall aim of the three days was to get new insights, based on both conceptual perspectives and case experience, into approaches for assessing cost and benefits of MUS.

The workshop made clear that the way in which costs and benefits can be analysed depend a lot on the type of entry point to MUS that is chosen. These entry points define which costs and which benefits need to be looked at. Often an approach of looking into incremental costs and incremental benefits is the most relevant one for MUS. However, the type of entry point defines the incremental changes that need to be looked at. The water ladder is a useful conceptual tool for looking at incremental costs and benefits in the case of domestic plus approaches. In irrigation plus and community-scale MUS approaches, this may be less clear-cut.

In addition the workshop emphasised the need to define the purpose and use of cost and benefit analyses around MUS. For certain uses, a full economic analysis, including of opportunity costs, may be needed, whether in other cases simpler financial analyses or even the use of proxy indicators can do. A framework was developed which gives indications of the type of indicators that may be needed in different stages of the decision-making process and the corresponding information needs and methodologies in each step of that.

The current evidence base shows high positive indicators for incremental costs and benefits. Even when concerns on the reliability and quality of the data are included, these results may remain

positive. Yet, they also call for further complementary analyses, for example into opportunity costs. Above all, a call was made to start compiling evidence bases at country level, as that is the level where decision-making largely takes place. The mentioned framework can help in defining what kind of additional evidence is needed at country level.

Acknowledgements

This event has been made possible through the support of the French Government through the Echel-Eau funding to CPWF. This is gratefully acknowledged. Many participants were self-funded, and we thank their organisations for making that possible. In addition, FAO and the Water Supply and Sanitation Collaborative Council facilitated the participation of a number of participants through their support to the MUS Group secretariat.

Annex 1: list of participants

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Annex 2: detailed agenda

Monday February 22

Time	What
8.30	Participants are welcomed and register
9.00	Opening, formal welcome and briefing on logistics
9.15	Introduction of participants
9.45	Setting the scene: entry points to MUS and presentation of the workshop agenda
10.05	Coffee break
10.30	Presentation of perspectives; first round: Domestic-plus <ul style="list-style-type: none"> Patrick Moriarty and Catarina Fonseca: a service ladder for assessing and costing water services Mary Renwick: costs and benefits of multiple-use services Guy Hutton: conceptualization of MUS from the health economic perspective
11.15	Discussion
11.45	Conclusions from first round on domestic-plus approaches
12.15	Lunch
13.30	Presentation of perspectives; second round: productive-plus <ul style="list-style-type: none"> Daniel Renault: Multiple Uses of Water in Large Irrigation Systems: Conceptual approach & Cost Benefit Analysis for Operation and Management Nidhi Nagabhatla: Multiple-use of water in Bangladesh floodplains: seasonal aquaculture and conjunctive use of surface and groundwater for improved rice-fish production systems
14.00	Discussion
14.30	Conclusions from second round
14.45	Short comfort break
14.55	Presentation of perspectives; third round: community-scale MUS approaches and methodological considerations <ul style="list-style-type: none"> Barbara van Koppen: community-scale MUS costs and benefits Dennis Wichelns: A preliminary view of the Multiple Use Services perspective pertaining to water sector investments
15.25	Discussion
15.55	Conclusions
16.00	Tea break
16.15	Group discussion
16.45	Exchange of results between subgroups.
17.05	Briefing on structure and inputs for day 2 and 3
17.15	Closure of the day

Tuesday February 23

Time	What
8.30	Participants are welcomed and register
9.00	Formal welcome by Nico Terra (Director IRC) Briefing on logistics
9.15	Introduction to background, objectives and programme
9.30	Interactive round of introductions and expectations at tables
10.00	Exchange of results – open microphone
10.10	Policy makers' perspective: <ul style="list-style-type: none">- Minta Aboagye: how can MUS benefit policy direction for water resources management in Ghana?
10.30	Coffee break
10.45	Presentation of the results of the expert meeting <ul style="list-style-type: none">- Conceptualization of water services for MUS- Identifying costs of MUS- Identifying benefits of MUS
11.30	Group discussion on tables on useful elements, methods and tools for CBA and performance assessment
12.15	Lunch
13.30	Case presentations <ul style="list-style-type: none">- Ian Smout: costs of water for multiple-use in Nigeria- Stef Smits: the cost or benefits of sustainability of rural water supply in Honduras, taking a MUS perspective- Marna de Lange: multiple sources for multiple uses in South Africa
14.15	Group discussion on cases
14.55	Short exchange of findings
15.05	Tea break
15.30	Case presentations <ul style="list-style-type: none">- Zemedede Abebe and Marieke Adank: Cost and benefits of MUS in Ethiopia- Amah Klutse: Experiences of MUS in Sub-Saharan Africa
16.15	Group discussion on cases
16.55	Short reporting back from the tables
17.05	Plenary: where are we? What can we expect tomorrow?
17.15	Closing
19.00	Group dinner in La Bota restaurant, Leiden

Wednesday February 24

Time	What
9.00	Recap yesterday; presentation of today's programme.
9.10	Case presentations <ul style="list-style-type: none">- Trinh Ngoc Lan: Analysing Cost & Benefits of Multiple Services in Bac Hung Hai Irrigation System - Red River Vietnam- Jorge Merino: Minding the "attribution gap" in MUS cost-benefit analysis; a case study from one MUS in Dhikurpokhari, Nepal
9.50	Group discussion on cases
10.15	Coffee break
10.30	Video on experiences with community-based MUS in Southern Africa
10.40	Case presentations <ul style="list-style-type: none">- Jacob Kalle: Role of water resource mapping in cost-benefit analysis of Multiple-Use Water Services; experiences from Andhra Pradesh, India- Mary Renwick: Water for Health and Wealth: Multiple-Use Water Services in Niger and India
11.30	Group discussion on cases
12.00	Reporting back
12.30	Lunch
13.30	Discussion in subgroups, focusing on the agenda for the way forward
14.15	Presentation of ideas elaborated by sub-groups
14.45	Defining who takes agenda forward
15.30	Tea break
15.45	Joint wrap up
16.15	Introduction for MUS Group meeting next day
16.30	Evaluation Closing by Larry Harrington, Director Research of CPWF