



# Summary report Workshop 2: Scenarios for the World Water Quality Assessment

15 and 16 February 2022 13.00 - 21.30 CET

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## Introduction

Early May 2021 we heard that we secured funding from the World Water Quality Alliance to organise two workshops to develop 'light' water quality scenarios for the World Water Quality Assessment in November 2022, i.e. combining existing qualitative and quantitative knowledge to describe different water quality futures. The idea of the workshops was to convene experts from around the world to facilitate them to collect inputs, distil and summarize these inputs, run water quality models and thus develop a set of water quality scenarios providing first insights in long-term future water quality. The first workshop was setup to evaluate and collate the available scenario data. In between the workshops, the modellers could then run their models and in the second workshop the results are evaluated and 'light' scenarios developed.

## Workshop 2

The second workshop took place in the February 2022. We had again 44 participants in total, although the number fluctuated a bit throughout the two days. The topics covered during the first workshop included (see Appendix 1 for details):

- Introductions and model outcomes overview
- Comparing model results, congruence with storylines
- Backcasting under different scenarios
- Reaching SDGs under different scenarios
- Insights, conclusions, recommendations
- Funding, high impact paper, and next steps

The workshop was prepared by the organisers and convened from Leipzig. Some of the participants and organisers had run their water quality models with the scenarios put together in the first workshops and two following meetings. They briefly presented the results of their modelling studies. These presentations were in many cases still based on preliminary results. After the presentations, the results were used to enrich the SSP storylines.

After the storylines were enriched, they were used for a backcasting exercise. For this backcasting, the organisers had prepared, with help of participants, a list of potential targets for water quality variables relevant for SDG6 on the proportion of population using safely managed drinking water services (6.1.1) and the proportion of bodies of water with good ambient water quality (6.3.2). We focussed on these SDG indicators only to facilitate discussion and making it manageable, knowing, of course, that there are many interlinkages between all the different SDGs. In breakout groups, the participants discussed the potential measures that could be implemented to improve the water quality and were in line with the SDGs, in order to answer the question: In how far can we reach the SDG targets. Additionally, tradeoffs and synergies were discussed and measures that will still need to be implemented after 2030 listed. Main conclusions of the workshop were prepared by the organisers and discussed in a feedback session (see Appendix 2 for the proposal and feedback from the audience).

Additional topics discussed during the workshop, were funding opportunities and a community high-impact paper discussing the conclusions of the two workshops. Participants were able to provide input to a draft paper setup using sticky notes in an online environment. A first draft to this paper will be developed by the organisers after the workshop. Funding opportunities were discussed as a follow up of the 1<sup>st</sup> workshop. We will continue to look out for funding opportunities.

The workshop was moderated by Dr. Marc Gramberger from Prospex and four of his colleagues. His contribution has been vital to ensure that all participants still understood the discussion and to ensure contribution of all the different participants. Already in the preparation phase, his contributions were vital to develop a program, in particular in an online environment. His expertise in scenario analysis and backcasting has strongly benefited the workshop

## Evaluation

The workshop has been very well evaluated (see Appendix 3). The participants particularly appreciated the facilitation of the workshop, the presentations prepared by the organisers and they think the objectives were met. They also appreciated the way they were able to contribute, despite working in an online environment. The timing was not ideal, but unavoidable with the rising COVID cases. We are very much looking forward to

## Appendix 1: Agenda of 1<sup>st</sup> workshop

# AGENDA

## for the second interactive workshop for the ***Scenario Analysis for World Water Quality Assessment project***

Version: 1, February 2022

### Please note

- The workshop is interactive and builds heavily on your contributions
- The late start and end times are set in order to allow participants located on different continents to join
- Timing is indicative and may be adapted in view of the flow of discussions and conclusions
- Please try to participate in all sessions, thank you.

### Day 1

Tuesday, 15 February 2022, 13:00-21:30 Central European Time (CET)

#### ***Session A: Introductions and model outcomes overview***

- *13:00 Welcome and general re-introduction to then pilot project & project*
  - Presentation by Prof Dr Martina Flörke (RUB)
- *13:10 Welcome by UNEP/WWQA* ○ Presentation by Nina Raasakka, UNEP/WWQA, followed by Q&A
- *13:30 Introduction to the workshop* ○ Presentation by Dr Marc Gramberger (Prospex)
- *13:45 Model outcomes* ○ Introduction by Prof Dr Lex Bouwman (UU) / Dr Arthur Beusen (UU) ○ Presentation by each modelling group, followed by Q&A
- *15:00 BREAK*

#### ***Session B: Comparing model results, congruence with storylines***

- *15:30 Comparison of model outcomes* ○ Presentation by Prof Dr Martina Flörke (RUB) and Prof Dr Nynke Hofstra (WUR), followed by facilitated discussion and conclusions
- *16:20 Comparing model results with storylines* ○ Presentation by Prof Dr Lex Bouwman (UU)
- *16:40 Enriching the storylines for water quality* ○ Groupwork in three groups, facilitated by Katharina Faradsch, Stefan Haenen and Dr. Marc Gramberger (all Prospex)
- *17:25 Presentation of groupwork and discussion*
- *18:00 LONG BREAK*

### ***Session D: Backcasting under different scenarios – part 1***

- 19:30 *SDG indicators under different scenarios* ○ Presentation by Prof Dr Nynke Hofstra (WUR), followed by discussion
- 20:15 *Backcasting* ○ Groupwork in three groups, facilitated by Katharina Faradsch, Stefan Haenen and Dr. Marc Gramberger (all Prospex)

**21:30 END OF DAY'S WORK**

### **Day 2**

Wednesday, 16 February 2022, 13:00-21:30 Central European Time (CET)

### ***Session E: Backcasting under different scenarios – part 2***

- 13:00 *Introduction to day 2*
- By Dr Marc Gramberger (Prospex)
- 13:15 *Continued: Work in three scenario groups* ○ Groupwork in three groups, facilitated by Katharina Faradsch, Stefan Haenen and Dr. Marc Gramberger (all Prospex)
- 14:15 *BREAK*

### ***Session F: Reaching SDGs under different scenarios***

- 14:45 *Plenary presentation and discussion of backcasting results per scenario*
- 16:15 *BREAK*

### ***Session G: Insights, conclusions, recommendations***

- 16:45 *Interactive exercise on insights*
- 17:00 *Reactions and plenary discussion* ○ Dr Ilona Bärlund (UFZ) and Prof Dr Lex Bouwman (UU)
- 17:15 *Conclusions* ○ Proposal for conclusions by Prof Dr Martina Flörke (RUB) and Prof Dr Nynke Hofstra (WUR) ○ Reaction from UNEP by Nina Raasakka ○ Facilitated discussion and first conclusion
- 18:30 *LONG BREAK*

### ***Session H: Funding, community paper, and next steps***

- 20:00 *Preparing the high impact paper* ○ Overview by Prof Dr Nynke Hofstra (WUR) ○ Interactive exercise and reactions
- 20:30 *Towards a full-fledged World Water Quality Assessment – next steps* ○ *Statements by Prof Dr Martina Flörke (RUB) & Carolien Kroeze (WUR), Dietrich Borchardt (UFZ) and Nina Raasakka (UNEP)* ○ *Discussion*
- 21:00 *Summary of steps to take from here* ○ Dr Ilona Bärlund UFZ
- 21:10 *Wrap-up and closure* ○ Wrap-up of the workshop by Dr Marc Gramberger (Prospex) ○ Closing words by the organizing team

**21:30 END OF WORKSHOP**

### **Organising team**

Prof Dr Martina Flörke

Ruhr-University Bochum (RUB), Engineering Hydrology and Water Resources Management

Dr Ilona Bärlund

Senior Science Manager and Senior Researcher, Department Aquatic Ecosystem Analysis and Management (ASAM), Research Unit Water Resources and Environment, Helmholtz Centre for Environmental Research - UFZ

Prof Dr Nynke Hofstra

Wageningen University & Research (WUR), Water Systems and Global Change Group

Prof Dr Lex Bouwman

Professor, University of Utrecht (UU), Geochemistry department (Nutrient transport from land to sea), and senior researcher at the Dutch Environmental Assessment Institute (PBL, Planbureau voor de Leefomgeving)

Dr Arthur Beusen

Senior Researcher, University of Utrecht (UU), Senior Advisor, models and techniques at the Dutch Environmental Assessment Institute (PBL)

Dr Marc Gramberger

Managing Director, Prospex bv, lead facilitator

### **Co-facilitators for the second workshop**

Katharina Faradsch

Senior Consultant, Prospex bv, facilitator

Stefan Haenen

Senior Consultant, Prospex bv, facilitator

Karolina Niemenoja

Junior Consultant, Prospex bv, ICT tool supporter

## **Appendix 2: Workshop conclusions**

The picture below shows the mural result of the conclusions put together during the workshop. The text is the proposal of conclusions by the organisers. The sticky notes are suggestions for addition by workshop participants and UNEP.

## Why these workshops:

The need to assess future water quality

## We had two workshops:

1. Enriching SSP storylines for input variables for water quality models to enable scenario analysis
2. Enriching SSP storylines for water quality quantitatively and identifying actions to achieve SDG targets

## Outcomes:

- We brought the enthusiastic community together
- We developed 'light' water quality scenarios (including storylines enrichment)
  - Scenarios are important as a common basis
  - Water quality is in a pretty bad state for many variables and river basins / aquifers, and is in many places expected to deteriorate in the future
  - Different sectors contribute to water quality problems
  - We have to decide on the way of presentation
- We identified that SDG targets are not well defined, particularly for SDG 6.3.2
  - Just 'improving' water quality is not enough
  - Standards or targets are required
  - Water quality is more than just pH, DO, EC, N and P
- We identified actions for improving water quality
  - Depending on the SSP, the actions focus on different parts of the problem
    - End of pipe (reactive) <-> pollution prevention (proactive)
    - Technological change <-> social changes (lifestyle, behaviour, capacity development) -> interdisciplinary topic
  - Transformations are required and thresholds (SDG6.3.2 (and SDG6.1.1)? will not be met everywhere, even in SSP1 with additional measures (e.g. because of legacy)
  - Transformation is required in many different sectors
    - agriculture
    - sanitation
    - production/industry (plastics, chemicals etc)
  - Opportunities and enabling conditions should be embraced to enhance acceleration of actions (e.g. black swan events, focus on health)
  - Synergies are often related to the impacts (may create opportunities)
  - Tradeoffs often address the agricultural sector
  - Do we have enough governance in our actions? We didn't address the actors.
  - Actions should start NOW
- The community will continue to work on water quality scenario assessments
  - World Water Quality Assessment
  - Joint scientific papers
  - Projects (hopefully!!!)
  - Linking to other initiatives (within WWQA (friends of groundwater), ISIMIP, PROCLIAS etc)

We can also learn from bright spots

2030 is too short a timeframe

Need for model input and output protocols (and baseline periods)

We need to validate our models (we try our best given the limited data), but cannot validate scenarios (the future)

Check future trends with stakeholders

Monitoring of sources is also required

How to bridge the policy world, how to communicate findings? UNEP willing to help!

There are more ways to build trust in models. Even if there are uncertainties, models can still be valuable

Importance of social engagement - use WWQA workstreams on youth etc to get their views on results

Impacts are important in assessments

How to connect the global to the local?

Linking global to local is a difficult task (already for quantity), because of temporal and spatial resolution mismatch.

More robust conclusions when many models come to the same conclusions

How to connect this group to the social engagement workstreams (youth group) to see how they respond to outputs?

Limitation in modelling impacts -> research agenda.

Local water forums are groups to present to

What matters is that the people making the decisions trust the results

How to synergise with the capacity development within WWQA

Potential loading of pollutants and exceedance of thresholds can also be basis for policy

UNEP willing to help make links

Initiatives exist where scientist and youth groups etc work together in backcasting exercises

For some emerging pollutants impacts are unknown. Presence already indicates pollution (as they are mostly man made)

We need to make clear that action is necessary despite the uncertainties (link to air pollution control in Europe)

Bring models to peoples reality by linking the impacts to their local level

Scenario in table

The way this indicator is phrased is the maximum countries can report on

SDG6.11 has moved away from country contributions

Should we propose something to use additional monitoring in addition to existing sampling programmes

Do we need varying standards by region? Trends up and down are maybe more important?

Should standards be defined based on impacts?

Add less meat? (Depending on the scenario)

Climate change impacts are important and may provide opportunities

Multi model, multi variable, multi sector assessments will provide many insights

## Appendix 3: Evaluation

#	How would you rate the workshop overall?	How much were you enabled to contribute to the discussion?	Were the objectives of the workshop met?	Was the composition of the group of participants beneficial to meeting the objectives of the event?	Were you able to develop insights and knowledge relevant for you and your work?	How would you rate the process of the workshop?	How would you rate the work of the facilitators?	How would you rate the presentations given during the workshop?
1	Very Good	Much	Very much	Very much	Very much	Very good	Very good	Good
2	Very Good	Very much	Much	Much	Very much	Very good	Very good	Very good
3	Good	Much	Very much	Very much	Much	Good	Very good	Good
4	Very Good	Much	Much	Much	Very much	Very good	Very good	Good
5	Very Good	Very much	Much	Much	Very much	Very good	Very good	Very good
6	Good	Much	Much	Fair	Much	Good	Very good	Good
7	Very Good	Very much	Much	Much	Very much	Very good	Very good	Very good
8	Good	Very much	Much	Very much	Much	Good	Very good	Very good
9	Good	Much	Much	Much	Much	Very good	Very good	Good
10	Good	Fair	Very much	Very much	Very much	Good	Very good	Very good

#	What did you like most about this workshop?	Is there anything you think we could've done better?	Are there any organisations or individuals you would recommend to engage in future similar events?	Any further comments?
1	I liked the scenarios sessions. Very well planned and facilitated. I also liked the interactive formatn of usi			
2	Discussions and interaction	next time to meet in presence :)	people from private sector	none

3				
4	The team spirit despite remote distance for most participants	May be one or the other informal break	No	No
5	nice facilitator, diversity in participants, great assignment			
6	Seeing the results by others	The timing perhaps, we lost 25 people in the evening CET	Look around in the ISIMIP sector	'-
7	Interactions and discussions	The timing: late at night is not optimal	Bart Koelmans (plastic)	Thank you
8	interaction	the time could be better (no evenings)	proclias	no
9				
10				