UN Taskforce on Wastewater Management and Water Quality

For most users, the quality of water is as important as the quantity available to meet their needs. Almost all uses of water change its quality in some way to create "wastewater"[1]. This means that the availability of water resources, the quality of water and the disposal of water once it has been used are all inter-related.

The integrated management of water at all stages of the water cycle is becoming more and more important as the pressures of population growth, especially urban populations, increased water demand from improving diets and lifestyles, the pressures of climate change and water pollution all place great stress on local and regional water availability.

Water is a renewable resource, but not a replaceable one. It plays an essential role in, poverty alleviation. Therefore, the necessity to look after this precious substance is now of paramount importance. Available freshwater, including groundwater, needs to be used as many times as possible in order to meet all the demands of the future.

Looked at from any user's point of view, the water cycle has 3 components: - upstream of them, - their own use, - and activity and downstream from them. Most users look first at what they want the water for and hence the quantity, quality and availability in time and space of that water. They then look "upstream" to satisfy themselves that their requirements will be met and what risks their resources are exposed to. Far fewer users look "downstream" at what happens to the water that is discharged after they have used it and the impacts that their uses have on the availability and quality for people, the economy and the environment further "down" the cycle. The "downstream" or "return flow" part of the water cycle receives much less attention than the "upstream" part. It could be said to be a blindspot in water management or the blindside of the water cycle, both in public opinion and UN policies. This is not surprising, but must be changed for many reasons. Today, there are global standards for drinking water quality but there is not even a common vision of good wastewater management in the United Nations.

There is a common perception that these downstream characteristics make managing water after use, pollution prevention, groundwater protection and water quality difficult issues for political leaders. This view may not be entirely true, but if it is, the opportunity of incorporating the issue in a global goal on water presents a golden opportunity to overcome it. It will enable the issues of wastewater management and water quality to be positioned in an integrated way with the more readily accepted issues on access to water supply and sanitation and water resource management. This should place wastewater management on the political radar screen.

Looking from downstream upwards, the problems of water pollution come into sharp focus. The "dead zones" in the sea caused by land-based pollution have already damaged or destroyed significant parts of the fishing industry and therefore protein sources for millions of hungry people. Polluted beaches prevent the development of tourism and its attendant revenues. Contaminated water is much more expensive to convert into drinking water than cleaner water, thus posing heavy costs on downstream cities, and so the list goes on. In reality, prevention of pollution, the management of wastewater and the protection of water quality are the cheap options for solving these problems, while the real cost of inaction in terms of lost jobs, poor education, failing public health, lost economic opportunity, reduced shuman wellbeing and loss of ecosystem services is enormous. Pollution of surface and groundwater resources may even destroy the future base for safe water supply.

In technical terms there are ample solutions to these problems, so the objective of a target within the proposed global water goal should be to mobilise both public opinion and political action to applying them.

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[1] **Defining Wastewater** "a combination of one or more of: domestic effluent consisting of blackwater (excreta, urine and faecal sludge) and greywater (kitchen and bathing wastewater); water from commercial establishments and institutions, including hospitals; industrial effluent, stormwater and other urban run-off; agricultural, horticultural and aquaculture effluent, either dissolved or as suspended matter" (UNEP & UN-Habitat 2010)

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Good water quality is the direct result of good wastewater management, and poor water quality should be the stimulus for improving the management of water once it has been used. Therefore, concentrating on wastewater management is the key to overcoming the problem. Three dimensions need to be considered: prevention, cure and subsequent use. From this comes the simple approach:

Reduce pollution at source to prevent it entering water and degrading its quality

Remedy the degradation of water after it has been used by collecting it and treating it to remove the harmful materials

Re-use the water that has been cleaned to suitable standards for other purposes and recover the beneficial content such as nitrogen, phosphorous, organic matter and energy so that it is not wasted.

Incorporating these three dimensions into a single target of a future global goal should be possible. Tentative suggestions have been formulated for discussion as follows: "*Reduce water pollution, collect used water, manage wastewater pollution and maximise water re-use"* or "*Achieving by XXXX a significant improvement in water quality for all uses by [rationalizing water use], reducing pollution, remedying and reusing water"*

These definitions would be consistent with the Rio+20 outcome document which states: "We stress the need to adopt measures **to significantly reduce water pollution and increase water quality, significantly improve wastewater treatment** and water efficiency and reduce water losses."

Finding suitable indicators that can be used to both establish a starting point and follow progress improvements will be more challenging. Such indicators need to be relevant to localities and countries that face widely different conditions and levels of development in their water management. They should be related to end results, be flexible and avoid requirements for physico-chemical analysis or complex statistical processes. They also need to be integrated with and be mutually supportive of the indicators that are developed for the other targets of the proposed global water goal and even other goals such as those proposed for energy of food. Finally they need to inspire public support and political commitment.

A tentative analytical structure for indicators that cover the Reduce, Remedy, Re-use framework is as follows:

Sub-themes		Urban wastewater *(point sources)*	Main industrial and breeding facilities *(point sources)*	Agricultural inputs *(diffuse sources)*
Reduce		■		
Remedy	Wastewater collection	■	■	
	Wastewater treatment	■	■	
Re-use		■		

The suggested priority areas are indicated thus ■

On the assumption that it will be difficult to have more than one indicator for each criterion, the above rationale, which gives up to 6 indicators may already be too complex.

It is likely that the Reduce and Re-use objectives could be reached primarily by designing, implementing and enforcing regulations. In addition to regulation, the Remedy objective would require efforts in planning and prioritisation, budgeting and financing, construction and operation of physical infrastructure. The indicators proposed need to take this into account.

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Appendix **A draft proposal**

Based on the above, a shortlist of indicators that satisfy the above criteria and priorities might be that shown in the following.

Sub-themes		Urban wastewater *(point sources)*	Main industrial and breeding facilities *(point sources)*	Agricultural inputs *(diffuse sources)*
Preventing pollution		Quantity of nitrogen and phosphorous discharged into nature		
Reducing impacts	Wastewater collection	% of urban population whose wastewater is collected (in sewers or in on-site facilities that are managed properly)	% of industrial facilities not connected to public sewers that have their wastewater discharges identified (location, volume)	
	Wastewater treatment	% of urban population whose wastewater is treated in an off-site wastewater treatment plant supervised by public authorities	% of industrial wastewater flows that are treated before discharge	
Reusing water		% of water released by urban and industrial wastewater treatment plants that is reused (not discharged into nature)		