

List of Contributing Authors:

A. The World Water Quality Assessment

Résumé

Ilona Bärlund⁶, Martina Flörke¹³, Nynke Hofstra²⁰

Chapter 1

Ilona Bärlund⁶, Dietrich Borchardt⁶, Christian Schmidt⁶, Hartwig Kremer¹⁶

Chapter 2

Ting Tang⁸, Seifeddine Jomaa⁶, Claudia Faerber⁷, Karin Schenk³, Nynke Hofstra²⁰, Martina Flörke¹³, Maryna Strokal²⁰, Michelle van Vliet¹⁹, Joel Podgorski^{14,18}

Chapter 3.1

Joost van den Roovaart², Lex Bouwman^{19,9,10}, Arthur Beusen^{19,9}, Jos van Gils², Tineke Troost², Daniel Odermatt¹⁴, Stefan Simis¹², Kerstin Stelzer¹, Nynke Hofstra²⁰, Annette Janssen²⁰, Maryna Strokal²⁰, Ting Tang⁸, Michelle van Vliet¹⁹, Bruna Grizetti⁴

Chapter 3.2

Nynke Hofstra²⁰, Mirjam Bak²⁰, Gertjan Geerling², Andrew Gemmell^{16,15}, Alessio Ippolito⁴, Issoufou Ouedraogo¹⁷, Joel Podgorski^{14,18}, Eirini Politi¹, Jaime Rivera¹³, Philipp Saile⁷, Christian Schmidt⁶, Stefan Simis¹², Kerstin Stelzer¹, Maryna Strokal²⁰, Michelle van Vliet¹⁹, Mengru Wang²⁰, Jikke van Wijnen¹¹

Chapter 3.3

Martina Flörke¹³, Jaime Rivera¹³, Arthur Beusen^{19,9}, Lex Bouwman^{19,9,10}, Hans H. Dürr¹³, Thomas Heege³, Joel Podgorski^{14,18}, Karin Schenk³, Maryna Strokal²⁰, Ting Tang⁸, Michelle van Vliet¹⁹

Chapter 4

Andrew Gemmell^{16,15}, Cornelius Riemann^{16,15}, Rowena Hay¹⁵

Chapter 5

Christian Schmidt⁶, Nynke Hofstra²⁰, Joost van den Roovaart²

Chapter 6

Ilona Bärlund⁶, Martina Flörke¹³, Nynke Hofstra²⁰, Ting Tang⁸

¹ Brockmann Consult, Germany

² Deltares, The Netherlands

³ EOMAP GmbH & Co.KG, Germany

⁴ European Commission, DG Joint Research Centre, Italy

⁵ European Food Safety Authority (EFSA), Italy

⁶ Helmholtz Centre for Environmental Research (UFZ), Germany

⁷ International Centre for Water Resources and Global Change (ICWRGC), Germany

⁸ International Institute for Applied Systems Analysis (IIASA), Austria

⁹ Netherlands Environmental Assessment Agency (PBL), The Netherlands

¹⁰ Ocean University of China, PR China

- ¹¹ Open University, The Netherlands
- ¹² Plymouth Marine Laboratory, United Kingdom
- ¹³ Ruhr-University Bochum, Germany
- ¹⁴ Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland
- ¹⁵ Umvoto Africa (Pty) Ltd, South Africa
- ¹⁶ United Nations Environment Programme (UNEP), Kenya
- ¹⁷ University of Fada N'Gourma, Burkina Faso
- ¹⁸ University of Manchester, United Kingdom
- ¹⁹ Utrecht University, The Netherlands
- ²⁰ Wageningen University, the Netherlands

B. The Africa Use Cases

Andrew Gemmell^{1,2}, Cornelius Riemann^{1,2}

¹United Nations Environment Programme, Nairobi, Kenya

²Umvoto Africa (Pty) Ltd, Cape Town, South Africa

C. The Capacity Development Consortium

D. Chapman¹

¹UNEP GEMS/Water Capacity Development Centre

D. The Social Engagement Platform

This is the core team of the work stream not contributors.

Richard Elelman¹, Bernd Gawlik², Hartwig Kremer³, Andreas Steiner⁴, Richard Damania⁵, Anna Huber⁶, Lesha Witmer⁷, Richard Berman⁸, Ioana Dobrescu⁹, Paul Orenghoh¹⁰, Felipe Coelho Costa¹¹, Angela Ortigara¹¹, Adrian Sym¹², Carla Toranzo¹², Hasmik Barseghyan¹³.

¹Water Europe and EURECAT

²Joint Research Centre (JRC)

³UN Environment Programme (UNEP)

⁴Swiss Agency for Development and Cooperation (SDC)

⁵World Bank

⁶World Economic Forum

⁷The Women for Water Partnership

⁸University of South Florida

⁹Expert in Youth for Water Programmes

¹⁰African Ministers Council on Water (AMCOW)

¹¹World Wildlife Fund (WWF)

¹²Alliance for Water Stewardship

¹³President of the European Youth Water Parliament

E. Friends of Groundwater (FoG)

Alice Aureli¹, António Chambel², Bruce Misshear^{2,3}, Caroline Delaire⁴, Chloé Poulin⁴, Claudia Ruz Vargas⁵, Craig Simmons^{6,7}, Dan Lapworth^{2,8}, David (Dave) Kreamer², Dylan Blake⁹, Frank Wagner¹⁰, Hans Duerr¹¹, Issoufou Ouedraogo¹², James (Jim) Jawitz¹³, Jane Dottridge², Joel Podgorski¹⁴, Junguo Liu¹⁵, Karen Villholth¹⁶, Cornelius Riemann⁹, Luciana Scrinzi¹, Manzoor Qadir¹⁷, Martin Andersen^{6,18}, Neno Kukuric⁵,

Niels Hartog¹⁹, Pauline Smedley^{2,8}, Ralf Klingbeil¹⁰, Seifu Kebede Gurmess²⁰, Tobias Licha¹¹, Tom Boving²¹.

¹ United Nations Educational, Scientific and Cultural Organization, International Hydrological Programme

²International Association of Hydrogeologists

³Trinity College Dublin, The University of Dublin, Ireland

⁴Aquaya Institute

⁵International Groundwater Resources Assessment Centre

⁶National Centre for Groundwater Research and Training

⁷Flinders University, Australia

⁸British Geological Survey

⁹Umvoto Africa, South Africa

¹⁰Federal Institute for Geosciences and Natural Resources, Germany

¹¹Ruhr-Universität Bochum, Germany

¹²University of Fada N'Gourma, Burkina Faso

¹³University of Florida, United States

¹⁴Swiss Federal Institute of Aquatic Science and Technology

¹⁵School of Environment, Southern University of Science and Technology, China

¹⁶International Water Management Institute

¹⁷United Nations University, Institute for Water, Environment and Health

¹⁸University of New South Wales, Australia

¹⁹KWR Water Research Institute, The Netherlands

²⁰University of KwaZulu Natal, South Africa

²¹University of Rhode Island, United States

F. SARS-CoV-2 Sewer Sentinel System

Bernd Gawlick¹

¹ European Commission, DG Joint Research Centre

From the Initial creation of a pan-European Umbrella Study to better understand the limitations and challenges of this approach by the European Commission's Joint Research Centre and the Directorate-General Environment and upon suggestion from the Dutch Water Research Institute (KWR) and the Rheinisch-Westfälische Technische Hochschule (RWTH), the activity was well support by the European Water Sector (EurEau and Water Europe) as well as private and public entities which joined the initiative: CEDEX- Centro de Estudios y Experimentación de Obras Públicas (CEDEX), Eurecat – Technology Centre of Catalonia (Spain), the Helmholtz Centre for Environmental Research, NIREAS – The International Water Research Center, NORMAN Network, SUEZ, University of Thessaly and National Technical University of Athens (Greece) and the University of Exeter (UK) to name, but a few.

G. Antimicrobial resistance (AMR)

Anna Huber¹, Alex Mung¹, Andreas Steiner²

¹World Economic Forum

²Swiss Agency for Development and Cooperation (SDC)

H. The Knowledge to Practice (K2P) project

Nynke Hofstra¹, Joan Rose², Matthew Verbyla³, Heather Murphy^{4,5}, Panagis Katsivelis⁶, Daniel Okaali¹, Isaac Musazi³, Innocent Tumwebaze⁴, Stakeholders^{7,8,9}.

¹Wageningen University

²Michigan State University

³San Diego State University

⁴Temple University

⁵University of Guelph

⁶Venthic technologies

⁷National Water and Sewerage Corporation, Kampala

⁸Kampala Capital City Authority

⁹Ministry of Water and the Environment, Uganda

I. The Ecosystem Group

Ken Irvine¹, Bryan Spears².

¹IHE-Delft

²UK CEH

J. The Plastics Workstream

Water Pollution by Macroplastics and Microplastics: A Review of Technical Solutions from Source to Sea

Josiane Nikiema¹, Javier Mateo-Sagasta¹, Zipporah Asiedu², Dalia Saad³ and Birguy Lamizana⁴

Monitoring Plastics in Rivers and Lakes: Guidelines for the Harmonization of Methodologies

Katrin Wendt-Potthoff⁵, Tamara Avellán⁶, Tim van Emmerik⁷, Meike Hamester⁶, Sabrina Kirschke⁶, Danielle Kitover⁸, Christian Schmidt⁵.

¹International Water Management Institute

²Safi Sana Ghana Limited

³University of South Africa

⁴United Nations Environment Programme

⁵Helmholtz Centre for Environmental Research – UFZ

⁶UNU-FLORES

⁷Wageningen University and Research

⁸T+I Consult