

Three interrelated crises of our planet's health

A healthy planet is the foundation for societal well-being and a healthy economy. A healthy planet enables development. However, three interrelated crises affect the planet's health: climate, biodiversity, and water. All three have dominated the World Economic Forum's risk top 5 for the global economy since 2010. All three are symptoms of an economic system that defines success too narrowly in terms of increases in produced and human capital. All three challenge planetary boundaries without considering decline in natural capital and growing inequality within and between societies. Collectively, these crises move society toward tipping points – a trajectory that increases the probability of catastrophic events, and that eventually will pass a point of no return. This non-linearity introduces uncertainty that societies are ill-prepared for.

After decades of debate around the three Rio Conventions on Climate Change, Biodiversity and Desertification, the necessary transition to sustainable development seems now to have started in earnest. COVID-19, has triggered discussions about “building back” a greener and more equal society. The June 2021 G7 Summit Communiqué underlines that. It would be a missed opportunity if that would not translate into action. The time seem ripe.

In support of such transition, many independent global reviews have been conducted, by the IPCC, UNEP, IPBES, etc. Among these reviews, two prominent ones are noteworthy, because they were specifically written from an economic perspective. Because they applied and challenged the logic that served to justify the current economic system that produced the current crises:

- the “Economics of Climate Change”, also known as the Stern Review (2006)
- the “Economics of Biodiversity”, also known as the Dasgupta Review (2021)

Both reviews had a global scope. Both were independent, and were founded in rigorous economic analysis. Both challenged shortfalls in mainstream application of economic logic. Both were commissioned by the UK government (Treasury) ahead of a global summit. And both had substantial influence on policy, although for the Dasgupta review – published only in February 2021 – it may be early to make that claim.

Both reviews mark a shift in mainstream economic thinking. Both conclude that mainstream economic paradigms and models are flawed, and that the way economic success is measured needs to change; the focus on GDP alone will lead to neither sustainable development nor broad societal well-being. Both reviews find that the societal and economic cost of *inaction* – on climate change, and degradation of the biosphere respectively – will be enormous. Both advise urgent action to redress the institutional and market failures that cause these crises.

The message per se is not new. For over 30 years environmental reports have argued the same. What is new is that the Dasgupta Review brings nature into mainstream economic analysis at the same level (production factor) as capital and labour, and not as an externality, and that the UK Treasury underpins the message. It is no longer in doubt that the cost of inaction will far exceed the benefits of action. The message resonates in at least parts of the economic and financial sectors (National Banks, IMF).

Water – the unaddressed crisis

No similar global review from an economic perspective is available yet for the third crisis: water. The UN 2023 Water Conference provides an opportunity to add that missing piece of the puzzle. A review of “The Economics of Water and Beyond” would curate the robust scientific basis and evidence gathered to date, provide input to societal dialogues focused on remedial action and then integrate the feedback into an action oriented final product.

Such Global Water Review would investigate the interconnections between the three crises and within the climate-water-biosphere system. It would take the economic case for climate action, and for investing in the restoration and sustainable use of the biosphere (“green recovery”, “building back better”, etc.) as a starting point and then explore if, where and when water can be a meaningful *entry point* for such change. After all, if the climate-water-biosphere system is considered as one, water may provide actionable levers to trigger certain changes in that system, while climate or biodiversity may provide levers for others. Water's multiple identities as a public and private good, and multiple functions ranging from a social service, to an economic good, to a

resource that sustains nature, are a basis to address certain questions of power, values, carrots and sticks that can change society. Climate and biodiversity may be a basis to address other questions.

A Global Water Review would address:

- specific application to water of Dasgupta’s broad analytical framework for the biosphere;
- interaction, co-existence and competition between water systems’ regulating, provisioning and cultural services for people, economy and nature;
- costs of inaction versus the benefits of action in the face of the growing water crisis,
- investigating a globally applicable “social cost of water” parameter
- concept of planetary boundaries for water, including quality, complementing the boundaries currently defined for fresh water use, nitrogen, and climate change;
- dynamics around thresholds that may first manifest locally and then trigger a cascade of effects globally as tipping points for water security (local, regional)
- paradoxes around water’s polymorphous economic identity (public, private), regressive subsidies, exports of (virtual) groundwater from deserts, choice architecture;
- appreciation of water resources as economic assets and the benefits they provide (e.g. groundwater, glaciers, etc.);
- different challenges at different scales: from hyper-local, to regional (transboundary rivers, glacier melt, tropical rainforests and their evapotranspiration and condensation cycles), to global (climate change, geo-engineering, etc.);
- social and environmental justice and inequality in access to water and water services, exposure to water risk, and transfer of such risk between groups in society;
- short- versus long-term considerations in water use (reversible and irreversible changes);
- water as a determining system factor in food systems, commodity systems, financial system etc
- ...

Why a Global Review of the Economics of Water?

The Dasgupta Review poses that the economy is embedded in the biosphere, and is not external to it. While environmental economists have argued this for over half a century, it only now enters mainstream economic logic. Economic and societal growth have made demands on nature that have exceeded its carrying capacity for decades. This triggers non-linear system dynamics that - over time - make societies poorer, not wealthier. Steady degradation of the biosphere makes no economic sense in the long-term!

Growing political focus on climate change in past decades has only recently started to translate into broad action globally. Despite persistent efforts and notwithstanding piecemeal successes, water has not become a broad global policy and action priority yet. Given water’s relevance for the functioning of people, society, economy and nature that seems paradoxical. Water-related global goals (SDG’s) for 2030 are off-track. The COVID19 crisis continues to cause further setback. That points to a growing importance of a post-2030 agenda. “The year 2050 is now”!

The UN 2023 Water Conference will be the first of its kind since 1977, illustrating that water rarely gets the global stage. The summit aims to put the spotlight on water challenges and persistent inequalities in access to water (resources and services), vulnerability and exposure to water risks, and accelerate action to redress these. Because society, nature and the economy will remain water dependent. The summit may also highlight the (indirect) effects of water-related choices that are often overlooked, and promote alternative choices.

Commissioning an independent Global Review “The Economics of Water and Beyond” now, to be delivered before the summit, may both draw global attention to the summit in March 2023, and build momentum to act. Point of departure for the Review is the recognition that the economy and society do not stand apart from, but dwell in nature. Water is fundamental to nature, nature is fundamental to the economy. Current trends move the climate-water-biosphere system towards tipping points. This creates great uncertainty. Bending the trend is therefore crucial. The review can promote an agenda for system change in the way societies use, allocate, price and value water with the aim to reduce systemic inequalities and unsustainable practices at the interface of society, economy and nature.

The triggering of meaningful action across sectors and society will be the measure of success of a Global Review. The Review can achieve those if it:

- i) compiles an analytical and evidence base, that is robust in the face of push back from vested interests, and
- ii) develops an inspiring and action oriented **water narrative** pinpointing the relevant **levers for action**: who is in charge, who can act, what social norms and dynamics matter, how can these be influenced, where to start?

Target groups are primarily the actors who don't consider themselves part of the water community but whose actions have profound consequences for water access, availability and quality for other groups.

Using the Dasgupta review as a starting point, a Global Water Review would do three things:

- curate the relevant **science** on the Economics of Water - building on the Dasgupta framework, going beyond traditional cost-benefit economics and investigating the global, national and local political economy and governance of water to enable action;
- mobilize - through **societal dialogue and communication** about initial findings - innovative actors or communities, committed to change current unsustainable water use and behavior
- feed **actions and pathways** of systems change identified through societal dialogue back into the science community and build bridges across the chasm between the realities of today's political economy and the vision of an Economics of Well-being.

Meaningful and inclusive societal dialogues would be a central component in the review process. The necessity of change will trigger resistance. Therefore such dialogues will stretch the comfort zones of all participants. The dialogues will receive inputs from and will feed back into the review's analytical work: science and dialogue will reinforce each other. That seems the only plausible mechanism to arrive at an actionable “whole of society” agenda that engages government, business, science, farming, civil society, etc.

The scope of the review – 3 work streams

The crises that the climate-water-biosphere systems faces, is deepening as a consequence of societies' use of and extraction from that system beyond its capacity to regenerate. In this context, the review's objective is to contribute to the transformation of the way societies/economies use, share and govern water – and all benefits derived from it – within that broader climate-water-biosphere system. This requires a deep understanding of the water cycle, the political economy around it, the power dynamics that influence who gets what, and the institutions that govern it.

Initial, discrete conversations about desirability and scope of an independent global water review with thought leaders in multilateral organizations, civil society, academics were: i) positive about opportunity and ii) cautious about the objective and process design to achieve the intended impact. Many of those consulted favour an economic approach as an important pillar of a Water Review, in step with the climate and biodiversity reviews by Stern and Dasgupta. This leads to the following components:

Work stream 1 – curating the evidence – economics, political economy and governance

Work stream 1 focuses on curating the available evidence on the costs of inaction, the benefits of action and the political economy and governance systems that either stimulate action for change or sustain the status quo. An economic lens makes sense for various reasons:

First, water is economically polymorphous. It assumes multiple identities, ranging from a (quasi) public and private good and morphs from one into the other, and back again. The trajectory of water from the point it falls from the sky onto land, toward the point where it evaporates again, is largely determined by the water cycle. Technologies like cloud seeding affect water even before it falls from the sky.

Second, because of water's economic polymorphism, economic approaches (problem assessment, valuation, evaluation, policy), and concepts (externality, (quasi)public good, monetary value,

pricing instruments, (bounded) rationality, markets, subsidies, etc.) are useful to explain dynamics around water use and allocation.

Third, economic actors have influenced and framed social norms globally, to a point where those social norms no longer make economic sense. Redressing those with economic logic itself, seems a pragmatic thing to do, taking account also of the aspects of political economy and governance of water, at the interface of economy, society and nature.

Economic analysis and arguments are not the only pathway to action. Civil society organisations in the Netherlands and Germany demonstrated that an environmental justice approach can trigger change as well. They took their respective governments as well as a multinational oil company to court over their lack of climate action and ambition, threatening human rights of future generations, and won. Social activism using the legal system, not economic logic, triggered action.

Holding firms, governments, cities, etc. accountable for the consequences of their (lack of) action, can be a game changer. The Whanganui River in New Zealand was granted the legal status of a person, with the rights attached to it; another instance where the judiciary contributed to systems change. Shareholder activism in the case of a multinational corporations like ExxonMobile is another avenue to accelerate action. A Global Water Review should consider such alternative pathways. One partner argued that the Global Review adopt a climate and security lens. While that angle is relevant, it may not go to the heart of the challenge.

All who were consulted about the scope of the Global Water Review agreed that it be rooted in the water cycle, which is on overdrive as a result of climate change. The review should address the multiple societal, environmental and economic functions water serves along the way: the provisioning, regulating and maintenance, as well as cultural services, as Dasgupta defines them. It should address water as an essential input in production and as a precondition to sustain the environment (within which the economy and life are embedded). Circular economy concepts around water use and re-use need to be at the heart of the review. Making the water cycle central to the review, will ensure this.

The review will also address the spiritual dimension of water, the myths, the narratives and their relevance for peoples' identity, indigenous peoples specifically. This is not to say that myths are the domain of indigenous peoples only. The narratives around economic growth – measured in GDP – as the means to overcome all challenges, could be considered in the domain of myths as well. Important starting point is that water is a vital ecosystem service as Dasgupta, but also IPBES, TEEB and other studies have argued: taking externalities into account. Rights to water and rivers may be a topic to be integrated in the Review. Most persons consulted emphasized the relevance of societal analysis where livelihood, health, dignity and environmental justice are relevant factors to consider.

Work stream 2 – dialogues and communication

Societal dialogues that make deep dives into certain **sectors** are meant to bridge the analytics of workstream 1 and the societal action targeted in workstream 3. Such dialogues could be sector-specific and focus on the cost of inaction or benefits of action in the areas of: water and health, water and food, water and energy, water and cities, water and ecosystems, water and finance. But dialogues may also centre around specific areas of feasible action, levers of change. Such focus may promote greater action-orientation and may increase the probability that the dialogues add something new to the many dialogues that have been conducted previously. The dialogues may address issues of rights, governance and water service delivery as well. The kinds and character of dialogues to be convened, are important choices for the lead authors to make.

For each dialogue, findings from workstream 1 will need to be communicated in a manner that each of the stakeholders in the dialogue understands. Failing to do so will create an unlevel playing field and will diminish the value of the dialogues. The dialogues should give voice also to those who are most water-insecure. The choice of dialogues topics and settings on one hand and authors' choices how broad and how deep they will review certain aspects will be interdependent. In other words, the scope of workstream 1 will interactively adjust to needs that get revealed in workstreams 2 and 3. Water is a complex domain, and if choices need to be made between comprehensive or crisp messages, crispness and actionability should prevail.

Those who were consulted emphasized the need that the NL Govt clearly define directions for the review and outline deliverables in 2023 and beyond. This scoping document aims to do so. Based on the general direction of travel it outlines, an independent team of authors will shape content. As momentum builds towards the UN 2023 Water Conference, and societal dialogues mature, the space to apply the relevant levers of change, trigger action and drive change, is expected to grow.

Work stream 3 – action agenda for transformation

New economic insights that emerge from workstream 1 will not - in and of themselves – translate into action. Formal institutions and informal social norms determine the dynamics in the climate-water-biodiversity system and contribute to the crises in that system. In order to change these dynamics, these institutions and norms will need to change. Experience shows that informal social norms are often so deeply embedded in society that they override formal rules. Deep-rooted inequalities are hard to overcome. Yet formal institutions rarely acknowledge this. Interactions between people/individuals, organizations/collectives and biosphere-society-economy/system, are primarily governed by social norms that define who has what value in each interaction. These norms vary and are constantly re-interpreted, based on changes in narratives that people embrace. They may hold the societal status quo in place, until certain levers are pulled and a cascade of changes may be set in motion, affecting narratives, behaviors, norms and institutions. The dialogues under workstream 2 will address these mechanisms. Workstream 3 will then identify pathways for change based on findings from workstream 1 and 2.

Changing a social system requires changes in both formal and informal rules. Changes in only one of these will not. This is evident at all levels of society, from the household, to the nation state, to the multinational corporation. Changes in rules alone do little to change people's and organizations' behaviour as long as social norms support that behaviour. New rules create space for change, but social practice does not change without supportive changes in social norms. In the latter area – changes in social norms – a lot of new ground remains to be broken.

The influence of social norms and social dynamics that drive change has long been overlooked. A particular view of markets – namely that they always serve the common good efficiently, are best left alone, and that interference, through regulation, should be minimal – has been very influential in shaping institutions and societies over the past 50 years. Alternative views, including for instance those expressed in Elinor Ostrom's work on governance of the commons, have been less influential.

Individuals can be a potent source to set in motion changes in social norms. But the role of individuals as “leaders” or as “consumers” should not be over-estimated. Collective capacity to act, is what matters to change society. There will always be vested interests inclined to put the brakes on systems change - even if those interests stand to suffer future adverse consequences of maintaining the status quo. Systems change is a tall order, particularly for systems such as the global climate or regional or local biosphere and water systems, in which all of society is an actor.

The challenge in workstream 3 is primarily one of interdisciplinary synthesis. Workstream 3 is not an afterthought, but needs to be considered as having the same weight as the other workstreams. Findings from workstream 3 will interactively feed back into workstream 1 and 2. Their potential impact will be tested through modelling exercises that will compare business as usual with alternative scenarios. These scenarios will be aligned with those used for climate and biodiversity. A number of iterations between these workstreams should produce an actionable agenda for transformation.

Core Deliverables

Core deliverables could include an overarching report that:

- presents powerful analytics to underpin an action agenda to redress the water crises
- redefines water economics based on credible evidence of the cost of inaction versus the benefits of action, and possible the definition of a “social cost of water” parameter.
- explains the political economy of water, the governance mechanisms that enable the current crisis, and what it may take to change these, in terms that are understandable for all.
- inspires in its narrative, in the economic rationale for reduced inequality, and in the voice it gives to those who are most water-insecure and in its specificity about who can act how.

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- captures the initiatives of innovative actors who set in motion positive change (through formal and informal institutions, with attention to social dynamics), and
- outlines pathways of systems change that can shift current unsustainable water practices and replace these with sustainable alternatives contributing to broader societal well-being
- characterizes (and illustrates) the enabling environment required to support or accelerate change.
- Provide different scenarios based on the system change actions developed.

Component reports could also be delivered in the process: analytical papers, reviews of case studies for change, testimonies on the values of water, etc. The overarching **message** will be defined over the course of the study. Think of water as universal enabler of local, domestic, global agendas and livelihoods, the water cycle that connects a vast group of changing public and private actors with different values and behaviours, water wise decision making that helps reconcile water's multiple values for diverse groups, etc. It could also be left to the creativity of the team that will author the Review to refine the message.

How to commission a global water review?

Both the climate change and biodiversity reviews were commissioned by the UK Treasury. First step was the UK Treasury's defining the main direction of the report. With that in hand a lead author was identified. Approximately 4 months later formal Terms of Reference were established. And around 18 months after that, the lead author – plus a network of co-authors – delivered the report. The entire process took around 22 months. The core task of the authors is to compile and curate existing knowledge and combine that knowledge in new ways that can inspire new thinking and modes of collective action. There will not be much space in the process for new research. With the UN summit 22 months away, we are still within that time frame of the Dasgupta Review. But, rapid action is required.

The choices as to who will lead the review and who will commission it may not be strongly connected. A renowned lead-author may re-prioritize their schedule for the coming 18 months for a challenge they cannot refuse. The author(s) will be independent. They will determine the content of the review, within broad boundaries of a broad ToR. The principal influences the direction of the review through the ToR only. The principal will also influence how the report is made public, and what exposure it will get. The political economy around these choices needs careful consideration.

It is an option to either ask one lead-author, or a team that represents the relevant mix of expertise and experience. The Terms of Reference for the Dasgupta review, was remarkably short: a 1-pager: i) examine the evidence, ii) make an assessment, iii) deliver a report. The description of activities for a global Water Review does not have to be more complex than that. Elements from the first five sections of this document could set the broader scene in the ToR.

A track that requires specific consideration is dialogue with actors that use and depend on water (but do not consider themselves as part of the water community) about the levers to translate analysis into action. This track could be commissioned separately from the writing of the report, or be integrated. Separation has pros: two processes, each with a dedicated team with specific expertise focused 100% on the task. It has cons too: if information does not flow freely between the two task teams, a disconnect between end products of the two tracks could result. The reverse argument can be made for integration. It is desirable that both tracks come together in one report.

Potential lead author(s)/ knowledge institution to coordinate the review?

The argument could be made for a renowned economist as the lead-author, just like in the Stern and Dasgupta reviews. However, if the three work streams of the review are to be given equal weight, then a broader team of 4 or 5 peers as lead authors may be more effective. Extensive credentials in natural resource economics, a track record in the water domain, interdisciplinary orientation, in-depth understanding of the corrosive impact of inequality on society, and a commitment to analytics in service of social change, not just academic excellence will be relevant. The team will need strong representation of the Global South. The team will need to demonstrate the intellectual independence necessary to question orthodoxy and push the boundaries of what is acceptable in the policy mainstream. Names that have come up:

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- Johan Rockstrom (Professor in Earth Systems Science at Potsdam Institute Climate Impact Research)
- Mariana Mazzucato, professor of Economics of Innovation and Public Value at London University College
- Aromar Revi, Indian Institute for Human Settlements
- Leena Srivastava, former Vice Chancellor at TERI and current Scientific Director at IIASA
- Richard Damania (chief economist at sustainable development Vice Presidency, World Bank)
- Cameron Hepburn, professor of Environmental Economics, Oxford University.
- Rosina Bierbaum, professor of Natural Resources Economics at University of Michigan and co-author of the 2009 World Development Report on Development and Climate Change
- Gita Gopinath, Chief Economist at the IMF,
- Francisco Ferreira, Amartya Sen Professor of Inequality Studies, LSE
- Michael Hanemann, Professor at the School of Sustainability and Department of Economics of Arizona State University
- Kate Raworth, Professor of Economics, Oxford University
- Sengupta Rajeswari. IGDIR Mumbai
- Bajabulile “Swazi” Tshabalala - AfDB
- Ngozi Okonjo-Iweala – Fmr Min Finance Nigeria, ex Worldbank
- Tharman Shan Mugaratnam – Singapore Monetary Authority
- Quentin Grafton, Crawford School of Public Policy
- Inger Andersen – UNEP
- Sir Adair Turner Chair of the UK Energy Transitions Commission, Former Chairman of the UK Financial Services Authority and the Committee on Climate Change
- Joseph Stiglitz, Professor of Economics, Columbia University
- Gretchen Daily, Stanford University and Natural Capital Project
- Johan Schellenhuber, former Head of the Potsdam Institute for Climate Impact Research
- Christina Figueres, former Executive Secretary UNFCC
- Dianne Coyle, expert Beyond GDP, Bennet Institute for Public Policy Cambridge

Lead Institutions that come to mind include London School of Economics, Oxford University, ..., ..

Broad group of co-authors and junior researchers

A broad group of academics will need to provide the relevant and existing knowledge pieces that the global review would curate, and from which – through synthesis not made previously – the review could generate new knowledge. This will ensure that lead authors incorporate relevant existing knowledge as much as possible.

Names of co-authors that have come up: Amartya Sen, Partha Dasgupta, Nicholas Stern, Joseph Stiglitz, Mark Carney, Roy Brouwer, Singupta Rajeswari, Bajabulile “Swazi” Tshabalala, Ngozi Okonjo-Iweala, Tharman Shan Mugaratnam, Claudia Sadoff, Xavier Leflaive, Stephan Hallegatte, Inger Andersen, Wim Kuijken, Aart de Zeeuw, Christiaan Rebergen, Kees Veerman, Klaas Knot, Erwin Bulte, Joyeeta Gupta, Yuria Celidwen, Jim Hall, Alban Thomas, Céline Nauges, Henk Opschoor, Casey Brown, David Wiberg, Olaf Slijpe, Cindy van Oorschot, François Molle, Jomo Sundaram, Maarten Hajer, Peter Taylor, Ed Barbier, Peter Mollinga, Kees Vendrik, Lars Hein, Marten Scheffer

Many of those consulted have emphasized that lead authors will only have limited time available and that a substantive and diverse team of less senior researchers and academics will do the bulk of the work, with lead authors in a supervisory and synthesising role.

Advisory board

A broad group of thought leaders from the public, private and knowledge sectors will accompany the review in the role of a sounding board. This group will not steer the review, but will reflect on societal relevance of findings, credibility, economic/political/societal consequences, and on SMART and action-oriented actions that authors propose for the various actors in society. This group may also connect lead authors to relevant networks for specific deep dives or dialogues.

Moreover, members of the advisory board may play a role in convening societal dialogues, connecting relevant voices and networks to those dialogues, and ensuring diversity of perspective.

They may also raise the profile of findings of the review when component reports or the final synthesis report get published.

Secretariat

Many of those consulted have emphasized that a substantive secretariat, that coordinates the process of soliciting, compiling and curating relevant existing knowledge, is crucial. To promote balance and coherence between the various workstreams, the secretariate will need to ensure coordination across work streams, among lead authors, and between lead and contributing authors. Another domain in which the secretariat will play a role is in the collaboration between authors and advisory board. It is the intent of the NL government that the leading knowledge institution assuming responsibility for the review, will take responsibility for many of these tasks.

At the same time the NL government realizes that certain tasks, like convening, putting together an advisory board, may be more effectively kept at the Ministry of Foreign Affairs and its network of partners. This will have to be agreed with the lead knowledge institution. The NL government and its partners may mobilize partners to contribute components of work stream 1, convene specific dialogues under work stream 2 or review policy recommendations under workstream 3.

Process for the review – exploration, commissioning, execution and communication

As co-chair of the UN 2023 Water Conference, and given its reputation as a water champion, the NL Govt has credibility to initiate the global review. In August 2021, the Minister for Foreign Trade and Development Cooperation authorized to initiate the review. There are two considerations: i) the review process must be independent and dissociated from UN 2023 Water Summit process of political consensus building, and; ii) the review process must be inclusive, conducted by a diverse group of authors and researchers and, include and give voice to groups who tend not to be heard.

The roadmap includes:

1. **Preparation** – GoNL in the lead
 - Co-define the preliminary scope of the review with leading academics and through an initial, round of consultations in a broad network that weighs in on the review (Aug-Sep '21)
 - Approach potential lead-author(s) and gauge their interest (Sep-Oct '21)
 - Arrange direct contracting of lead institution and lead author team (Oct – Nov '21)
 - Define ToR for a sounding board and populate this board with a mix of established leaders and figureheads from the public sector, finance, civil society and business, to ensure actionability of end product (Oct-Dec '21)
 - Publish ToR for Global Water Review – next iteration of present document as annex (Nov '21)

2. **Implementation** – lead institution (secretariat)/lead-authors in lead, role GoNL diminished (Nov '21 – Feb '23):
 - Consultations, soliciting relevant knowledge and thought pieces for review and curation by the team of authors (Nov '21 - Jan '22)
 - Present draft intermediate report (May '22)
 - Societal dialogues on intermediate report, and academic review group and sounding board (around the dynamics and pathways of systems change: the formal institutions and informal social norms (May-August '22)
 - Draft final report (Nov '22)
 - Feedback draft report – academic review group and sounding board (Dec '22)
 - Deliver final report content (Jan '22)
 - Present the report (Feb '23) – well ahead of the summit

3. **Communication and dialogues** – collaborative effort lead institution/GoNL and partners (Nov '21 -April '23)
 - Ensure that scientific findings get communicated to various audiences in understandable narratives, graphics and other visuals

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- Conceptualize effective formats for dialogues that promote a back and forth with workstreams 1 and 3
- Convene dialogues with relevant stakeholders that focus on meaningful action for each of them, and ensure that inputs from workstream 1 and 3 and feedback to those workstreams are mutually understandable
- Set up and deliver a strategic communication campaign that boosts attention to component and final synthesis reports and that guides the review toward concrete action – with specific roles for lead authors, sounding board, partners, etc. (who can do what and when?)

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