
OECD EXPERT MEETING ON WATER ECONOMICS AND FINANCING

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Sessions on Financing Water Resources Management
(Days 1 and 2)

Rapporteur's summary

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Session 1. Welcome and introduction

Robert Visser (Acting Director for Environment, OECD) opened the meeting welcoming participants. He emphasized the high interest in the meeting with more than 80 registrations. He reminded participants of the “expert meeting” character. And he expressed satisfaction for the balanced representativeness of countries and stakeholders (researchers, private sector, NGOs, representatives from non-OECD countries, UNESCO, African Development Bank etc.). In addition, Mr. Visser stressed the commitment of the OECD to the subject, highlighting how the expert meeting will feed into two ongoing OECD water initiatives on 1) Financing water resources management and 2) Assessing the benefits of investing in water supply and sanitation.

Anthony Cox (OECD) gave an overview of the OECD water programme that enters into its second phase. The first phase was focused amongst others on financing water supply and sanitation and on public private partnerships. The existence of the second programme focusing on water shows the importance given to the subject by the OECD. Besides the two projects dealt with during the meeting, parallel OECD activities deal with agricultural water management and water governance. Mr. Cox finally stressed the key milestones of future work, emphasising the need to establish closer links between water and climate change adaptation.

Claire Charbit (OECD) presented the OECD’s initiative on water governance. Emphasizing the importance of identifying good principles, adequate tariffs etc. she explained that new approaches are, however, only meaningful when they can be implemented at national, regional and local level. There is clearly not one single way to organize water resource management. And analysing the current organisational setting is a pre-requisite to any water reform. A questionnaire has been developed and sent out by the OECD on the institutional mapping of water policy in 35 countries. First outcomes from the survey show that organisational fragmentation is the rule. Whatever the country regarded or the instruments applied, water management is not performed in a coherent manner. Another preliminary outcome suggests the limited territorial orientation of water policy, with inadequate attention given, for example, to the connection between urban and rural areas. The questionnaire’s responses shall clarify where the main coordination gaps lie and which approaches are applied to respond to those gaps.

Céline Kauffmann (OECD) gave insight in OECD’s initiative on private sector participation in the water sector. In 2007, a Checklist for Public Action has been developed describing key policy principles. The practical guidance shall help governments to assess and manage the implications of involving private actors in the financing, development and management of water and sanitation infrastructure and to maximise the expected benefits. Since 2009, work has started with specific countries (so far Egypt and Russia) for identifying areas of particular action.

Finally, Kevin Parris (OECD) presented OECD’s research on agricultural water management. The main emphasis in the past was on the sustainable management of agricultural water use, financing water management in agriculture and pricing water for the agricultural sector in OECD countries. A new focus is now set on agricultural water pollution. Kevin Parris informed participants about the forthcoming OECD Workshop on “Improving the information base to better guide water resource management decision making” which will take place in Zaragoza, Spain, the 4-7 May 2010.

Session 2. Introduction to financing water resources management

Pierre Strosser (ACTeon) provided an overview and some reflections on financing water resources management based on recent experience in the EU. The European Water Framework Directive (WFD) has changed the focus of water policy in Europe, with ecology becoming central to the debate of water policy. The WFD organises water management at river basin district scale, it promotes participatory processes and it has led to a shift in the environmental issues regarded. A wider range of pressures and environmental aspects are now considered, including for example river continuity and hydro-morphology. Also the scope of sectors looked at has been widened. Several implications of the WFD for financing water management have been put forward:

- European Member States are asked to assess cost-recovery rates in the water sector, providing more transparency on who pays for what and who is responsible for the existing pressures.
- Cost-effectiveness analysis specified in the WFD has found only limited application in MS. This might partly be explained by the separate sector-focused process in place in some countries which hinders the comparability of measures between sectors.
- The programme of measures required under the WFD will entail significant costs, making it necessary to widen the potential sources of financing. This includes not only water-sector based financing but also sector-based financing coming from agriculture, climate change, harbour development, etc.
- Assessments are carried out to determine the affordability of households, but also of economic sectors or of the general state/water budget. This helps assessing whether the total costs of the PoM can be covered. Results are used to economically justify exemptions from the set objective of reaching a good ecological status for all water bodies.

Future challenges that need to be tackled include the economic and financial crisis which might impact amongst others on the access and availability of financial resources. Despite the large costs foreseen for the implementation of the WFD, only limited efforts have been undertaken so far by Member States to investigate new financing instruments. Instead, time exemptions that delays implementation of costly measures have been favoured by the EU Member States.

At the end of his introduction, Pierre Strosser presented the different workshop issues.

Session 3. Policy frameworks for financing water resources management

Pierre Strosser (Chair) introduced the session on policy frameworks for financing water resources management by defining a policy framework as a coherent approach to an issue, or the organisation of a process. The assumption was made that a sound policy framework for financing water resources management is a pre-requisite to effective policy making (and implementation) and towards sustainable management of water resources. Identified basic policy principles include amongst others the “polluter pays principle”, the “user pays principle”, the “beneficiaries pays principle”... or principles of equity and transparency. Other elements which should be regulated in a comprehensive policy framework comprise the issue of integration of financing (within the water sector and between the

water and other sectors), priority setting in the form of allocating the existing budget between different alternatives or adapting the available budget and finally institutions and governance. The latter refers to the mechanisms, institutions and rules etc. which have been established to make the framework “work in practice”.

The questions to be addressed by the four presentations proposed for this session were:

- Q1. What should be the key principles and elements of a policy framework for financing water resources management?
- Q2. What are the links between the policy frameworks for financing water resources management and the policy frameworks for financing water supply and sanitation services?
- Q3. To what extent are adopted principles being applied?
- Q4. What institutional and policy reforms would be needed to implement such a framework?
- Q5. What are the main messages and emerging issues in this topic?

Fausto Medel (CONAGUA, Mexico) presented the financing of water resources management (WRM) in Mexico. He shortly introduced the main actors and challenges in water resources management as well as the existing legal framework. Revenue sources of WRM in Mexico are tax collection, oil revenues, foreign credit loans, collection through water rights for use and exploitation of water, debt emission and user and service tariffs. Part of the water rights collection (300 million pesos) is allocated to the Mexican Forestry Fund and is used for the Payment of Environmental Services programs which preserve the environment and water resources. Whereas all water infrastructures have been traditionally financed by the Mexican federal government (requiring between 25 and 60% of total investment from the counterparts), the National Infrastructure Fund (FONADIN) has been created in 2008 as a financing mechanism for water infrastructure, including the compulsory participation of the private sector. Fausto Medel complemented his analysis by providing figures on the budget and revenues from the National Water Commission (CONAGUA), indicating that water investment trend from 1980 to 2002 showed a clear decrease in per capita investment. He emphasised that economic crises have historically diminished the budget and investments in the water sector. Finally, he listed some principles which should be considered in the future for financing WRM in Mexico, in particular:

- Start charging for agricultural water use.
- Coordinate public policies among different sectors, mainly agriculture.
- Decentralize water management, including the allocation of financial resources, so that the river basins have their own budgets.
- Increase the user participation in the financing of WRM through water tariffs.

Ricardo Segura (Ministry of Environment, Spain) presented the system of financing water supply, sewage and wastewater treatment services in Spain. Following a short overview of the sector's general features and the entities in charge of water services, he stressed that the state and the autonomous regions have created public societies (with 100% of the money stemming from public sources) which are eligible to apply for loans from the banking sector, getting hence access to extra-budgetary finance. All entities rendering services are in principle supposed to pay all costs necessary to carry the service (both investments and operating costs). The total annual cost of water services is about 6,000 million Euros, whereby 80% of these costs (4,600 million Euros) are paid from final users.

Ricardo Segura underlined therefore the need to increase the average unit water price to increase the cost-recovery rate.

Guy Pegram (Pegasys) presented the South African policy framework for financing water resources management. He started by giving some indications about the development of the South African policy over time and stressed the very variable hydrology in the country. South Africa shows a significant development of the economy whose location is not corresponding to the distribution of water resources. Large water infrastructure development was therefore a precondition for economic development in the country. Since 1998, the water resource finance policy includes that commercial sources are paying for commercial infrastructure whereas the state is paying for social investments. Affordability issues of the poor limit therefore a complete application of the user pays principle. A dedicated research levy exists, being used for the continued long-term funding of research and technology needs. The presentation stressed the importance of “ring-fencing” of money, meaning to ensure that money collected stays in the sector. Guy Pegram concluded by highlighting the different phases of the evolution of the water sector, from a primary economy to a secondary and finally tertiary economy with water resource governance costs steadily rising and water resources infrastructure costs decreasing after a peak in the main phase of the secondary economy development.

A.K. Bajaj (Central Water Commission, India) presented the water resources financing situation in India. He stressed in particular the importance of the agricultural sector for the Indian economy and for providing food security. He argued for low water prices for agriculture and existing subsidies in order to ensure access to food for the poor. Currently, operation and maintenance costs are not met by water charges and irrigation projects require huge capital investments. Current private participation is negligible and only taking place recently, in cases where hydropower is an issue. With water being in India handled by the states, the central government provides (financial) assistance and guidance (only) when requested. Main issues identified by A.K. Bajaj include encouraging (1) the participation of users in self-financing projects and covering at least operation and maintenance costs as well as (2) private participation wherever feasible.

The four presentations were followed by a plenary discussion. The main subjects are summarised in the following. In general, meeting participants recognized that many different approaches exist in the different countries with different degrees of development.

Application of the cost-recovery principle

- Reaching a high percentage of cost-recovery in the water sector has been an accepted goal amongst meeting participants. Though, different views have been put forward regarding justifications for not promoting full cost-recovery of water services in specific cases.
- In general, however, fully recovering the costs of maintaining and operating infrastructure is seen as critical. Insufficient cost-recovery rates are leading to the running down of the existing water system. Considering also investment costs in the tariff setting process gives the end consumer an idea of the actual costs. To fully apply the polluter pays principle, attempts should be made to make the full costs transparent, in particular in countries where high subsidy rates exist. However, it has been recognised that getting to full cost recovery might be a long process, if it shall be politically acceptable.

- Recovering full costs of water services should be linked to considerations of affordability and social issues. It was suggested that policies dealing with affordability problems should rather be handled at national level and not at water service level.
- However, some meeting participants have stressed that other priorities might justify low cost recovery rates, in particular in low income countries. Food security is given as one reason for highly subsidising the agricultural sector.
- The issue of whether reasons for setting tariffs not high enough are always political or economically justified was raised. If reasons are only political, then international organizations should promote the increase of tariffs. An economic reason might be the macro-economic implications of full cost-recovery. Increasing tariffs to cover the full economic costs of water may have an impact on national growth.
- When recovery of costs is low, this implies high water subsidies that have high opportunity costs of public funds. This issue might be particularly important given the current constraints on public finance.
- Overall, there is lack of verified good data and evidence on actual levels of cost-recovery. Greater transparency and consistency is essential for moving the cost-recovery debate forward.

Mobilising different financing sources

- The role of private financing sources as well as sources coming from outside the water sector was raised.
- The question remained open to which extent private sector participation should optimally take place. Good examples of management by both private and public utilities exist. And well working combinations of private and public management can be found.
- In some countries, there is a general understanding that the public sector pays for social investments and the private sector for commercial investments.
- Looking for financing sources from outside the water sector needs to be further investigated.

Incentives for providing good services

- Potential incentives which could be provided to local governments or other responsible institutions for well maintaining water infrastructure were also discussed. This includes incentives which promote tariff setting at a sufficiently high level – for the authorities or local bodies which have the power to set tariffs. One incentive might be to keep collected revenues in the river basin in which they have been collected.
- How to deal with the fact that smaller regions have smaller incomes and might not be able to raise sufficient funds for maintaining infrastructure was also discussed. The scale at which cross-subsidies might take place to ensure equity in access to water services was also raised.
- The importance of legal requirements for ensuring proper financing was emphasised by meeting participants. In Europe, the development would probably not have gone so far without legal requirements provided by, for example, the Urban Wastewater Treatment Directive or the Water Framework Directive. Making reference to international law allows national and local politicians to justify more easily costly interventions.

Finally, the importance of transparency in the financing sector has been recognised by meeting participants.

Conclusion

Concluding remarks on this session have been provided by Roberto Martin-Hurtado (OECD) and Pierre Strosser (Chair):

- In most cases, no explicit policy framework for financing WRM is in place (with South Africa as an exception), underlining the need to look at a more coherent way at financing issues.
- Concerning principles of water financing, the issue is less on which principles to apply (as most principles identified are widely accepted today) than on how far they are effectively applied in practice – and why.
- The roles of public and private financing need further consideration.
- Further investigation is required on the mechanisms to establish to ensure financing decisions at the different levels of governance are well taken, and that financing from other sectors is coherent with the water sector objectives and priorities.
- Concerning social issues, mechanisms for sharing the burden within and between sectors must be found. The choice between handling social issues either within the water management policy or in a separate social policy needs further consideration.
- Overall, it is essential that financing frameworks are dynamic and can adapt to changes in the water sector. Transparency in financing remains a key principle that should be more widely applied.

Session 4. Identifying financing needs

The session's introduction by Mike Muller (Chair) recalled that meeting does not concentrate on financing water supply and sanitation *per se* (as much work has already been done in this field), but on the activities required for water resources management (WRM). To illustrate the financing challenges in this area, he gave the example of a country which intended to introduce a comprehensive WRM system. However, the costs turned out to be about 5% of its GDP. Mike Muller furthermore indicated that no textbook for integrated water resource management exists, but that all approaches have to be targeted to the different needs resulting from different stages of development and the varying hydrology. The chair finally introduced the questions to be treated within this session:

- Q1. What are the water resources management functions that need to be paid for?
- Q2. Do we have good estimates of the cost of carrying out those functions at a satisfactory level?
- Q3. Do we have good estimates of how much are we currently spending in carrying out those functions?
- Q4. What are the main messages and emerging issues in this topic?

Ivo Kokrment (Water Management Development and Construction joint stock company, Czech Republic) presented the system of financing water resources management in the Czech Republic. He introduced the main actors of water management and explained how cost-recovery takes place in the

country. He mentioned that both operation costs and *common* investment costs are covered by water and wastewater charges, including also the administration costs of rivers and watercourses. *Development* investments, on the other hand, need to be supported by the state and/or EU budgets. Ivo Kokrment concluded its presentation by stating that, if all costs would have to be recovered by revenues from water users, limits of affordability would be reached.

David Lloyd Owen (Envisager) focused his presentation on wastewater treatment and spending needs from 2010 to 2029, concentrating in particular on more advanced levels of treatment. He emphasised that data collection on this issue needs more attention, as currently available data is outdated. About one third of spending related to wastewater is for wastewater treatment. In the US, spending in the sector is postponed and commitments avoided, resulting in a decline in the performance of existing infrastructure. In Europe, EU legislation has been a crucial driver for developing and maintaining wastewater treatment infrastructure. In Asia, wastewater treatment is seen as an essential part of global competitiveness, favouring its development. In Latin America, only 25 % of wastewater is treated to the 2nd or 3rd degree. Overall, only 5% of urban wastewater is treated in the developing world to secondary or tertiary treatment standards. David Loyd Owen concluded his presentation by indicating the global spending needs for basic urban wastewater projects and wastewater recovery for the next 20 years, estimated at between USD 40 to 52 billion per year. Current spending is only estimated at USD 30 billion per year. How to fill this financing gap remains an open question.

Martin Geiger (WWF Germany) focused in his presentation on freshwater functions and implications for financing. He showed the trend in global water availability and its link to the serious stress on freshwater and aquatic ecosystems. He underlined that aquatic ecosystems have several valuable functions, including river and sediment dynamics which provide for water purification. Rivers provide furthermore a valuable protein supply, in particular in developing countries. Currently, already 54% of the accessible annual runoff is diverted for human use, so care has to be taken regarding the needs associated with future population growth. As with regards to implications for financing needs, more investments are needed in upstream planning processes and in assessing the environmental water needs. Also “no go areas” regarding biodiversity in water systems should be identified. Considerable investments are needed for example in stakeholder consultation processes. Martin Geiger concluded his presentation indicating that extending the information basis necessary for sound WRM is not necessarily very costly, if activities are well targeted.

Following the three presentations, the discussion among meeting participants addressed the following issues.

Data quality

Several statements confirm that the quality of available data on financing is steadily improving and that greater efforts are undertaken in collecting statistical information. Also the OECD is fulfilling an important role in this regard. Figures which are produced today in European countries could not be produced ten years ago.

Level of costs for WRM

- Lowering the cost level is an agreed challenge. A wide margin has been attributed to reduce costs through innovation. Today, for example, tertiary treatment costs are only 25% of tertiary treatment costs from the past thanks to innovation.
- The question was raised whether there is an interest of the water industry to over-estimate costs so that they can obtain more funds from public sources and whether cost figures given are hence trustful. In this regard, a constant tension has been stated for the water utility – between what they would like to spend and what they have. The utility provides forecasts of financing needs, but the regulator prescribes how much actually can be spent.

Functions to be financed

- The question of the functions to be financed within the WRM system has to be answered holistically. One should try to cover all the costs which have WRM functions. This includes not only management and infrastructure costs but also dealing with environmental costs.
- The environmental functions of ecosystem services also received attention during the discussion. The relationship between aquatic ecosystems and biodiversity should be kept in mind. Furthermore, it has been recognised that the knowledge on valuing environmental needs is still in its infancy. In France, for example, this issue has only been introduced at the beginning of this century.
- To give concrete figures for environmental costs requires sound knowledge on the water resource base and on what the ecosystems need for proper functioning. Once this is known, the level of financial resources required to maintain water for nature and limiting water abstraction can be assessed.
- Overall, financial resources spent for WRM needs to be well targeted to fulfil useful functions.

Finally, the need to adapt approaches to find solutions regarding (local) financing needs was stressed. Viable solutions will differ depending on the country's situation in particular with regards to water availability. This should be considered when deciding between a centralized and decentralized approach to water management and financing.

The concluding remarks by Mike Muller (chair) pointed out that the task of the water resource manager is not to focus on water supply and sanitation. Instead, her or his priority are: reliability, usability of water for other purposes downstream, avoiding vulnerability, sustainability and water security. He emphasised furthermore that WRM should not only look at legal compliance, but at reaching social and environmental goals.

Closing day one

Anthony Cox (OECD) closed the first meeting day by summarising the main messages of the day's sessions. He underlined the need to increase transparency in the water sector: public accounts on water financing as well as the reliability of information should be steadily improved. Incentives should be provided to authorities to adequately prepare for future water resource management needs. And mechanisms have to be investigated for sharing the financing burden. He recalled furthermore that

seeing environmental services as a function of water is still in its infancy, but to a certain degree accepted in WRM. Valuing those services and trying to link them to costs is still an important challenge. Finally, driving down costs through innovation and new approaches is a main issue. Cost information on WRM exists in many countries, but is not always publicly available. More detailed case studies are needed to combine and share this information.

Session 5. Reducing the costs of achieving policy objectives

Josefina Maestu (Chair) launched the session by pointing out that reducing costs and ensuring that available resources are well used is one key goal of economics. She presented the four questions to be handled in this session (see below), underlining that it is useful to have examples of how cost savings have been achieved, e.g. in the way of choosing between different types of measures to fulfil given objectives.

- Q1. What are the options for achieving cost savings in the water sector (improved planning, improved operational efficiency, demand management...)? How much money could be saved by implementing those options?
- Q2. To what extent would increased coordination/coherence between public policies (such as water, energy and agriculture) reduce the costs of achieving water security?
- Q3. Do we have enough “governance capacity” to achieve those cost savings? What institutional and policy reforms would be needed to achieve those cost savings?
- Q4. What are the main messages and emerging issues in this topic?

Regarding the implementation of the EU Water Framework Directive, Josefina Maestu mentioned that measures targeting water users and changes in practices are often less costly than measures targeting pressures directly. The comparison of measures can therefore entail cost savings. Cost savings might also result from a better coordination of, for example, the agriculture or hydropower sectors with the water sector.

Javier Fernández Pereira (Confederación Hidrográfica del Duero, Spain) presented the experiences of the Duero river basin authority on reducing the costs of achieving policy objectives. He started his contribution by emphasizing the importance of E-governance – the use of information technologies – in water management in order to increase public participation in the decision making process. He introduced the organization of the Duero river basin authority and indicated that – although most of the water in the basin is used for agriculture – the services sector is providing a higher added value. Often different water services are provided by one utility and different tools for cost-recovery exist. The programme of measures proposed in the river basin management plan includes more than 1400 measures to be applied until 2015, involving planned expenses of 4000 million Euros (2009-2015). However, it is unsure whether all measures can be applied. Javier Fernández Pereira differentiated between investment actions, for which costs are well known, and management actions, which do not include direct investments but which might be very efficient. Measures are compared using a model simulating their impact on the initial water status and assigning points for valuing their efficiency. He concluded his presentation by highlighting the importance of having a robust regulatory framework to guide water management and its financing.

Patrick Thomas (National Water Agency, Brazil) presented financing water resources management in Brazil. He gave some indications about the administrative structure of Brazil and underlined the highly uneven water distribution within the country. The average annual costs for water management in the country are 2,600 million Euros, whereby the federal government expenditures in 2009 covered 84% of the financing needs. The expenditures are financed at 96.5% by tax revenues and only to a minor degree (3.5%) by revenues from WRM instruments (water pricing and financial compensation for the use of water resources for electric energy generation). Different experiences have been made for reducing the costs of WRM. Among those, the water “producer” program can be mentioned which includes payments for ecosystem services and led to both erosion reduction and a water quantity increment through the expansion of forested areas. The “Integration Pact”, on the other hand, enabled the joint implementation of WRM instruments among different jurisdictions within the same river basin. It did not include any financial resources but led to the reduction of compliance costs. In his concluding remarks, Patrick Thomas stressed key challenges for financial sustainability such as the increase of revenues from WRM instruments, the search for alternative funding sources as well as the expansion of cost reduction experiences.

Giulio Boccaletti (McKinsey) presented the results of the 2030 water resources working group named “Charting our water future – Economic frameworks to inform decision-making”. He provided estimations of the global aggregated gap between existing accessible, reliable water supply and the presumed withdrawals in 2030 (assuming no further efficiency gains take place) which amounts to about 2,800 billion m³. This potential gap can be either closed by increasing supply or reducing demand. Giulio Boccaletti presented the results of a study which looked at measures which could be applied in different countries to close the potential water supply gap in the most cost-efficient way. In the case of India, closing the gap would cost about USD 6 billion, whereby 80% of the most cost-effective measures are not to be found in the traditional water sector but in agriculture (relying mainly on increasing productivity). In China, applying all cost-effective measures would lead to financial savings of USD 20 billion per year. Furthermore, many of the measures proposed have payback periods of less than one year, but are associated with an important risk for those implementing them.

James Horne (Department of the environment, water, heritage and the arts, Australia) gave some insight in the Australian way to handle costs of achieving policy objectives. He indicated that some work is currently done in the rural water sector, where attempts are made to install a new governance system. The key challenge in the rural catchments of Australia is how to achieve sustainable water use. Costs are in generally passed on to end-users. More efforts can be put in strengthening water markets and in increasing compliance and enforcement. Furthermore, discussions within the society about water resource availability, sustainable agriculture and sustainable water management shall be supported. James Horne underlined the need for key data to be provided for good policy making. He pointed out that clear public good reasons exist for public investments in some WRM areas, whereas in other areas, the *user pays principle* is more appropriate. In Australia, the well defined property rights system plays an important role. James Horne stressed that a strong entitlement framework is required to protect all water users, including the environment. He concluded his presentation by emphasising that the current main issue in Australia is not reducing costs, but delivering key services to both consumptive and environmental users. Once this system is in place, then possibilities to minimize cost-structures can be explored.

Following the four presentations, the discussion among meeting participants addressed several issues that are summarised below.

Opportunities for cost savings

- The importance of exploring potential cost-saving solutions was stressed. Efforts should be put in prioritising measures according to their cost-effectiveness ratio.
- Several options for reducing expenditures have been cited. They include reductions relying on incentive measures (e.g. for establishing good practices, tradable water rights), the use of negative cost measures, governance incentives (incentives to apply less costly measures) and soft measures without investment needs. On the planning side, cost-effectiveness analysis is one important tool. Also payments for environmental services or the replacement of constructed infrastructure by natural infrastructure are a way to reduce costs (e.g. the use of wetlands for reducing water pollution).
- Generally, cost management savings can occur both on the supply or the demand management side. Reducing demand for example saves financial resources as costly infrastructure does not have to be built. However, this might not be in the interest of the water utility. The regulating authority has therefore to provide incentives to the water utility to sell less water and to apply tariffs which reduce the amount of water used.
- New regulations are one driver to reconsider current approaches and to be more inventive regarding cost-savings.
- Developing countries can and should benefit from the experiences concerning cost-savings made in OECD countries.
- Also the effect of pricing mechanisms on changing behaviour and reducing demand should be considered.

Constraints for cost savings

- Different factors have been discussed which constitute constraints to the realisation of cost savings. It includes for example complex situations where many actors are participating in WRM activities and many different measures can be considered. The use of the cost-effectiveness analysis is limited when measures are compulsory.
- Calculations of costs of measures have to consider transactions costs. Some measures might not lead to increasing costs at project level, but to an increase of macro-transaction costs (less investment costs but higher governance costs). This might explain to some extent why part of the cost-savings are not realised.
- Improved information – both on costs and impacts of measures – is needed for making good decisions. This requires a first investment in better understanding the system, in order to check for possible cost savings and to decide on priorities for infrastructure development. There is hence a need to invest in governance first so costs can be reduced later. For some countries it might be too difficult or too expensive to gather all the necessary information. International organisations can provide help in those situations.
- Part of the existing drawbacks can also be explained by looking at who is saving and who is spending money, as those might not be the same. Some costs might also be transferred. This applies in particular to costs imposed to the agriculture sector which are transferred to final consumers. Distributional issues must therefore be addressed.

- Incentives should be considered for the implementing institution to save costs. There might be a lack of personal or professional interest of the responsible persons for implementing such measures.
- In the context of developing countries, the time for donor agencies to adapt and improve their strategies based on new information is slowing processes down.
- Realising cost savings requires also solid institutional capacity which, in particular in low income countries, might not always be given.
- The focus on cost savings should not prevent looking at the current costs of inaction. These are mainly occurring in the agriculture and in the environmental sector.
- It is also important to consider the potential impact of climate change, in terms of types of measures implemented. Some measures are more risky than others, have long payback periods etc. The systems need to be flexible enough to cope with sudden change.

Other issues

- Demonstrating that water is not only solely a social issue but that it contributes to the global economy might help fostering investments.
- Significant financial resources are currently used for subsidizing those who have already access to water due to ineffective irrigation systems, etc. More efforts should be put in providing access to those which currently do not have access to water services.

Session 6. Increasing financial resources from users and beneficiaries

In his introduction to the session, Jonathan Fisher (chair) presented the four questions to be discussed during the session:

Q1. What instruments and mechanisms are currently being used to finance water resources management? What is the rationale for using those instruments? Could a broader set of instruments be used?

Q2. How much money is being raised? Is there substantial scope for substantially increasing those revenues?

Q3. What institutional and policy reforms would be needed to achieve those cost savings?

Q4. What are the main messages and emerging issues in this topic?

Jonathan Fisher pointed out that financing instruments should consider both existing uses and emerging uses. There should be a steady search for less costly solutions. Also the use of a broader set of instruments should be considered, including for example payments for ecosystem services. Jonathan Fisher stressed the importance of governance costs and complexity, of public stakeholder involvement and the consideration of upstream-downstream issues. Overall, more evidence and transparency on financial flows within the water sector are required. Cost-recovery rates as well as subsidy levels should be considered. In view of the following presentations, Mr. Fisher underlined the importance of looking at lessons learnt from past experiences for guiding institutional or policy reforms for achieving cost savings.

Rob van der Veeren (Centre for Water Management, Netherlands) presented the overall principles and mechanisms put in place for financing water resources management in the Netherlands. After a short presentation of the special Dutch features, stressing in particular the elevated flooding risk, he focused on regional water management under the responsibility of regional water boards. Their functioning is based on the three basic principles “interest-pay-say”, resulting in solidarity and fairness. Payments are following the polluter pays and user pays principles. Water quantity management fees for example depends on the value of the property. The proper financing structure of the water boards secures funds for water management. Rob van der Veeren stressed that integrated water management is the norm in the Netherlands, allowing for more effective and efficient water policy. He underlines that IWRM requires cooperation at different scales: regional, (inter)national, between ministries and between various stakeholders. He concluded his presentation by stressing the resilience of the system of regional water boards that has proven over centuries to be well working, being democratically chosen, with own responsibilities, tasks and financing. He emphasised furthermore that efficient water management requires an integrated approach which is transparent, looking at synergies and accepted by all parties involved.

Yoonhee Cho (Ministry of Environment, Korea) and Ryu MunHyun (K-Water) made a common presentation on financing water resources management in Korea. They introduced the water and sanitation tariff as well as the water use charge that are part of the water financing framework in Korea. The two tariffs are following the user pays principle, but the services are seen as a public good, and the acceptability to pay prices is rather low. The water user charge together with the watershed management fund is seen as an adequate mechanism for increasing financial resources to the water sector. The water charge is paid by end users and pipeline facilities at the level of four river basins. The allocation of the revenue raised takes place through the watershed management fund, being distributed by the watershed management committee. In 2007, 80% of users were charged, the remaining being exempted. But only 83% of the invoiced people actually paid their due charge. Ryu Munhyun underlined that the water user charge in Korea improved water quality in public waters significantly. In particular, land purchases greatly affected water quality. In conclusion, the water user charge turned out to be a good instrument for water management in Korea. It created a win-win-system where water quality efforts upstream are paid by actual water users downstream, helping to establish a local watershed community.

Malinne Blomberg (African Water Facility) gave a presentation on sustainable financing mechanisms for African basin organisations. She emphasised that the current financial situation of most African Basin Organisations is characterised by irregular and unpredictable financial flows, insufficient funding and a great dependency on donors. Most of the African basin organisations only get 40% to 50% of what governments agreed to allocate to their functioning. African governments do not seem to be interested in changing the prioritisation of funds. As investment funds from donors are irregular, short-term and conditional, it is important to identify other funding sources which might require the establishment and management of strong regulation and management systems. National and regional taxes for example have high funding potential but a rather low management complexity. The most important income sources, however, are tariffs from water service users. Use permit systems have however a low potential, as their relevance depends on the level of economic development. Problems of enforcement might furthermore occur, in particular when different agencies need to cooperate. An appropriate mix of complementary financing sources needs to be found. For attracting financing means, results must be visible not only in the long- but also in the short-term. Malinne Blomberg

provided examples of the financing structure from the OMVS (Organisation for enhancing the river Sénégal) and CICOS (International Commission of the basin Congo-Oubangui-Sangha). In the system of the OMVS, countries are getting money back from profits of individual projects, but only if they paid their annual contribution. This provides a sufficient incentive for complying with financing commitments. She concludes her presentation emphasising the importance of political dialogue and of focussing on measures with the biggest impact.

Following the three presentations, the discussion among meeting participants addressed several issues that are summarised below.

The overall challenge

- There are major challenges for the future regarding how to fund wider, more integrated and innovative water management. This requires looking at new charges and at the same time reducing costs (e.g. using lower cost alternatives from the start).
- Overall, countries are facing large and increasing needs for funds in water management. This raises *inter alia* a range of problems and challenges such as: the dual increase in costs and increase in charges from historically low levels (and how can those be socially accepted); the absence of sufficient and reliable funding; the impact of climate change on funding availability; the constraints imposed by the economic crisis on government budgets but also on economic sector affordability; the consideration of equity and social concerns.
- Institutional issues are key to changing the financing system. However, it takes time to develop and implement new institutional structures.

Combination of different financing mechanisms

- Although the role of water levies as “the” instrument to raise financial resources is recognised, it is important to consider applying a broad set of financing mechanisms.
- New mechanisms or adaptations in existing financing instruments must always be analysed in the context of existing financing mechanisms and regulation.
- Efforts should be undertaken to create win-win situations. Water price increases could, for example, be matched with general tax decreases leading to higher acceptability by affected water users.
- Water levies can also be used for their incentive effect. Where there is scarcity of water resources, they can lead to long-term water and financial savings.
- Payments by beneficiaries of specific ecosystem services need to be explored and developed. These payments will convert a potential benefit into a realisable benefit with demonstrated willingness to pay on the part of beneficiaries.

Adaptation to different situations

- The presentations underlined the diversity of challenges faced by different countries.
- The discussion addressed the issue of the right institutional context. In Latin America, few river basin organizations exist, and coordination takes place within informal committees that limit costs. Whether this approach would represent an adequate solution for river basins in Africa, instead of introducing specific river basin organisations that represent the most pertinent scale

for coordination, was raised. In practice, both well-working basin organizations and other informal structures exist.

- Transboundary issues are more difficult to handle, in particular in the context of developing countries. Clear distinction should be made between what is relevant to the transboundary scale and what can be dealt at national scale.
- The cost-recovery issues should be considered in the context of centralisation and decentralisation. Local or basin management needs to recover costs. This leads to an increasing interest and need for greater local charges on users and beneficiaries.
- In general, basin level's interest lies with operational issues, while national interest are of a strategic nature. The state should finance activities that have a clear national interest and character, resulting in different applications of the cost-recovery principle depending on the scale of interest.
- Clearly, however, it is important to envisage how ministries of finance will consider new local charges. If these are classified as taxes, their revenues might directly feed into the government budget with centralised control on expenditures. Moreover, finance ministries might want to limit the rise of such taxes due to concerns about any increase in the overall tax burden on the economy.

Best practice examples

- Very useful information can be extracted from success stories (and also failures).
- The Netherlands show a well established system with the application of the user pays principle (e.g. for environmental services or clean water) and the polluter pays principle (the end polluter pays for sanitation services, decontamination service etc.). With strategic reasons for developing WRM in history, the Dutch example could be used as a model in different ways.
- However, the particular characteristics and objectives of each individual country and river basin will determine the solution(s)/option(s) that are best adapted (fit for purpose).

Acceptability of financing mechanisms

- Linking the tariff level with the quality of the service provided and its efficiency increases the acceptability of new financing mechanisms by end users (benefiting from service improvements). Higher or new payments should therefore be linked to a better service, a situation that is not the rule in many developing countries.
- It might be necessary to more clearly distinguish between water services and WRM. For choosing the right financing source, the benefits for individuals and/or for the community should be clarified. Flood defence, for example, can be perceived as a public good, but the benefits could be attributed to individuals (such as in the Netherlands case).

Other issues

- How could "harmful" subsidies impacting negatively on the aquatic environment be adapted and removed was also discussed. With the reduction of their negative effects on the environment, fewer investments for environmental improvements would indeed be needed.

- The water sector might be considered as more risky than other sectors, e.g. as compared to the energy sector. This leads to lower willingness to invest by the private sector. Efforts should be made to change this perception.

Session 7. Improving the allocation of public resources

In his session's opening, Jim Winpenny (chair) stressed the importance of clarity in the terminology used. He emphasised that "water" is not a sector like others, but an *environmental* sector. It is therefore useful to talk about WRM instead of water in general to emphasise its environmental dimension. Talking about public financing mechanisms does not only include central government expenses but also all expenses made at basin level. Thus, the allocation of public financing sources covers only part of the picture. In some countries like the Netherlands, the cost-recovery principle implies that users and beneficiaries finance some services independently. Furthermore, some funds for financing the water sector are coming from outside the water sector, for example payments for environmental services as a source for funding water quality management. Jim Winpenny indicated that criteria for the allocation of public funds are not always transparent and based on political processes. They are clear, however, when it comes to allocating consumer subsidies. As a transition to the following presentations, he states that different ways of allocation of financial resources exist. This includes, for example, democratic processes as in the Netherlands and in France, or economic decision rules like cost-effectiveness or cost-benefit analysis.

The following questions were to be looked at in this session:

- Q1. How are public financial resources allocated to the water sector? What are the criteria and processes used?
- Q2. What are the criteria used to allocate financial resources (public subsidies) within the water sector?
- Q3. Is there scope for improving the allocation of existing public financial resources within the water sector? Can we calculate the financial benefits of improving the allocation of financial resources within the water sector?
- Q4. What institutional and policy reforms would be needed to achieve those improvements?
- Q5. What are the main messages and emerging issues in this topic?

Alexis Rouque (Cour de Comptes, France) presented instruments for sustainable water management in France. He first stressed the importance of mobilizing a wide range of stakeholders for reaching good water status as required by the European Water Framework Directive. In change stakeholders' behavior, the French central government and the six water agencies are using three different instruments: regulation, environmental taxation and government support. Alexis Rouque underlined the four risks which are associated with public resources allocation. This includes: 1) a lack of selectivity, with projects driven mainly by the large availability of funds. This can be avoided by prioritizing support in financial planning activities. 2) A lack of projects to be funded as a result of inadequate incentives given to stakeholders. This risk can be reduced by introducing a support conditionality and contract-based arrangements with responsible stakeholders. 3) Resource depletion through inconsistent environmental taxation and reluctance to make full use of price effects (e.g. in

cases where changing behavior is given priority). This can be avoided by applying higher tax pressures on users and polluters. Finally, 4) inadequate linkages with regulation, which can be mitigated by establishing coherent planning documents. In conclusion, Alexis Rouque underlined that the fundamentals of water policy – decentralizing, pooling resources, water democracy – are not questioned. But there is room for improvements when it comes to optimizing existing tools.

Mugisha Shillingi (Ministry of Water and Environment, Uganda) presented the financing of water resources management in Uganda, introducing the water policies and legislative framework currently in place. This includes the 1995 Water Action Plan which led to good progress in water supply and sanitation systems. However, limited progress was made for irrigated agriculture and hydropower development. He emphasised that the contribution of water to social and economic development remains in general poorly understood, as illustrated by the reduced funding trend for water management while the population is increasing at high growth rates. Mugisha Shillingi proposed several approaches to improve the financing conditions. This includes a sector reform with a decentralisation process which would lead to improvements in government services, and allocation of revenues from service provision to provider instead of the general budget. He underlined the importance of communicating the value of water and related resource management to decision makers so investments by the public and private sectors in WRM can be encouraged. He finally mentioned the reinvigoration of the Water Policy Committee (a multi-sector venue to advise the Minister on water management strategies) and the facilitation of parliamentary dialogues on water and climate change adaptation as opportunities to improve the water financing situation in Uganda.

Ravinder Malik (International Water Management Institute) presented the status of financing water resource management in India. He indicated that almost 80% of all water in India is used for irrigation in the agricultural sector, making progress in WRM significantly depending on developments in this sector. Financial allocations are taking place between the central government and the states as well as between different ministries through an iterative and inclusive process in which the planning commission plays the pivotal role. The role of the ministry of finance is to give a basic indication on expenditures the country can afford. Expenditures amount to about 2.48 billion rupis per year. Ravinder Malik explained that current cost-recovery rates are low, as social objectives – e.g. food security – are put in the foreground. He concluded his presentation underlining that India faces a turbulent water future and that the current water development and management system is not sustainable. The existing financial gap has to be met by a combination of different instruments, supplemented by innovative financing solutions.

The three presentations were followed by a short discussion among meeting participants. It was mentioned that although social objectives might be used to justify low cost-recovery rates, it has to be kept in mind that there is limited leeway to serve people which currently have no access to water. Furthermore, the importance of costing has been underlined and the need for better communicating on products and services of WRM in particular beyond the water ministry.

The session has been concluded alluding to the bias towards funding capital investments (instead of maintenance) and hard solutions (versus soft solutions), e.g. in the area of flood management. The application of the *user pays principle* and of the *polluter pays principle* seems to be omnipresent in all countries, although applied to different extents. Finally, although providing public finance for public

goods is a widely accepted principle, applying this principle might also encounter difficulties and challenges.

Session 8. Special Address by the OECD Secretary General

The special address by Angel Gurría (OECD Secretary General) provided a policy perspective on water and economics using the opportunity of the launching of three new OECD water publications entitled “Innovative financing mechanisms for water report”, “Pricing Water Resources and Water and Sanitation Services” and “Sustainable Management of Water Resources in Agriculture”. Angel Gurría stressed the high priority given by the OECD to water. He emphasised that financing water remains a challenge in most of the OECD countries. As agricultural production will double by 2050, the agriculture sector will also need to contribute by a fair share to the respective water capital costs. In developing countries, increasing investments in water and sanitation remains a priority. Whereas the work on water was first targeted to full cost-recovery, this changed during the process to “sustainable cost-recovery rates”. Angel Gurría stressed the role of water in the green growth process and referred to the interest of having a Stern-like review of the water security issue that would provide a comprehensive vision to the future development of the water sector. His conclusions underlined the commitment of the OECD to provide analysis and leadership on WRM and the need to join forces with other institutions, civil society organisations and all stakeholders of the water community.

Discussion

A series of questions followed Angel Gurría’s special address addressing the following issues:

- How to bring messages on the importance of WRM to decision makers and raise their interest in this issue? It must be clear to whom the request is targeted and what is exactly requested. Different messages might be adequate for different publics. However, the message has to be put in a coherent package, without internal contradictions. In particular, specific efforts might be required to communicate on the complex issue of governance.
- How to enhance the integration and collaboration between sectors, including for example the link between water and climate change challenges? Both the minister of environment (water) and the minister of economics should be involved in policy discussions, in particular when dealing with policy priorities and the allocation of financial resources.
- How to raise the challenge of those not having access to water in the policy/political agenda? It was agreed that more work should be done for those people who do not have access to water. And access to sanitation should be considered at the same time. However, it should be clear from the beginning that ensuring water availability has a price which has to be paid (even if only partially) by consumers.

Session 9. Financing water resources management – Main messages and information gaps

The final session on WRM financing issues aimed at summarising the key messages of the presentations and discussions of the two days, and identifying information gaps that would need to be

tackled for supporting policy decisions on financing WRM. The following questions were raised at the start of the session:

- Q1. What should be the main elements of a “reference framework” for the financing of water resources management?
- Q2. What type of “long term/strategic financial planning” would be useful to operationalise it?
- Q3. What are the main messages and emerging issues in this topic?
- Q4. What are the main information gaps and what further analytical work would be needed?

Roberto Martín-Hurtado (Chair) summarised the emerging messages from the sessions of the two days. He reminded that the results of the conference will be integrated in a report, which will be published early next year. So far, efforts in WRM are not (yet) comparable with those for water and sanitation as the process started only a few years ago. Thus, it is expected that the report will raise the right questions rather than provide full answers to these questions.

The session on policy frameworks showed that more explicit and coherent frameworks are needed, also to provide transparency. Furthermore, convergence exists around key financing principles (user pays principle / cost recovery principle, polluter pays principle) but tradeoffs are not always recognized (e.g. between the user pays principle and questions of affordability). Also, principles are not applied to their full extent. The session on financing needs made clear that although financial information is improving, crucial information is still missing. This includes for example the costs of measures for achieving objectives. Whereas a lot of information is available on infrastructure costs, only some is known on environmental costs, and very little on governance issues. There is a general need to spend more financial resources as several countries are running down their infrastructure. Although governance costs are probably small, they are difficult to find but crucial for the success of WRM.

Regarding the attempt to achieve objectives at the lowest cost, there is still leeway to improve the efficiency of resources spent. There is in particular a need to overcome the current scale of decision making. Taking decisions in individual sectors hampers the possibility to reduce costs. The session on increasing revenues from users and beneficiaries underlined the benefit of ring-fencing revenues so they are staying in the sector. A range of mechanisms is available in the different countries, but their complexity needs to be taken into account. Questions of centralisation and decentralisation have to be considered. Financial independence at river basin level would improve management. Concerning the allocation of public resources, a mix of criteria seems to be applied. Whereas for example India follows a top-down model, the WRM financing system in France is rather decentralised. Both models have advantages and disadvantages and need to be adapted to the given situations.

Finally, Roberto Martín-Hurtado listed key cross-cutting issues which emerged during the meeting. As a general statement, no blueprint exists for financing WRM, but some common principles could be identified. As one important characteristic, institutions must be able to cope with rapid change. Finally, it has been mentioned repeatedly that tackling water financing cannot be made in isolation to the two prominent issues that are climate change and the economic and financial crisis.

Pierre Strosser (ACTeon) questioned the necessity to expand the financial resource base for WRM or whether more efforts on using available funds differently should not be the priority. He also raised the issue of the implications of current spending (for water services, for WRM) on future generations which

must be able to maintain and then replace the infrastructure. He questioned also whether CEA and CBA are really used in practice to improve the allocation of public resources or just made once decisions are already taken elsewhere.

Mike Muller (Global Water Partnership) underlined the importance of constructing a conceptual framework for WRM financing and of focussing on the natural environment. Key goals of WRM should be reliable supply, usable water (regarding quality), sustainability and climate resilience. He emphasised that tariffs should be applied where there are direct products, whereas financing for indirect products should rather take place through taxes. Tariffs can be justified both with cost-recovery aims and their incentive effect. Efforts have to be made to put WRM in the public policy debate.

Josefina Maestu (UNDESA) picked up the question of whether more or different spending is needed; indicating that not much has been said about how to spend better. She identified dealing with financial risks as one important issue, referring in particular to micro-financing and the provision of seed-money. She observed furthermore that, although flood management might be a public good, charges are still possible. In general, WRM does not necessarily need huge infrastructure investments, but significant efforts in governance.

Jonathan Fisher (UK Environment Agency) stressed the benefits of learning from experiences. In times of economic crisis and climate change, it is all the more important to put efforts in economic analysis. The WRM financing system needs to be made more robust and resilient. Jonathan Fisher underlined the need for more evidence on costing information and highlighted decentralisation as a useful way forward. In general, taking different elements of good practice and adapting them to the existing circumstances seems to be a viable way forward.

Jim Winpenny (Wychwood Economic Consulting Ltd) stressed that water governance and the “soft” part of water management are underfunded. The use of rational economic criteria for WRM funding is so far limited, but should be further considered. Concerning the financing of public goods through public sources, he specified that the state could provide the basic public good, but that the possibility should be given to improve the good locally with the help of local financing sources if people think its provision level is not sufficient. Furthermore, Jim Winpenny referred to the issue of earmarking that complicates the allocation of financial resources but that can help getting support of those which are paying as they see what the money is used for.

Discussion

Following these statements, different issues were discussed as summarised below.

- Water resources accounting has not been discussed during the meeting. When someone wants to have more water, then somebody else has to take less without the right (or certainty) to take water again at a later point in time.
- When developing financing mechanisms, the tension between social and economic objectives should be recognised. Whether tariffs shall be used in priority for efficiency or for social issues remains to be addressed. If the priority lies on social issues, other mechanisms are needed to ensure efficiency (following the principle of *one instrument one goal*). The OECD tradition

prioritises full cost pricing, combined with independent instruments to account for social issues.

- The question of prioritising beneficiary pays or polluter pays principle was raised. Concerning sanitation, for example, households are the main investors, but there are underlying financial constraints (in particular in developing countries). One way to overcome this problem would be to ask beneficiaries from those investments to contribute to the final bill.
- Economies of scale need to be further investigated. Joining funds and activities can lead to lower costs and therefore lower tariffs.
- WRM cannot solely be based on one principle, but more on a combination of principles that are made coherent within the WRM framework (for example integrating top-down and bottom-up approaches). Whereas the setting of a framework has usually a top-down component, enforcement might prove more effective when built on a bottom-up approach.
- Issues that would require further attention include: the role and relevance of water trading systems; the increased role and use of Environmental Impact Assessment or CBA; the right mechanisms for ensuring flexibility
- Putting figures might not always be adequate. Some environmental services should not be quantified. Instead of using monetary values, a threshold principle for nature could be introduced and considered for example in CBA.
- Whereas part of the discussion went around increasing water use and how its costs can be recovered, no discussion took place on water restoration needs. However, groundwater levels around the globe are significantly overused and restoration activities are necessary.
- The importance of the energy sector has only been touched upon slightly during the meeting, although this sector clearly influences the water sector. Apart from hydropower, this includes the cooling water for nuclear plants which can cause thermal pollution. Also biofuel production will influence WRM through its high water needs.

The chair concluded the session by stressing the importance of the financing issue and the right time to discuss it. The meeting represents a clear first step towards the production of the planned OECD report which will further identify issues for future work.

Closing day two

Anthony Cox (OECD) closed the second day of the meeting that has dealt with financing WRM. He re-emphasised that several very important issues influencing WRM are to be considered (e.g. climate change, the economic and financial crisis, etc). This includes also the relationship between the water sector and the agriculture and energy sectors. While every sector claims its issues are complex, this should not be overemphasised. And simple solutions should be looked for and applied whenever possible. Finally, Anthony Cox added that a lot can be learnt by looking at other sectors, e.g. analysing pollution trading systems in the climate/air policy as source of inspiration for trading systems in the water domain. Source of inspiration from outside the water sector can also relate to institutional systems dealing with multilevel governance. Identifying and finding solutions requires indeed an open approach to the financing water issues.