

# **American Association for the Advancement of Science**

Science and Human Rights Coalition Meeting - *The Human Right to Water*

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## **Human Right to Water & Sanitation: the UN framework and health, its realization in LAC, and research & development challenges**

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Allow me to start by thanking AAAS for inviting the Pan American Health Organization to this Coalition meeting and discuss with distinguished colleagues about the human right to water & sanitation.

### **The UN framework for Human Rights to Water & Sanitation**

Water & Sanitation has always been considered fundamental to well being, dignity and health.

In the United Nations forums –

- it was implicit in the 1948 Universal Declaration of Human Rights;
- present in discussions on economic and social rights;
- explicit in the Conventions for women, for children and for disabilities;
- and codified in UN General Assembly resolutions in 2010 and 2016

The basic principles of the HR to W&S include: equity – inclusion – transparency – and progressive realization.

And all this has been reiterated in the global development agenda 2015-2030, the Sustainable Development Goals devoted to the realization of human rights and equity which include the specific SDG 6 for clean water and sanitation.

I propose that realizing the right to W&S comprises universal access to quality services

and

That there is a fundamental role for expanded knowledge & innovation – for science & technology - in this quest

But allow me also a comment on the relation between the right to W&S and the right to health.

## **The Right to Health and its relation to the Right to Water and Sanitation**

The intimate relation between the right to health and to W&S is well established.

The modern approach to the Right to Health focuses on what has been termed the social and environmental determinants of health. And among the most basic determinants are water, sanitation and hygiene.

Ill health is associated with unsafe water, and most diarrheal disease in the world is attributable to deficiencies in basic sanitation and hygiene.

A current example is Haiti, where we are waging an impossible battle against cholera in the absence of sanitary infrastructure.

And at the most basic level WHO and UNICEF now have an initiative for Water Sanitation and Hygiene in schools and health care facilities. We can not conceive of health care – of mothers giving birth – without running water or wastes disposal. In the same way we can not promote hygiene education in the absence of toilets or hand washing facilities.

We hold that water & sanitation have constituent and instrumental value: they are good and on themselves and are a vehicle for health and well being.

So – how do we realize this valuable and fundamental human right?

## **Realizing the Human Right to Water & Sanitation in LAC: universal access and quality**

Well, as mentioned I will argue that the realization of the right to W&S is nothing less than universal access to quality services – the progressive provision of quality services for all.

There are many ways of quantifying and qualifying the effort required to realize universal access.

Only as an example I will present an analysis of 2012 conducted by the Development Bank of Latin America CAF where I participated.

It is a scenario for the year 2030 universal coverage in water and sanitation in Latin America and the Caribbean. The LAC Region will have some 700 million people then and the analysis concentrated in the urban areas where 85% of the population is expected to live and where most growth will occur.

We projected 100% of drinking water coverage and development of new water sources for the incremental demand; 94% of sewerage; 2/3 of waste water treated; 85% of rain water drainage; and formalization of W&S connections in slums (where 1 in 3 urban dwellers are expected to live).

CAF estimated that the Region would have to invest USD 12.5 billion per year over a 20 year period (or a total of USD 250 Bn), the equivalent of 0.3% of Regional GDP. Furthermore it would require investment in infrastructure AND fundamental changes in the governance of the sector.

We believed then and hold true now that the effort for the Region is imperative and feasible. The societies demand it, the resources are available, and the political capital exist.

But I also believe that there is great need for innovation – for science and technology.

### **The role of knowledge and innovation**

We could talk for hours about water and sanitation accomplishments and the role of innovation. In the time available I will use only a few example to illustrate.

Health evidence has underpinned investments in municipal and community water supplies and sewerage. Here is the emblematic graph showing the abatement of typhoid fever in the US following the introduction of chlorination in the early 1900's.

By the way water disinfection with chlorine and vaccination are probably the two public health interventions which have saved more lives in human history.

Water and wastewater treatment have seen enormous advances but there is a long way to go in LAC, especially in the latter.

And I would like to point out the importance of analytical tools and risk assessment protocols – shown in the slide is a WTQ for surveillance of the WHO water quality guidelines and its inventor Professor Barry Lloyd fro Surrey University in the UK.

Technical, societal, behavioral, and economic challenges remain for universal coverage, and they demand a multi stakeholder effort.

A specific effort will be required for on-site sanitation and also in governance in terms of policy changes, practices and regulations.

Allow me to illustrate this last part with the example of condominal water and sewerage systems in Lima, Perú. Condominal systems are a clever scheme developed in the 1960's in Brazil. Pipes are the main capital cost in W&S projects. Designing according to probability of simultaneous use instead of peak demand generates substantial savings – a technique borrowed from water piping to individual apartments in high rise buildings. Basically condominal schemes assume that each household is an apartment. Clever no?

When W&S condominal projects were developed for urban slums in Lima, it was not engineering constraints, costs or the acceptance of the population but regulations and construction standards entrenched in the metropolitan water utility which delayed implementation for years.

I would also like to make a special mention to health borrowing from the work of Professor Mark Sobsey of the University of North Carolina – Chapel Hill. Key elements for research, development and innovation are water testing and the elimination of virus and protozoa in water, and the development of

virus and protozoan indicators for waste water treatment and reuse – an area of increasing importance in LAC. Here Coli phages are an area of capital attention.

### **Working together**

If you allow me I would like to conclude with a personal note. It is a quote from my PhD Thesis which dealt with innovation in slow sand filtration for rural communities in the Andean highlands.

During an international seminar held in London in 1988 a senior manager of the Thames Water Authority confided with the audience the secret for the operation of slow sand filters “passed down from father to son in the metropolitan water board” – the secret was the adequate communication between scientists, engineers, planners and operators. In my Thesis I pointed out that such collaboration was clearly lacking for community supply programs in developing countries.

And it must be said now that if we are to succeed we will have to work together – scientists, engineers, planners, operators and others - for the realization of the human right to water and sanitation.

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