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Dear Madam Krautzberger, dear Prof Krebs, dear Prof Rockström, dear Members of the Water Science Alliance, dear participants,

It's a pleasure for me to welcome you to this 7th Water Research Horizon Conference, in particular as it takes place on the premises of the Federal Environment Agency, the Umweltbundesamt, which is supporting and advising the Federal Government and especially the Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety in designing and implementing environmental and climate policies. I would like to thank my colleagues at the Umweltbundesamt for their courage to take on the challenge for hosting and co-organising this conference. As Madam Krautzberger rightly pointed out already the UBA is perfectly suited to host this conference, not only because it is a member of the Water Science Alliance – but because the UBA plays an important role at the science policy interface. The UBA is both a research organization in itself but at the same time it works as an interpreter between science and policy by transposing scientific findings into policy relevant in-

formation and options for taking action. For example the UBA has been highly instrumental in developing the methodologies for assessing the environmental quality components of ecological status of water bodies in Germany according to the WFD.

Ladies and Gentlemen,

This year´s conference theme “Water Quality in a Changing World” couldn´t have been chosen more timely. In 2015 two major global agreements have been achieved which can and should have major implications for water policies around the globe – the Agenda 2030 for Sustainable Development and the Paris Climate Agreement.

The Agenda 2030 with its 6 sub targets under Goal 6 on water and sanitation and a number of water related sub targets under other goals addresses water in a quite holistic and also ambitious way.

The Paris Agreement, although it does not particularly refer to water management, will be influential in particular due to its provisions concerning adaptation to climate change. Adaption to climate change is mainly an issue of water and land management and therefore integrated water and land management should be a cornerstone of national and supranational adaptation strategies and their financing. This is not only valid for developing countries in arid or semiarid regions. Even for Germany the vulnerability assessment published last year as part of the German Government´s progress report on its strategy for adaptation to climate change identifies water as an important element in the effect chains causing impacts of climate change.

Besides the adaptation agenda there is also the big question of how we can ensure that mitigation policies needed to achieve the 2.0 degree or even 1.5 degree target

are designed in a way which has no harmful side effects on water resources but makes use of synergies.

Ladies and Gentlemen,

It is important to realize that water security is not only an issue of water quantity and of allocating water in an efficient and equitable manner but also of ensuring good water quality and healthy water ecosystems. The recently published UNEP report "A Snapshot of the World's Water Quality: Towards a global assessment" put it this way: **"People and ecosystems require both an adequate *quantity* of water as well as an adequate *quality* of water.**

Therefore, it is urgent to assess where *water quality is inadequate or under threat* and to incorporate the need for good water quality into the concept of water security."

The same report combines a message of hope with a call for urgent action. On the one hand the report highlights that pollution of freshwater has increased drastically in the last two decades and already one third of all rivers stretches in Asia, Africa and Latin America are facing severe pollution by pathogens and one out of seven river stretches are suffering from organic pollution. On the other hand the reports highlights that "although water pollution is serious and getting worse in Latin America, Africa, and Asia, the majority of rivers on these three continents are still in good condition, and there are great opportunities for short-cutting further pollution and restoring the rivers that are polluted."

But how do we define “good water quality” and is there a one fits all definition? And when it has been defined it, how do we monitor and assess it? These are very relevant questions if we discuss indicators for monitoring and assessing the progress in implementation of the SDG on water which need to be applicable worldwide and should provide a comparable picture of the situation at country level. The Water Quality Index which has been developed in the context of the Global Monitoring Initiative (GEMI) is certainly not a scientifically perfect solution but nevertheless it will be difficult enough to collect the necessary monitoring data to make the index a meaningful tool.

Do we have a comprehensive enough understanding of the driver-pressure-impact-response chain? Madam Krautzberger already referred to the question of how effective effluent and water quality standards for a restricted number of substances really are. How can we better assess the potential effects of measures already in their design phase and efficiently evaluate the effects during the implementing phase? These are also important questions for two of the strategy processes currently been pushed forward by my ministry – the nitrogen strategy and the strategy on micro pollutants.

Let me also take on and add to the example given by Madam Krautzberger concerning the understanding of the impact of climate change on the water environment. Already in the early 2000s the European Water Directors asked the Joint Research Center of the European Commission for a preliminary assessment of the possible effects climate change might have on the reference conditions for the quality parameters which define good ecological water status under the WFD. The answer was that

within the timeframe foreseen for implementing the objectives of the WFD effects of climate change would be insignificant. Is this answer still valid when we are now starting to think about the future of the WFD beyond 2027? We will look into this complex question with a research project to be launched in 2017 by the Umweltbundesamt. Or how climate proof are the measures we are currently using and planning for achieving good ecological status of water bodies?

This gives us already a number of questions which require research but so far mainly by natural sciences. But there are more questions out there which would also involve social sciences. Mindsets and traditions as well as social and institutional landscapes are different from country to country, also concerning water and water management. Therefore the narratives for successful water policies need to be different, policies and measures need to be adapted to these different circumstances. For example, although natural scientist may agree on how to define good water quality societies may have different views. How can we trigger engagement of societal groups for water quality issues taking into account different prevailing ideological patterns and philosophical and religious backgrounds? Also issues of social equity are relevant in this context but are still quite often neglected in water management and water policies. By the way, this is also the case for the economic dimension of water. Do you know for example to what extent the German Gross Domestic Product is depending on water?

I therefore would like to repeat my call for a broader focus on societal and social challenges as well on economic aspects in the programs for future Water Research Horizon Conferences.

Ladies and gentleman,

In my opening remarks at last year's 6th conference I attested The Water Science Alliance a good start but I also stated that in order to be able to stand the challenge of its mission statement it would need to establish a critical mass of water researchers and water research institutes and institutions as active and/or supporting members and that it would be critical for the further development of the Alliance that it is accepted as a collective, bottom up initiative with the ability to create overall added value for the water research community. I am happy that since then the Alliance has attracted new members, in particular institutional members, as well as additional financial resources. This is good news, and I sincerely hope that the upward trend will continue. Only with an increasing membership and additional supporting partners the Water Science Alliance can mobilize the resources required for providing services for its internal networks and relevant inputs to political processes.

The excellent program which the Water Science Alliance has managed to pull together for this 7th conference is a very good advertisement for joining the team.

I am looking forward to a very interesting presentations and discussions and I wish all participants two days of a fruitful and forward looking exchange which may result in new ideas for research initiatives and partnerships.