

## Research Paper

## 'WaSH Futurism': exploring post-SDG6 targets using the Nominal Group Technique for more equitable global agenda setting

Georgia Hales <sup>\*</sup>, Bushra S. F. Hasan, Oscar Balongo, Jay Meshvania, Reychel Sanchez-Martinez, Charles Shachinda , Paul Hutchings  and James Bartram

School of Civil Engineering, University of Leeds, Woodhouse Lane, Leeds LS2 9D, UK

\*Corresponding author. E-mail: cn14gih@leeds.ac.uk

 GH, 0000-0003-4776-3905

### ABSTRACT

Sustainable Development Goal 6 (SDG6) is grounded in human rights and derives from international policies refined over decades. We argue that much of this agenda setting and monitoring reflects or gives way to neo-colonialism and neo-liberalism. We implement an online version of the Nominal Group Technique to explore its efficacy for more equitable global agenda setting. We apply the technique to a group of 19 graduate WaSH students – from diverse professional backgrounds and originating from and having worked in all global regions – to gain their insights on future WaSH issues to be included in global targets. This was preceded by preparatory exercises on WaSH progress and influential contextual factors. We thus demonstrate a novel and systematic application of the NGT and discuss its potential to be used in challenging neo-colonial and neo-liberal agenda setting. The results also provide an early assessment of future priorities that could inform post-SDG target setting including: inclusivity among populations and settings, hygiene, menstrual health, sustainability, circular economy, climate resilience, preventing infectious disease transmission, and universal 'safely managed services'. These are compared with themes highlighted in Joint Monitoring Programme reports, SDG6 indicators and General Comment 15: The Human Right to Water.

**Key words:** future agenda setting, Human Right to Water, Nominal Group Technique, Sustainable Development Goal 6, Water Sanitation and Hygiene

### HIGHLIGHTS

- The use of an adapted virtual nominal group technique to reflect on priority WaSH issues post-2030.
- The potential for a virtual NGT to challenge neo-colonial and neo-liberal agenda setting.
- Novel priorities: sustainability, climate resilience, water conservation, circular economy of WaSH systems, broadening the scope of hygiene, menstrual health, inclusion of vulnerable groups, and preventing infectious disease transmission

### INTRODUCTION

The processes of forming international development goals, targets and indicators (GTIs) have been coordinated by the United Nations (UN) since the 1940s. Starting out as 'fragmented and disjointed', new partnerships were required to reshape the process of agenda setting, leading to the generation of the Millennium Development Goals (MDGs) (Kumar *et al.* 2016, p. 1). This called for measurement of progress through monitoring the provision of domestic water and sanitation via a harmonised global methodology. WHO and UNICEF provided this through their Joint Monitoring Programme (JMP), using validated third-party surveys. The MDGs were developed at a technocratic level where the human rights (HR) community were late to the conversation, only able to criticise them for not targeting the most marginalised populations or addressing inequalities retrospectively (Winkler & Williams 2017). While the MDGs concentrated on advancing well-being in the so-called developing world, the 2015 Sustainable Development Goals (SDGs) succeeding them concerned all countries in extending higher levels of infrastructure and services to improve social and economic well-being (Eisenmenger *et al.*

This is an Open Access article distributed under the terms of the Creative Commons Attribution Licence (CC BY 4.0), which permits copying, adaptation and redistribution, provided the original work is properly cited (<http://creativecommons.org/licenses/by/4.0/>).

2020). Additionally, the HR community were much more engaged in negotiations for a more rights-based development era (Chapman 2016).

The recognition of the HR to Water and Sanitation in 2010 shed light on the need to provide services beyond the household, with focus on vulnerable groups, in order to reach all individuals in all contexts at all times. While being a critical force in driving change in WaSH provision, some see the HR agenda as a 'form of neo-colonialism [that] cannot, therefore, address the neo-colonial injustices of the neoliberal global order' (Sharma 2021, p. 1). To expand: the Universal Declaration of Human Rights (UDHR) is criticised for being heavily led by a small number of mostly Western nations resulting in a bias towards civil political liberties and individual rights as opposed to socio-political and collective rights (Berti 2015). Salil Shetty, former Secretary General of Amnesty International, believes that HR are important for the resistance against colonialism but recognises their limitations and how easily they're misappropriated and manipulated for political ends namely through the domination of Western powers for neo-colonial projects (2018).

The SDGs have been criticised for private sector advancement in the name of HR (Sharma 2021). Langan (2018) adds that their development involved the imposition of neo-colonial discourses driven by Post-Washington Consensus norms, by which economic prosperity leads to social prosperity. This has paled the potential for democratised, decolonial approaches to target setting. Progressive processes should enable all groups to advocate their agendas without priority given to private sector interests (Langan 2018).

One such process is the Nominal Group Technique (NGT): a group participatory approach that systematically encourages the inclusive generation of ideas (Moore 1987). By combining the 'interactive and exploratory character of focus groups with the depth of individual reflection', the NGT offers 'insurances for unwanted social pressures that affect group-based approaches' (Hugé & Mukherjee 2018, p. 39). We explore the application of the NGT with a group of international WaSH graduate students on 'WaSH Futurism': the contemplation of the progress and trajectory of WaSH and its contextual influences to determine the future issues on which to centre global GTIs. We compare these with the areas of interest from the latest JMP reports, SDG6 indicators and General Comment 15: The HR to Water. We then reflect on the experience of applying the NGT as an approach that challenges the neo-colonial norms both for this exercise and in wider GTI formulation.

## METHOD

As part of a WaSH graduate programme, co-authors Jamie Bartram and Paul Hutchings facilitated a workshop on WaSH Futurism to evaluate the use of an online NGT as a means of equitable agenda setting, asking what students foresaw as priority WaSH issues for targets post-2030 and -2050. The group consisted of 19 WaSH PhD and Masters students from diverse ethnic and professional backgrounds, all enrolled at the University of Leeds. They collectively originated from all global regions as defined by WHO: Africa (Malawi, Tanzania, Zambia), Americas (Costa Rica), South-East Asia (Bangladesh), Europe (Italy, UK), Eastern Mediterranean (Sudan), and Western Pacific (China). They had worked in more countries within these regions (though too many to list) with experience as consultants, researchers, engineers, project designers, data scientists, urban planners, humanitarian field coordinators, software developers and water officers, advisors, and managers. They were 42% male and 58% female, aged 21–41.

The group undertook two preparatory exercises. Of their own choosing, each individual (1) researched the state and progress of five WaSH trends and (2) how five contextual factors would influence WaSH progress. The facilitators categorised responses to be discussed among the group.

The NGT session involved: individual silent generation, round-robin recording, structured, time-limited discussion and ranking of ideas (after Moore 1987). Due to COVID-19 social distancing rules, the conventional round-table approach was modified into a three-hour online session. The session was divided into two parts for questions:

1. What will be the principal concerns for WaSH post-2030?
2. What will be the principal concerns for WaSH post-2050?

Each individual emailed their statements for question one to the facilitators. Then they took turns to present their statements, one idea per round, until all statements were exhausted. Similar ideas were discussed and consolidated by mutual agreement of their contributors. Occasionally, an individual was encouraged to provide an explanation for their statement, to clarify whether it should be considered nuanced or could be merged with a similar statement. In alignment with the NGT, this was not open for discussion for the whole group, but at the individual's discretion. For ranking, each individual was given five votes. The session for question two followed the same structure.

Before data analysis, the authors removed repetitions and topics unrelated to WaSH; reworded generic comments to demonstrate WaSH relevance; consolidated responses concerning similar topics; and placed some responses as subcomponents of others. These changes were agreed by author-group consensus. They carried vote counts over accordingly. The group then ranked statements by vote count.

## ETHICS

Following the workshop, the group was asked if their recorded responses could be used anonymously within this paper, to which all said yes. Those whose quotes were used in text were contacted privately to request their consent, which was granted. Thus ethical clearance was not necessary.

## RESULTS

### Activity one: WaSH trends, status, and progress

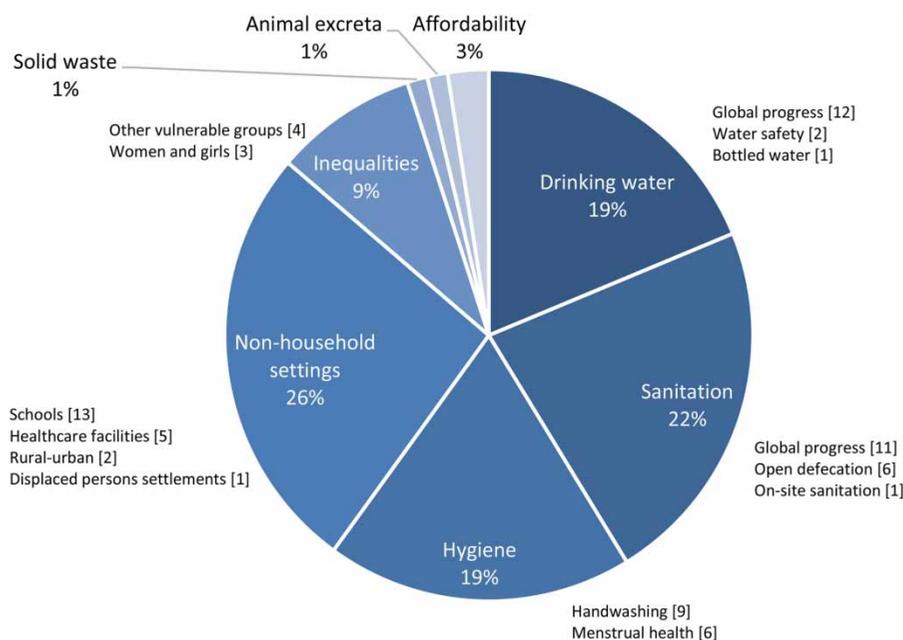
The authors collected 90 statements and consolidated them into eight categories. They transferred 10 statements to activity two, as they fell into contextual factors rather than WaSH trends. Statement outside of SDG6 concerned animal excreta as a carrier of disease, transmissible to humans through water supplies, crops, and hands (Prendergast *et al.* 2019). Others addressed solid waste management, and the change in status of packed-and-delivered water as potentially 'safely managed', previously classified as 'unimproved' due to insufficient data (JMP 2017; Figure 1).

### Activity two: contextual factors influencing WaSH progress

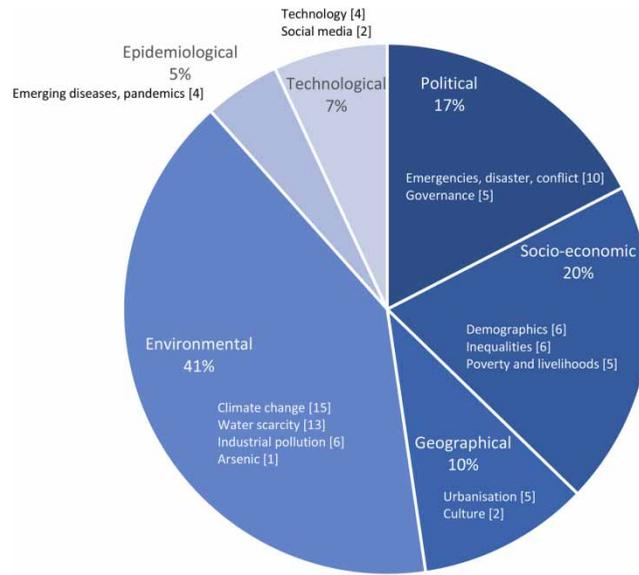
The authors collected 84 statements and consolidated them into six categories based on Suhlrie *et al.*'s (2018) grouping of contextual factors, to which the authors added 'Environmental' and 'Technological' categories. 'Legal' and 'Meso-political' categories received no statements (Figure 2).

### Activity three: the NGT

Table 1 lists issues to be considered in future targets for 2030 and 2050 that received at least one vote. Arrows between exact and similar issues illustrate the change in rated importance between 2030 and 2050. Seven issues arose for both periods. The biggest change was for inclusion of vulnerable groups across all domains, moving up seven places. All other changes were



**Figure 1** | Categorisation of Water, Sanitation, and Hygiene trends statements (bracketed numbers denote the numbers of statements for each sub-category).



**Figure 2** | Contextual factors influencing the trajectory of Water, Sanitation and Hygiene (bracketed numbers denote the number of statements received for each sub-category); categorisation adapted from Suhlrie *et al.* (2018).

**Table 1** | Responses to the question ‘What will be the principal concerns for WaSH in 2030 and 2050?’ during the Nominal Group Technique exercise, ordered by vote count

Priority issues 2030	Proportion of votes	Links	Priority issues 2050	Proportion of votes
1. Universal access to safely managed sanitation	14%		1. Sustainable water cycle and reuse	20%
2. Sustainable water cycle and reuse	12%		2. Include vulnerable groups across all domains	17%
3. Universal access to safely managed water supply in urban areas	12%		3. Climate-change adaptation/sustainability of WaSH infrastructure	15%
4. Climate-change adaptation/ sustainability of WaSH infrastructure	10%		4. Universal access to safely managed water supply	12%
5. Universal availability of MHM products and services	8%		5. Circular economy for WaSH products and services	8%
6. National plans with secured funding to meet SDGs	7%		6. Improve WaSH governance	6%
7. Global emergency systems against WaSH-related diseases	7%		7. Urban planning for formal housing with appropriate WaSH facilities	5%
8. Circular economy for WaSH products and services	7%		8. Eliminate WaSH-related diseases	5%
9. Include vulnerable groups across all domains	6%		9. Energy efficiency and renewables within WaSH systems	5%
10. Education on the importance of responsible water use	3%		10. Reduce water use through limitation of Litres Per Capita per Day (LPCD)	3%
11. Overcoming rural-urban inequalities	3%		11. Rethink container-based sanitation (CBS)	3%
12. Adapt targets for demographic change e.g. aging population	2%		12. Improve population/WASH professionals’ WaSH knowledge	2%
13. Hygiene standards beyond handwashing	2%		13. Achieve tariff-based sustainability in urban WaSH	2%
14. Increase diversity of WaSH leadership	2%			
15. Enhance data collection e.g. water quality indicators for microbial safety	2%			
16. Household livestock as a threat to hygiene	1%			

small: sustainability, climate resilience and the circular economy moved upwards, illustrating concerns for future planning. Limiting personal water usage stayed at rank 10. Safely managed water supply and WaSH-related diseases both moved down one place.

## DISCUSSION

The discussion is in two parts: the first compares the results of the NGT with current discourse on WaSH GTIs; the second reflects on the NGT as a potential tool that can be used in more equitable agenda setting. Few papers have looked into WaSH Futurism. Among those are *Setty et al.* (2019) who explored priorities given at a Water and Health Seminar using the NGT; and (2020), which used a semi-structured questionnaire for Sanitation and Water for All representatives. Priorities identified in the 2019 paper absent in this workshop are water treatment, information and artificial intelligence, real-time and rapid methods (e.g. point-of-use contaminant detection) and strengthening community participation.

### Universality of safely managed services

The group was principally concerned with the universality of WaSH services, measured through the proportion of the population using Safely Managed Services (SMS). Universality within SDG6 was largely about targeting those with poor access to adequate services. SMS, on the other hand, emerged during SDG setting to monitor and compare service levels between countries (JMP 2015). Such definitions change. For instance, the group called for the inclusion of more indicators for water microbial safety and to enhance data collection (e.g. water quality testing), leading to service level definitions broader than the current five. The JMP is also concerned with enhancing water quality testing, releasing a report in 2020 on integrating it into household surveys to generate reliable data representative of entire populations, which is imperative to monitoring (JMP 2020). The group also discussed elements of safely managed sanitation, such as rethinking the need for container-based sanitation.

### Inequalities and inclusion

The discrepancies in WaSH coverage are grounded in global inequalities. Priorities across both periods encompassed inclusion of vulnerable groups in all domains and those currently omitted from monitoring. They gave issue to overcoming rural–urban and poor–rich inequalities and those who fall into multiple categories of marginalisation. They also gave notice that action in stigmatised settings like prisons and detention centres is challenging. National HR legislation and political tensions around domestic financing and foreign aid may not align with these aims. Furthermore, in countries where WaSH access is low among the general population, services in these settings are often a low priority (Behnke *et al.* 2018). Similar is the case for displaced persons. On average, a refugee remains in camp or settlement for 5 years, where WaSH infrastructure becomes imperative (World Bank 2019). Saliency is illustrated by poor preparedness for disease spread, the COVID-19 pandemic being a prime example, whereby insufficient and inappropriate hygiene facilities, information, and medical facilities, alongside cramped living conditions, increased inhabitants' likelihood of contracting and dying from the disease (Vonen *et al.* 2021). As protracted crises continue, along with the increase of climate migrants, displaced populations may merit their own goal with its own WaSH and non-WaSH targets. This raises the issue of how WaSH monitoring would function if it were a component of non-WaSH goals. It is worth recalling that the original SDG indicator framework did not have a single indicator mentioning displacement, to be later remedied.

### Affordability

The group suggested that HR should be emphasised by establishing policies to address WaSH needs for vulnerable groups, such as by considering the affordability of services. Fonseca (2014) believes that disconnection from services following an inability to pay 'constitutes a violation of the HR to water and sanitation'. However, providing free universal WaSH denies governments and service providers the 'revenue needed to maintain, expand, and upgrade' services, resulting in a poorer quality, disproportionately affecting lower socio-economic communities (World Economic Forum 2021). Thus, the HR to water and sanitation necessitates that these services are instead affordable for all. This is challenging when there is no universally agreed upon definition or approach to assessing or monitoring affordability (WHO 2021). For example, the affordability of drinking water is included in the target for water provision, but its definition is technically contested and politically charged. Even after adoption of the MDGs, the wording on affordability was sequentially edited over years. While WHO and UNICEF have commissioned research into this, it is still excluded from SDG monitoring. One reason is because it is impossible to use a single threshold value to accurately assess affordability between differing contexts: if other essential services are provided for free by one country but not another, water becomes more affordable for the first (JMP 2021a).

### Global governance

The group mentioned increasing diversity within WaSH leadership post-2030 and improving WaSH governance post-2050. As with the NGT, the UN SDG voting system is based on one vote per country. However, this does not account for co-optative soft power plays. The result is that they are largely based on Western, neo-liberal values (economic growth and private sector development), raising questions on neo-colonial trade and High Income Countries (HICs) trying to exert dominance in low-middle income countries (LMICs) (Langan 2018). Additionally, 64% of those in global sanitation organisation leadership are white and from HICs (Worsham *et al.* 2021); while enacting this international policy globally (Luseka 2020). Ordaz (2019) adds the question of whether the processes to develop the SDGs render it reductionist in oversimplifying the broad issues they aim to tackle globally. In terms of monitoring, there are many gaps in HIC data compared with that from

LMICs, demonstrating the imbalance in the level of scrutiny different countries face, despite unequal access to WaSH services being universal (Barrington *et al.* 2021). It could be said that SDG implementation and monitoring, and what will succeed them is another way for HICs to culturally colonise ('develop') LMICs based on a dynamic of superiority and inferiority (Sadiku 2016). What may be fairer is Luh *et al.*'s (2013) approach of ranking countries on benchmarked progress, where countries with lower access rates become higher performers, and vice versa.

### National governance

The group discussed barriers to achieving SDG6 by 2030. Universal WaSH services are technologically and operationally achievable and affordable, therefore Sachs *et al.* (2020) ask whether calls to reduce SDG ambition reflects failure of global progress and of HICs to honour international partnership (SDG17). Countries can accelerate WaSH service coverage and quality as long as there is political will. WaterAid's (2021a) analysis highlights how, despite having a low GDP per capita, South Korea's post-war goal setting increased improved sanitation coverage from less than a third to 100% from 1960 to 2000. In India, through the ambitious target setting, Prime Minister Modi galvanised government bureaucracy: high-level political support and 'disruptive' leadership energised districts, leading to psychological and behavioural changes in district officials and sanitation programming (Curtis 2019). Thus, the emerging consensus at the international level is that 'systematic transformations' especially 'paradigm shifts in policies' with 'appropriate governance frameworks to implement them' can override barriers to achieving goals (Horan 2019, p. 376). Granted, decisions on where resources are spent should not be autocratic, as where one sector is prioritised, another is deprioritised resulting in asymmetric development. One participant touches on issues of governmental accountability mechanisms, capacity and funding, saying that: *'For the SDGs you would elect the national government to mobilize their own internal resources because ... the sector has been considered mostly a humanitarian sector rather than a sector that the government should be responsible to fund by themselves'*.

### Hygiene

Hygiene comprises distinct components, attention to which the group felt was overlooked in SDG6, the only indicator being hand-washing facilities under the target of safely managed sanitation (UN 2015). Some felt this should include bathing body and hair, cutting nails, laundry, and dental hygiene, which are all necessary to prevent disease (IFH 2021). Hand hygiene promotion is widespread in WaSH initiatives and enduringly relevant; with the COVID-19 pandemic instigating amplified campaigns worldwide as it 'offers a low-cost, high-impact intervention that governments can harness to protect their citizens' (JMP 2021c). However, achieving high levels of hand hygiene is challenging, especially when access to water and soap is low (Pati *et al.* 2014). One individual called to: *'Establish global public health and emergency systems against ... infectious diseases because ... diseases such as COVID-19 could be foreseen and be eliminated at the ... beginning'*.

### Menstrual hygiene management (MHM)

The group reasoned that menstrual hygiene management (MHM) requires explicit mention within targets in order to be properly addressed. They identified the universal availability of free products and services, particularly for poorer menstruators in non-household settings, while combatting stigma and improving access to information and education as a priority issue post-2030. Menstruation is a taboo subject globally, meaning its importance in designing, implementing, and monitoring WaSH services has historically been overlooked. In the 2017 JMP indicator report, there was no mention of MHM. A reason for this may have been its perception of being 'too difficult or impossible to monitor' as differing cultural practices allow for different types of MHM (Mara & Evans 2018). Recognition of MHM as a public health issue and advocacy for monitoring, mean more data is produced, with the newest (2020c) JMP report including disaggregated MHM indicators (Sommer *et al.* 2021). Additionally, Hennegan *et al.* (2021) present a Menstrual Health definition which recognises transgender, intersex, and gender-nonconforming folk, calling for inclusive language, e.g. 'menstruator'.

### Gender

Gender influences access to WaSH services; however, it is only loosely touched upon in SDG6, highlighting the necessity to pay 'special attention to the needs of women and girls' in access to sanitation and hygiene. An outcome of the Consortium on Gender, Security and HR (2017) was that, as well as gender-specific targets, goals should have sex-disaggregated indicators, which has been included in the latest JMP report (2021b). Monitoring surveys gather data from households rather than individuals and are thus not sex-disaggregated. This comes back to the technological-scientific failure to offer a credible proven alternative to target setting that ensures global relevance and applicability. This can either be resolved or fail through

indicator formulation, wherein complex issues are rendered into simple indicators. Examples of this can be seen throughout SDG6 for targets that are less subtle, such as the drinking water composite indicator. We cannot define gender equality through tick box exercises, especially when considering the nuances of gender across different cultures. Yet, the JMP is developing ways of informing national and global monitoring of gender equality in WaSH through a conceptual framework and reviewing measures and indicators (Caruso *et al.* 2021).

### Climate change and the environment

Climate change (CC) increases the frequency, intensity, and unpredictability of extreme weather events (Seneviratne *et al.* 2012), risking the lives, health, and livelihoods of 10% of the population worldwide (WaterAid 2021b). By 2040, the UN estimates that 25% of children will live in areas of extreme water stress (UNICEF 2017). The poorest communities will be affected most, being the least capable to protect themselves and their environment (Goldenberg 2014). CC and sustainability were concerns for both periods in terms of building and adapting WaSH infrastructure for climate resilience and the need for advanced, sustainable technologies appropriate for future settings. However, no-one referenced CC mitigation even though wastewater systems are associated with ~1.6% of all carbon and ~4.6–5.2% non-carbon greenhouse gas emissions, something to be remedied following calls for ‘net zero’ carbon dioxide emissions at the 2021 UN CC Conference (Lu *et al.* 2018).

The group discussed reducing adverse impacts on access to clean water through sustainable water cycle and reuse. This concerns protecting water sources from over-exploitation and pollution, and the use of wastewater (encouraged by policy change and technological innovation), linking to SDG6.3–6.6. The ‘Circular Economy for WaSH products and services’ was an identified priority post-2050, seen as important for delivering economical, long-lasting, green solutions. One individual suggested: *‘every industry has to be ... responsible for the life cycle assessment of their products and ... to reduce and mitigate the impacts of their production [to] reduce stress on water sources and improve the quality of ... water ... [and] wastewater’*.

### Targets beyond WaSH

Many of the current and proposed targets for WaSH relate to other SDGs. The provision of SMS is inextricably linked to SDG3: Good Health and Wellbeing, for example. This highlights the complications faced in delivering a complete service when that service falls into multiple sectors. It also links to the challenge of creating targets that do not have easy-to-define indicators. The JMP could become accountable for other related SDGs where relevant.

### Reflections on the NGT

The NGT was a useful tool for ‘fostering creative problem solving in groups’ by bringing together individuals from different professional and cultural backgrounds (Bartunek & Murningham 1984, p. 429). It enabled the group to elicit diverse priorities reflecting their individual WaSH knowledge and experiences. Setty *et al.* (2019) emphasise the need for a research-planning tool that bolsters equity and inclusivity, wherein voices usually underrepresented in such activities were equal. Thus, the NGT is effective in giving global voices equal standing to neo-liberal advocates, thereby promoting the formulation of GTIs that better reflect needs than the pursuit of economic growth.

The systematic nature of the exercise enabled reflection on crosscutting issues that dominate WaSH, by drawing upon peer-reviewed research, thus advancing GTIs representative of future WaSH needs. Rankin *et al.* (2016) highlighted the suitability of the NGT as a systematic technique that can lead to replicable outcomes; however, it is uncertain whether the systematic nature of the NGT will elicit similar outcomes by different groups who carry out this exercise. It is the careful consideration in selecting individuals that will enhance the inclusivity factor and determine outcomes.

The NGT was adapted to a virtual format. While dependent on adequate internet connection, most individuals were present throughout. Rapid growth in digital technologies and improving internet access (World Bank 2016) provide a potential for the NGT to become an accessible tool that enables such exercises to adapt to an increasingly digital world. It thus reduces the advantage implicit in physical presence. However, only those with internet access can be involved in this discourse; conversations on whether access to the internet should be an HR are being had (Berti 2015).

Although the NGT has been characterised as time efficient, pressure to reach a consensus can influence outcomes (Horton 1980; Mukherjee *et al.* 2017). However, discussions that are usually held between NGT activities are kept to a minimum online, thus rendering more time for consensus building.

While Horton (1980) recommended that the group size of an NGT session should not exceed 10, accommodating 19 students posed no limitations. Rather, the pace at which individuals contributed did not compromise the timeframe, but allowed

the generation of more ideas. It would be useful to explore whether subgroups would elicit deeper discussions and thereby better outcomes. Addition of breaks could be introduced to avoid 'Zoom-fatigue' (Nadler 2020).

Discussions during the voting process are encouraged for 'cross fertilisation' of ideas (Delph *et al.* 1977). Though beneficial, this is where the democratic nature of the NGT dwindles as assertive voices dominate. The virtual NGT mitigates this, as it provides additional ways for participants to contribute on an equal level: virtual hand-raising, the chat function, and only one person being able to speak at a time.

Through adaptation of the NGT online, the authors make a novel contribution to research through providing a contemporary way of making the approach accessible. It assists long-standing attempts to enhance engagement of excluded groups and challenges unequal participation in international events, due to accessibility such as travel costs and visa constraints. That said, there should be a focus on deliberate selection of excluded groups and programmed familiarisation with online social norms.

## LIMITATIONS

Our limited foresight could have made it easier for the group to see priorities for 2030, but challenging to imagine circumstances beyond 2050. Many of the issues related to outcomes rather than a means of implementation. This may have been due to the wording or interpretation of the question. Although participants were from a range of backgrounds, the heterogeneity of experiences was limited. They were enrolled on the same course, which likely influenced contributions, limiting the external validity of outcomes. Additionally, all are from the privileged minority who have a platform to comment on but do not live all aspects of the reality they study.

## CONCLUSION

This paper explores the use of an online NGT to enhance equitability in global agenda setting through the example of an international group of graduate WaSH students; and determines their priority WaSH issues for global targets post-2030 and -2050. The resultant WaSH priorities concerned contemporary issues, which move beyond the three basic components of WaSH. The novel priorities related to sustainability, climate resilience, water conservation, and the circular economy of WaSH systems and products. The group emphasised the need to broaden the scope of hygiene and to have an explicit target for menstrual health. They stressed the necessity of including vulnerable and hard-to-reach people and non-household settings. The COVID-19 pandemic assumedly influenced participants' discussions on preventing infectious disease transmission before reaching pandemic status. The NGT has the potential to contribute to improving the agenda setting process by lowering barriers to participation and encouraging the inclusive generation of ideas. Adapting it to an online format enhanced inclusivity, whereby individuals equally contributed from different global locations. In wider application, participant selection is critical. We believe that shifting towards the use of participatory tools such as a virtual NGT can bolster more equitable future agenda setting and thus improve GTIs and their outcomes.

## DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

## CONFLICT OF INTEREST

The authors declare there is no conflict.

## REFERENCES

- Barrington, D. J., Robinson, H. J., Wilson, E. & Hennegan, J. 2021 *Experiences of menstruation in high income countries: a systematic review, qualitative evidence synthesis and comparison to low- and middle-income countries*. *PLoS ONE* **16** (7), 1–4. <https://doi.org/10.1371/journal.pone.0255001>.
- Bartunek, J. M. & Murningham, J. K. 1984 *The Nominal Group Technique: expanding the basic procedure and underlying assumptions*. *Group and Organization Studies* **9** (3), 417–432. <https://doi.org/10.1177/02F105960118400900307>.
- Behnke, N., Cronk, R., Snel, M., Moffa, M., Tu, R., Banner, B., Folz, C., Anderson, D., Macintyre, A., Stowe, E. & Bartram, J. 2018 *Improving environmental conditions for involuntarily displaced populations: water, sanitation, and hygiene in orphanages, prisons, and refugee and IDP settlements*. *Journal of Water, Sanitation and Hygiene for Development* **8** (4), 785–791. <https://doi.org/10.2166/washdev.2018.019>.

- Berti, B. 2015 What Are the Universal Human Rights? - Benedetta Berti. TED-Ed. Available from: [https://www.youtube.com/watch?v=nDgIVseTkuE&ab\\_channel=TED-Ed](https://www.youtube.com/watch?v=nDgIVseTkuE&ab_channel=TED-Ed) (accessed 17 February 2023).
- Caruso, B. A., Conrad, A., Salinger, A., Patrick, M., Youm, A. & Sinharoy, S. 2021 WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation, and Hygiene: A Conceptual Framework to Inform National and Global Monitoring of Gender Equality in WASH. Available from: [jmp-2021-gender-review-conceptual-framework.pdf](http://washdata.org/jmp-2021-gender-review-conceptual-framework.pdf) (washdata.org) (accessed 22 June 2021).
- Chapman, A. R. 2016 Assessing the universal health coverage target in the Sustainable Development Goals from a human rights perspective. *BMC International Health and Human Rights* **16**, 33. <https://doi.org/10.1186/s12914-016-0106-y>.
- Consortium on Gender, Security and Human Rights 2017 Feminist Critiques of the Sustainable Development Goals. Analysis and Bibliography. Available from: [https://genderandsecurity.org/sites/default/files/Feminist\\_Critiques\\_of\\_the\\_SDGs\\_-\\_Analysis\\_and\\_Bibliography\\_-\\_CGSHR.pdf](https://genderandsecurity.org/sites/default/files/Feminist_Critiques_of_the_SDGs_-_Analysis_and_Bibliography_-_CGSHR.pdf) (accessed 14 January 2022).
- Curtis, V. 2019 Explaining the outcomes of the 'Clean India' campaign: institutional behaviour and sanitation transformation in India. *BMJ Global Health* **4** (5), e001892. <https://doi.org/10.1136/bmjgh-2019-001892>.
- Delph, P., Thesen, A., Motiwalla, J. & Seshardi, N. 1977 *International Development Institute: Systems Tools for Project Planning*. Bloomington, Indiana. Available from: [http://www.aucd.org/docs/urc/Leadership\\_Institute/Subsequent%20Leadership%20Institute%20Materials/Nominal%20Group%20Technique.pdf](http://www.aucd.org/docs/urc/Leadership_Institute/Subsequent%20Leadership%20Institute%20Materials/Nominal%20Group%20Technique.pdf) (accessed 14 January 2022).
- Eisenmenger, N., Pichler, M., Krenmayr, N., Noll, D., Plank, B., Schalmann, E., Marie-Theres Wandl, M. & Gingrich, S. 2020 The Sustainable Development Goals prioritize economic growth over sustainable resource use: a critical reflection on the SDGs from a socio-ecological perspective. *Sustainability Science* **15**, 1101–1110. <https://doi.org/10.1007/s11625-020-00813-x>.
- Fonseca, C. 2014 IRC: Affordability of WASH Services: Rules of Thumb and Why It's Difficult to Measure. Available from: <https://fr.ircwash.org/node/77131> (accessed 15 August 2021).
- Goldenberg, S. 2014 The Guardian: Climate Change: The Poor Will Suffer Most. Available from: <https://www.theguardian.com/environment/2014/mar/31/climate-change-poor-suffer-most-un-report> (accessed 1 May 2021).
- Hennegan, J., Winkler, I. T., Bobel, C., Keiser, D., Hampton, J., Larsson, G., Chandra-Mouli, V., Plesons, M. & Mahon, T. 2021 Menstrual health: a definition for policy, practice, and research. *Sexual and Reproductive Health Matters* **29** (1), 1911618. <https://doi.org/10.1080/26410397.2021.1911618>.
- Horan, D. 2019 Compensation strategies to enact new governance frameworks for SDG transformations. *Public Sector Economics* **43** (4), 375–400.
- Horton, J. N. 1980 Nominal Group Technique. A method of decision-making by committee. *Anaesthesia* **35**, 811–814.
- Hugé, J. & Mukherjee, N. 2018 The Nominal Group Technique in ecology & conservation: application and challenges. *Methods in Ecology and Evolution* **9** (1), 33–41. <http://dx.doi.org/10.1111/2041-210X.12831>.
- International Scientific Forum on Home Hygiene (IFH) 2021 Home Hygiene & Health: The Leading Source of Scientific, Professional & Consumer Information. Available from: <https://www.ifh-homehygiene.org/> (accessed 1 May 2021).
- JMP 2015 WHO, JMP and UNICEF: Drinking Water. Available from: <https://washdata.org/monitoring/drinking-water> (accessed 5 January 2022).
- JMP 2017 WHO, JMP and UNICEF: Progress on Drinking Water, Sanitation and Hygiene. Update and SDG Baselines. Launch version July 12 Main report. Available from: <https://www.who.int/mediacentre/news/releases/2017/launch-version-report-jmp-water-sanitation-hygiene.pdf> (accessed 17 August 2021).
- JMP 2020 WHO, JMP and UNICEF: Integrating water quality testing into household surveys: thematic report on drinking water. Integrating water quality testing into household surveys (who.int) (accessed 17 August 2021).
- JMP 2021a WHO, JMP and UNICEF: The measurement and monitoring of water supply, sanitation and hygiene (WASH) affordability: a missing element of monitoring of Sustainable Development Goal (SDG) targets 6.1 and 6.2. (who.int) (accessed 2 October 2021).
- JMP 2021b WHO, JMP and UNICEF: Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs. (who.int) (accessed 2 October 2021).
- JMP 2021c WHO, JMP and UNICEF: State of the world's hand hygiene: a global call to action to make hand hygiene a priority in policy and practice. (who.int) (accessed 14 December 2021).
- Kumar, S., Kumar, N. & Vivekadhish, S. 2016 Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs): addressing unfinished agenda and strengthening sustainable development and partnership. *Indian Journal of Community Medicine* **41** (1), 1–4. <https://doi.org/10.4103/0970-0218.170955>.
- Langan, M. 2018 The UN sustainable development goals and neo-colonialism. In: *Neo-Colonialism and the Poverty of 'Development' in Africa*. Contemporary African Political Economy (E. N. Sahle, ed.). Palgrave Macmillan, Cham.
- Lu, L., Guest, J. S., Peters, C. A., Zhu, X., Rau, G. H. & Ren, Z. J. 2018 Wastewater treatment for carbon capture and utilization. *Nature Sustainability* **1**, 750–758. <https://doi.org/10.1038/s41893-018-0187-9>.
- Luh, J., Baum, R. & Bartram, J. 2013 Equity in water and sanitation: developing an index to measure progressive realization of the human right. *International Journal of Hygiene and Environmental Health* **216** (6), 662–671.
- Luseka, E. 2020 Medium: Initiating De-colonisation of WASH Sector Knowledge. Available from: [https://medium.com/@euphresia\\_juseka/initiating-de-colonization-of-wash-sector-knowledge-c8ad0a9f8d6](https://medium.com/@euphresia_juseka/initiating-de-colonization-of-wash-sector-knowledge-c8ad0a9f8d6) (accessed 1 May 2021).
- Mara, D. & Evans, B. 2018 The sanitation and hygiene targets of the sustainable development goals: scope and challenges. *Journal of Water, Sanitation and Hygiene for Development* **8** (1), 1–16.

- Moore, C. 1987 *Group Techniques for Idea Building*. Sage, London, UK.
- Mukherjee, N., Zabala, A., Huye, J., Nyumba, T. O., Esmail, B. A. & Sutherland, W. J. 2017 Comparison of techniques for eliciting views and judgements in decision-making. *Methods in Ecology and Evolution* **9** (1), 54–63.
- Nadler, R. 2020 Understanding 'Zoom fatigue': theorizing spatial dynamics as third skins in computer-mediated communication. *Computers and Composition* **58**, 102613. <https://doi.org/10.1016/j.compcom.2020.102613>.
- Ordaz, E. 2019 The SDGs indicators: a challenging task for the International Statistical Community. *Global Policy* **10**, 141–143. <https://doi.org/10.1111/1758-5899.12631>.
- Pati, S., Kadam, S. S. & Chauhan, A. S. 2014 Hand hygiene behavior among urban slum children and their care takers in Odisha, India. *Journal of Preventive Medicine and Hygiene* **55** (2), 65–68.
- Prendergast, A. J., Gharpure, R., Mor, S., Viney, M., Dube, K., Lello, J., Berger, C., Siwila, J., Joyeux, M., Hodobo, T., Hurt, L., Brown, T., Hoto, P., Tavengwa, N., Mutasa, K., Craddock, S., Chasekwa, B., Robertson, R. C., Evans, C., Chidhanguro, D., Mutasa, C., Majo, F., Smith, L. E., Hirai, M., Ntozini, R., Humphrey, J. H. & Berendes, D. 2019 Putting the 'A' into WaSH: a call for integrated management of water, animals, sanitation, and hygiene. *The Lancet* **3** (8), E336–E337.
- Rankin, N. M., McGregor, D., Butow, P. N., White, K., Phillips, J. L., Young, J. M., Pearson, S. A., York, S. & Shaw, T. 2016 Adapting the nominal group technique for priority setting of evidence-practice gaps in implementation science. *BMC Medical Research Methodology* **16** (110). doi:10.1186/s12874-016-0210-7.
- Sachs, J. D., Schmidt-Traub, G. & Lafortune, G. 2020 Sustainable Development Solutions Network (SDSN): Speaking Truth to Power about the SDGs. Working Paper. UN. Available from: <http://www.indiaenvironmentportal.org.in/files/file/Speaking-Truth-to-Power-about-the-SDGs.pdf> (accessed 5 January 2021).
- Sadiku, E. 2016 Bartos Institute for Constructive Engagement of Conflict: The Sustainable Development Goals – Westernizing 'Developing' Countries. Available from: <https://scalar.usc.edu/works/cec-journal-issue-2/the-sustainable-development-goals-westernizing-developing-countries> (accessed 5 November 2021).
- Seneviratne, S. I., Nicholls, N., Easterling, D., Goodess, C. M., Kanae, S., Kossin, J., Luo, Y., Marengo, J., McInnes, K., Rahimi, M., Reichstein, M., Sorteberg, A., Vera, C. & Zhang, X. 2012 Changes in climate extremes and their impacts on the natural physical environment. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, Cambridge University Press, Cambridge, UK.
- Setty, K., Jean-Francoise, L., Courtois, S., Hammer, C. C., Hartemann, P., Lafforgue, M., Litrico, X., Manasfi, T., Medema, G., Shaheen, M., Tesson, V. & Bartram, J. 2019 Faster and safer: research priorities in water and health. *International Journal of Hygiene and Environmental Health* **222** (4), 593–606.
- Setty, K., Jiménez, A., Willetts, J., Leifels, M. & Bartram, J. 2020 Global water, sanitation and hygiene research priorities and learning challenges under Sustainable Development Goal 6. *Development Policy Review* **38** (1), 64–84.
- Sharma, V. 2021 Human rights are a form of neo-colonialism and cannot, therefore, address the neo-colonial injustices of the neoliberal global order. *Advance*. Preprint. <https://doi.org/10.31124/advance.13698982.v1>
- Shetty, S. 2018 Decolonising Human Rights. London School of Economics. Available from: <https://www.amnesty.org/en/latest/news/2018/05/decolonizing-human-rights-salil-shetty/> (accessed 17 February 2023).
- Sommer, M., Caruso, B. A., Torondel, B., Warren, E. C., Yamakoshi, B., Haver, J., Long, J., Mahon, T., Nalinponguit, E., Okwaro, N. & Phillips-Howard, P. A. 2021 Menstrual hygiene management in schools: midway progress update on the 'MHM in Ten' 2014–2024 global agenda. *Health Research Policy & Systems* **19** (1). <https://doi.org/10.1186/s12961-020-00669-8>.
- Suhlrie, L., Bartram, J., Burns, J., Joca, L., Tomaro, J. & Rehfuess, E. 2018 The role of energy in health facilities: a conceptual framework and complementary data assessment in Malawi. *PLoS ONE* **13** (7), e0200261.
- UNICEF 2017 Nearly 600 million children will live in areas with extremely limited water resources by 2040 – UNICEF. Available from: <https://www.unicef.org/press-releases/nearly-600-million-children-will-live-areas-extremely-limited-water-resources-2040> (accessed 1 May 2021).
- United Nations 2015 Department of Economic and Social Affairs: Sustainable development ensure availability and sustainable management of water and sanitation for all. Available from: <https://sdgs.un.org/goals/goal6> (accessed 1 May 2021).
- Vonen, H. D., Olsen, M. L., Eriksen, S. S., Jervelund, S. S. & Eikemo, T. A. 2021 Refugee camps and COVID-19: can we prevent a humanitarian crisis? *Scandinavian Journal of Public Health* **49** (1), 27–28. <https://doi.org/10.1177/1403494820934952>.
- WaterAid 2021a Implementing Political Will Effective Leadership in Delivering WASH for All. Available from: <https://washmatters.wateraid.org/sites/g/files/jkxoo256/files/implementing-political-will-effective-leadership-in-delivering-wash-for-all.pdf> (accessed 1 May 2021).
- WaterAid 2021b Climate Change. Available from: <https://washmatters.wateraid.org/climate-change> (accessed 1 May 2021).
- WHO 2021 Affordability of WASH must be defined and tracked if 2030 Global Goals are to be met: new report. Available at: <https://www.who.int/news/item/03-05-2021-affordability-of-wash-must-be-defined-and-tracked-if-2030-global-goals-are-to-be-met-new-report> (accessed 3 August 2023).
- Winkler, I. T. & Williams, C. 2017 The Sustainable Development Goals and human rights: a critical early review. *The International Journal of Human Rights* **21** (8), 1023–1028. doi:10.1080/13642987.2017.1348695.
- World Bank 2016 World Development Report 2016: Digital Dividends. Available from: <https://www.worldbank.org/en/publication/wdr2016> (accessed 20 August 2021).

- World Bank 2019 2019 Update: How Long Do Refugees Stay in Exile? To Find Out, Beware of Averages. <https://blogs.worldbank.org/dev4peace/2019-update-how-long-do-refugees-stay-exile-find-out-beware-averages> (accessed 17 August 2021).
- World Economic Forum. 2021 Here's Why Putting a Price on Safe Water Will Ensure Universal Access to It. <https://www.weforum.org/agenda/2021/08/heres-why-putting-a-price-on-clean-water-will-ensure-universal-access-to-it> (accessed 13 October 2022).
- Worsham, K., Sylvester, R., Hales, G., McWilliams, K. & Luseka, E. 2021 Leadership for SDG 6.2: is diversity missing. *Environmental Health Insights* **15** (1). <https://doi.org/10.1177/11786302211031846>

First received 18 November 2022; accepted in revised form 24 July 2023. Available online 3 August 2023