Science Advisory Board Environmental Economics Advisory Committee Augmented for the Consideration of the Value of Water to the U.S. Economy
December 5, 2011
Preliminary Comments from Members by Topic

Conceptual approach and available information

The Context and Conceptual Framework section provide a coherent framework for describing and evaluating the value of water. But the report seems focus on the use of water in various sectors of the U.S. economy. Does the report put a dollar value on the value of water to the U.S. economy? (Wu)

What specific data, methods, or models would improve estimation of the value of water to the economy? What would be the benefit of this improved information? (Loge)

Although seemingly trivial, it would be good to know what is defined as a "water" in the context of this study. Is treated municipal effluent a valued resource, when it is reused for irrigation or for electricity generation? Indeed, a feature of water resources in coming decades is the use of alternate or non-traditional sources of water for uses that do not require the highest quality water. Besides municipal wastewater these sources might include stormwater or agricultural drainage. I think adding cost to the use of water (as suggested in item 1) provides a framework for evaluating the cost and appropriateness of treating and transporting non-traditional water sources. (Roy)

How does growth in various sectors of the economy affect the demand for water and its associated value? (Loge)

The USGS withdrawal data is a good starting point, but issues of reduced USGS monitoring over the past years due to budget cuts is one issue but perhaps more important is our ability to capture 21st century high value added economic drivers (e.g., semi-electronics, biotechnology, etc) which tend to use public water supplies. The value of water can depend greatly upon its existing QUALITY, or the incremental cost required to treat the water (IX for semi-conductor). Somehow we need more detailed dataset to get at these. (Westerhoff)

It is unclear what the final metric will be that we are after – gallons per $ of gdp? (Westerhoff)

Is the water rights model of the western US functioning and suitable to expand? .(Westerhoff)

How can alternatives to existing water use be considered? For example – water distribution systems are designed largely for fighting fires (capacity and pressure) which influences local insurance rates. What if alternative fire fighting techniques were developed which did not require water – how would that impact insurance rates? Other examples is the incremental cost of energy based upon use of water-cooling versus air-cooled systems – especially with increasing numbers of smaller more urban natural-gas fired turbine power generating systems? (Westerhoff)

There is a WRF/AWWARF report on the value of water that may be a good extra resource – get it. (Westerhoff)

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General Economic Concepts
The concepts -- competing options, substitution, opportunity costs, values of water to ecosystems and ecosystem services, and economic and environmental sustainability – are fundamental to the value of water to the U.S. economy. How does the report take those concepts into account when evaluating the value of water to the U.S. economy? (Wu)

Cross sector impacts
In developing a valuation of water across multiple sectors, largely in terms of a benefit, where in the framework is the cost of water use to be considered? For most types of uses, I can see a pathway for valuing the water resource. However, other users may be affected by the consequences of the use. Thus, a thermal discharge might impact a fishery, or point source discharge and non-point source pollution may impact a drinking water supply, or excessive withdrawals of surface waters may impact a commercial fishery or an endangered species. I think an explicit assessment of the cost of each type of water use, in terms of its impacts on other downstream human uses and environmental impacts is an important part of the assessment, and I did not see it clearly emphasized in the overview and report outline. (Roy)

Will the water and energy topic include off shore wind and hydro kinetic power (wave power)? These uses of the spaces where water is may be limiting of other uses (perhaps ecological services or shipping, particularly access to certain ports, or recreational uses) (Palmer)

Valuation and Pricing of Water
How to deal with setting an appropriate price structure for water usage by the agricultural, power, and manufacturing industries as they will be the largest consumption of water.(Ducoste)

Can we find "natural experiments" where either availability or pricing of water in some area changed dramatically, to see how usage responded - did water users adapt and continue producing in the same location, or did they move? (Gray)

How does investment in water and other forms of infrastructure affect the value of water to the economy? (Loge)

How do we value treated wastewater discharged to streams? (Westerhoff)

Water Quality Considerations
The impact of water pollution and quality on the nations distribution of water (Ducoste)

The growth of developing nations, their strain on global water usage, and how might that impact pricing structure both nationally and internationally. (Ducoste)

It is unclear how we will handle regional inequities in water pricing. Even within the same region water costs can vary widely based upon governmental or hydropower subsidies (e.g., In Arizona, Central Arizona Project charges 4x more than Salt River Project (both initially federal projects)) (Westerhoff)

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Infrastructure

Lack of a driver for water utilities to implement improvements to aging infrastructure unless there is a water quality related issue. The need for water is prevalent in almost every critical industry within the US, which is directly related to the economy. (Ford)

How much is it worth to the US Economy to proactively address infrastructure needs? Many of the water systems components are well over 50+ years old, but we are trying to address today's issues with yesterday's technologies. Should there be an investment into the infrastructure now so that we are positioned to assist the economic growth in the future? (Ford)

How does investment in water and other forms of infrastructure affect the value of water to the economy? (Loge)

Water Availability

Consider second-best outcomes when modeling responses to shifts in water availability, given political constraints on water pricing - e.g. model what happens to future price disparities between agricultural and domestic uses of water, given declining overall availability in the area.

Water availability and value are specific to time and place. How does the report address the issues associated with regional and seasonal differences in water availability and water allocation and transport among regions? (Wu)

A methodology point - if businesses move away from areas with declining water availability, how to quantify the one-time moving cost in the valuation of water. (Gray)

The sustainability of continuing water use, under conditions of resource depletion or of climatic variability and climatic change, is an important consideration and needs to be addressed. Thus, agriculture in portions of the US is sustained by groundwater mining. How is this to be valued, when the underlying resource is being depleted for future generations? (Roy)

Valuation of a water use is strongly dependent of the reliability of the resource: the same quantity of water is far more valuable in a drought year than in an average-precipitation year. There are short term extremes in availability, and longer-term drivers, such as climate change, that need to be considered. (Roy)

An approach that could be used to value water is to relate it to the climatic context, i.e., relating uses to the natural renewable supplies of water. Water is inherently more valuable in regions where it is in short supply. In past and ongoing work, my colleagues and I have been looking at future water withdrawal estimates and available precipitation in a volumetric, although not an economic, context. A recent report looking at trends in some sectors, directly related to the proposed report outline, is attached for reference and may be beneficial to the EPA team. The report title is Water Use for Electricity Generation and Other Sectors: Recent Changes (1985-2005) and Future Projections (2005-2030). This report was prepared for the Electric Power Research Institute and looks at future scenarios of water withdrawal for different efficiency assumptions and projected growth in population and power generation. This report and all underlying data are in the public domain. I am happy to share other related publications, in different stages or review/publication, going forward. (Roy)

I wouldn't expect much impact on international competitiveness (aside from agriculture), since it's not clear that many traded goods depend heavily on water availability - but the closer look at specific sectors in the report might identify areas of concern (pulp and paper mills use water, but they tend to be located in regions where there's plenty of water available). (Gray)

There is no mention of the role of climate change in supply of water for particular uses or its valuation. Perhaps this is less of an economic issue, but it could have impacts on regional distribution of water resources and increased water scarcity in particular locations. Should this issue be explicitly addressed in the report?

We need to include not only the direct cost for securing water, but also costs incurred during treatment and disposal of water and residuals. This includes agriculture runoff etc because it affects subsequent or secondary "value" of the water.(Westerhoff)

In urban areas who has water rights to stormwater? (Westerhoff)

For agricultural activities on lands that require irrigation, should a water footprint be calculated to help incentivize certain crops? (Westerhoff)

Potential Expert Topics

What is the role for economic development implications (topic 8) of water use versus efficient allocation of water? I guess this is related to topic 15 B. Since promoting economic growth is listed first on policy objectives of improving water management in the project overview outline, it would seem this is the primary objective. (Palmer)

What about the value of water for shipping, both on rivers and on the high seas? Is that one of the water uses to be valued? In this vein, will topic 9 on infrastructure development include ports? (Palmer)

I actually like the list presented as it cuts across several areas. my top picks would be related to the following
Topic 8: Water use in sectors with high growth potential (Ducsote)
Topic 9: Infrastructure (Ducoste)
Topic 11: Markets for ecosystem services (Ducoste)

Top three topics
Topic 12: Pricing (Loge)
Topic 9: Infrastructure (Loge)
Topic 11: Markets for Ecosystem Services (Loge)