

## PERSPECTIVE OPEN

# Policy review of the means of implementation targets and indicators for the sustainable development goal for water and sanitation

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The Sustainable Development Goals, adopted by the Member States of the United Nations in September 2016, contain both 'Outcome' and 'Means of Implementation' targets. However, there is generally weak evidence linking the Means of Implementation to outcomes, they are imperfectly conceptualised and inconsistently formulated, and tracking their largely qualitative indicators will be difficult. In this paper, we analyse and critique the Means of Implementation targets of the Sustainable Development Goal on water and sanitation (SDG6). Improvements are recommended that would reflect: the considerable investment needed to attain SDG6; the important role of the state, including government leadership and planning; the utility of disaggregating financial and capacity-building assistance; and the need for people to realise their rights to information, voice and remedy. Recommendations are also made for relevant indicators, including indicators that are applicable to governments in both aid-providing and aid-receiving countries.

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## INTRODUCTION

The 2015 Sustainable Development Goals (SDGs) are 'a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity'.<sup>1</sup> They differ from the previous Millennium Development Goals. Notably they contain both 'Outcome' (circumstances to be attained) and 'Means of Implementation' (Mol) targets. The UN defines Mol as 'the interdependent mix of financial resources, technology development and transfer, capacity-building, inclusive and equitable globalisation and trade, regional integration, as well as the creation of a national enabling environment required to implement the new sustainable development agenda'.<sup>2</sup> The Mol targets were introduced late in the process of negotiation of the SDGs and provided a way to accommodate some of the concerns of Member States regarding how the SDGs were to be achieved.

The first 16 SDGs each include number-designated outcome targets (e.g., 6.1, 6.2) and two to four letter-designated Mol targets (e.g., 6a, 6b), while Goal 17 'Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development' is wholly about how the SDGs will be achieved.

There is generally weak evidence linking Mol to outcomes; they are imperfectly conceptualised and inconsistently formulated; and tracking of their indicators will be difficult because many are not quantitative. The Mol warrant scrutiny, especially of their necessity, sufficiency, universal applicability and acceptability—both to the member states who are the direct adopters, and to diverse stakeholders who are their underlying constituency.

While the distinction between outcomes and means of implementation is intuitive, its application is inconsistent. For

instance, within SDG10, 'Reducing inequality', Mol Target 10c resembles an outcome target: 'By 2030, reduce to less than 3% the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5%'. Within SDG6, Outcome Target 6.5 relates to management approaches: 'By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate', and resembles an Mol.

## SDG6: 'ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL'

This paper examines the Mol targets of SDG6. SDG6 combines consideration of the management of freshwater resources, the delivery of drinking-water and sanitation services and the practice of safe hygiene behaviours. It reflects both the increasing stresses on water ecosystems and associated management needs, and the high levels of access and increasing levels of service with drinking water and sanitation. The eight targets of SDG 6, plus 10 other water-related targets within other Goals, represent a substantive increase in the relative importance given to water and sanitation compared to the MDG agenda.

SDG6 combines six outcome targets (6.1–6.6), and two Mol targets (6a and 6b) which implicitly apply to all outcome targets, and to the overall goal. The Mol targets and their associated indicators<sup>1</sup> are:

Target 6a: By 2030, expand international cooperation and capacity-building support to developing countries in water-

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and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

- Indicator 6.a.1: Amount of water and sanitation-related official development assistance that is part of a government coordinated spending plan

Target 6b: Support and strengthen the participation of local communities in improving water and sanitation management

- Indicator 6.b.1: Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

Monitoring of the SDG6 Mol targets and associated indicators is under the co-custodianship of WHO, through the UN-Water Global Analysis and Assessment of Sanitation and Drinking-water (GLAAS) initiative, in collaboration with UN Environment and the Organisation for Economic Co-operation and Development (OECD).

In this analysis, we: reflect on the adequacy (necessity and sufficiency) of the Mol targets for SDG 6; analyse the current formulation of these targets and their proposed indicators; and make recommendations for improvement. This is intended to contribute to the review of SDG6 at the High Level Political Forum on Sustainable Development in 2018 and to the process of review of the performance of indicators in 2020 and 2024.

## MEANS OF IMPLEMENTATION OF SDG6

The Mol targets for SDG6, as currently formulated, address international cooperation (Target 6a) and participation (Target 6b).

### Target 6a

Target 6a concerns the proposition, at the heart of much of international development policy, that countries may and should provide assistance to one another. The reference to 'developing countries' relates to the proposition that privileged countries have a moral obligation to assist those in greater need, enshrined in the International Covenant on Economic, Social and Cultural Rights, which requires UN Member States 'to take steps...to the maximum of their available resources' to achieve progressively the full realisation of economic, social and cultural rights.<sup>3</sup> In its 1990 General Comment No. 3 on The Nature of States Parties' Obligations, the UN Committee on Economic, Social and Cultural Rights noted 'the phrase "to the maximum of its available resources" was intended by the drafters of the Covenant to refer to both the resources existing within a State and those available from the international community through international cooperation and assistance'.<sup>4</sup>

The references to 'international cooperation' and 'developing countries' have been taken to mean that the target relates to Official Development Assistance (ODA); that is, the aid that is provided from a donor country to a recipient country. The indicator for Target 6a is the amount of water- and sanitation-related ODA that is part of a government-coordinated spending plan. However, there is no convincing evidence for a general effect of volume of ODA finance on WaSH progress.<sup>5</sup> The reality is that water and sanitation in developing countries are largely funded from domestic resources, principally tariff payments by users and public finance derived from taxation. Thus, ODA should be used to leverage and optimise these funds, which are managed by

governments and service providers. Moreover, ODA should comply with basic principles of development effectiveness to build sustainability and avoid self-perpetuation.<sup>6</sup>

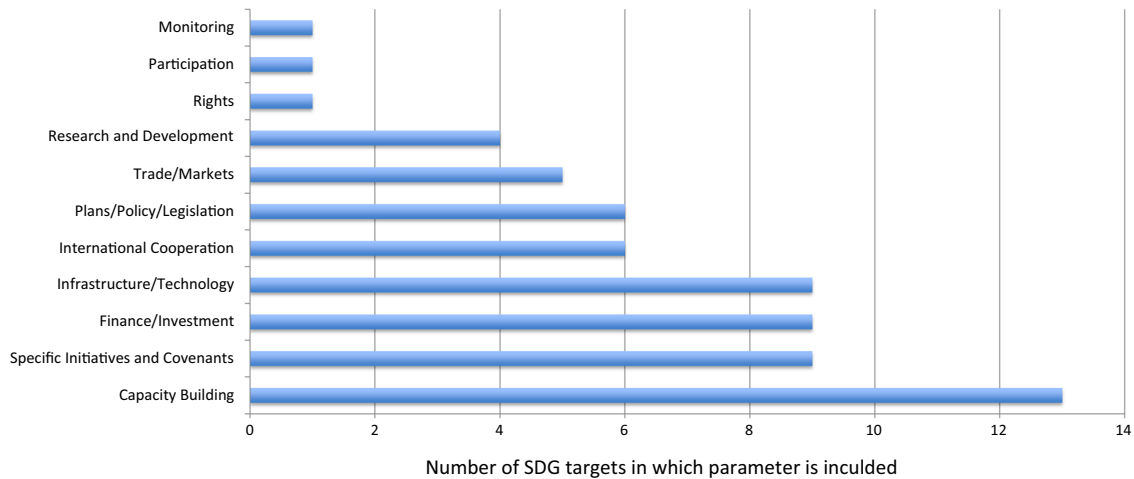
The wording of Target 6a ('... expand international cooperation and capacity-building support ...') suggests that assistance from one country to another should include capacity-building and account for it separately. The distinction between financing and technical or capacity building assistance is frequent in development literature, but data that differentiate these for water and sanitation are not systematically available. Indeed, aggregation of all ODA by financial value may, perversely, disincentivise capacity-building. The lack of data on aid volume by type and quality hinders comparative examination of the impact of capacity-building and financial assistance, which is especially important given the weak evidence for beneficial impact of financial aid by volume.<sup>5</sup> The proposed indicator, unlike the target, assumes international cooperation is primarily ODA, which excludes activities by other development partners such as NGOs, and that its expansion is open-ended. It also fails to distinguish between ODA in the form of grants, and that in the form of loans, concessional or otherwise, whose repayment falls to the taxpayers of the recipient country.

Indicator 6.a.1 is not fully consistent with the SDG claim to be: '... an Agenda of unprecedented scope and significance. It is accepted by all countries and is applicable to all... developed and developing countries alike'.<sup>7</sup> By defining countries as either only providers or only recipients of ODA, the indicator oversimplifies reality. For instance, it does not apply to assistance offered to one country by another in the form of advice or knowledge based on a country's experience with dealing with a particular challenge or problem. Target 6a should apply to all types of international cooperation, not just to developing countries, in the spirit of the SDGs themselves.

However indicator 6.a.1 does address the contribution of ODA to strengthening government systems in recipient countries, and in particular to strengthening recipient government leadership of planning. This reflects the 2005 Paris Declaration on Aid Effectiveness, which committed signatories to improving the quality of aid and its impact on development. Under it, donors committed to 'respect partner country leadership and help strengthen their capacity to exercise it' and recipient countries committed to 'exercise leadership in developing and implementing their national development strategies'.<sup>6</sup> This is also an essential element of the 'Collaborative Behaviours' for development effectiveness in water, sanitation and hygiene, adopted by the Sanitation and Water for All partnership (<http://sanitationandwaterforall.org/about/the-four-swa-collaborative-behaviours/>).

A more appropriate measure to monitor in aid-dependent countries is the proportion of ODA that is part of a government-coordinated spending plan in the recipient countries, and this is in fact the wording of the most recent statistical background note to indicator 6.a.1. In countries where there are substantial flows of ODA through budget support arrangements, this encourages donors to work with their government partners, and would provide an indicator of the extent to which ODA-providing countries have respected their aid-effectiveness commitments, and of the extent to which recipient country governments are exercising leadership in planning. However, government spending plans tend to focus on infrastructure spending (CAPEX), which absorbs more investment than capacity building or other 'soft' interventions, so this indicator has the disadvantage of emphasising this type of investment. There is also a risk this will lead to a lack of attention to the ongoing funding and development needs of institutions providing operation and maintenance services (OPEX).

Target 6a mentions several approaches specifically, 'water harvesting, desalination, water efficiency, wastewater treatment,



**Fig. 1** Frequency of occurrence of means of implementation parameters in SDG targets (data extracted from<sup>1</sup> by authors)

recycling and reuse technologies'. This is far from a comprehensive list of solutions in water and sanitation, may reflect the result of lobbying rather than a logical structure, and the omission of hygiene has attracted comment. However it does include approaches that are relevant to both developed and developing countries, true to the SDG vision of shared international priorities. Nevertheless, it is increasingly recognised that, because of the diversity of circumstances, there can be no single approach to water resource management<sup>8</sup> and that national and regional institutions should be supported to develop arrangements appropriate to their circumstances.

#### Target 6b

Target 6b focuses on 'local communities' and their participation in improving management. Of the 43 SDG Mol targets, it is the only one concerning public participation in management of resources or services.

The wording of Target 6b could be interpreted as focusing either on participation or on improving management. The former relates to the 'capabilities' approach and human rights perspectives and is primarily concerned with the impact of participation on the individual (participant). The latter places improvement in management at the centre. While the two are not contradictory, each would suggest different indicators.

Both access to information and participation are principles of the human rights to safe drinking water and sanitation which: 'can only be realised effectively through full, free and meaningful participation in decision-making by people affected by the decisions'.<sup>9</sup>

Alternatively, if the underlying intent concerns improving management, it likely derives from the concept of 'community management', developed during the 1960s, and promoted during the 'Water Decade' (1980s) and rural water reforms in the 1990s. It was presumed that it would improve sustainability and make communities responsible for ongoing costs of operation, maintenance, repair and potentially replacement and upgrade.<sup>10</sup> Community management has been described as entailing both a shrinking of the state and a form of people's empowerment.<sup>11</sup> The success of community management has been questioned, and evidence suggests that it may work with external support, but is often unreliable in its absence. There are also concerns that it places a disproportionate burden on the poorest, in part because it is overwhelmingly used in rural areas, where a larger proportion of the population is poor.

In larger, especially utility-managed, systems, 'participation' more frequently takes the form of payment for services, right-to-

know about the quality of service received and the rights, collectively and individually, to voice and remedy.<sup>12</sup> In the case of sanitation, much of the global population uses household-level on-site systems, which are "managed" by the household itself. The importance of stakeholder engagement has been emphasised in water resources management since 1977 and has been controversial where efforts have focused on specific groups (such as riparian or basin residents) as opposed to formal collectives (such as local government and water utility institutions, that serve a large family of users). There is nonetheless growing awareness of the need to ensure that there is voice for interested groups at different scales across the complex water resource management terrain and evidence that it contributes to more effective decision-making.

Indicator 6.b.1 refers to policies and procedures for participation of local communities in management, echoing the vocabulary of the target. In small communities, the demand that community members 'participate' to improve management of small systems requires a complementary support function and the indicator reflects a condition that is necessary but insufficient to improve management. The indicator potentially captures one (right to voice) of several necessary factors for participation to improve management through citizen voice and the opportunity to express concerns over decisions made by service providers and by all levels of government. It assumes that 'local administrative units' are responsible to establish 'operational policies and procedures' but this is uncertain—the associated policies may often be established by central government and in many urban areas they may be operationalized by utilities.

Alarming, neither target nor indicator address the right to information nor the role of users in decision-making. Citizen voice could include voicing preferences when investment decisions or resource allocations are being made, or voicing concern over ongoing management, such as tariffs. The OECD's principles on water governance are useful here, as they bridge the contested normative approaches of Integrated Water Resources Management and more generic integrated management of water resources approaches, while addressing mechanisms through which stakeholders can be informed about, and contribute to, water management decisions.

#### COMPARISON OF SDG6 MOI WITH OTHER MOI TARGETS

A review of the 43 Mol targets associated with SDGs 1–16 shows that some parameters are common to several (Fig. 1).

Finance and the need for infrastructure are each the subject of eight Mol targets. However, the SDG6 Mol targets contain no

references to either, excepting the modest financing through ODA.<sup>5</sup> This is despite the fact that annually USD 114 billion are needed for capital costs alone to achieve targets 6.1 and 6.2 by 2030;<sup>13</sup> estimates to reach the other targets of SDG6 will also have enormous financing requirements. Capacity building is mentioned, but only in the context of international support; despite a capacity deficit that will require both domestically initiated and financed and aid-supported initiatives. Conspicuously there are no references in the SDG6 Mol targets to the need for comprehensive legislation, robust policy or detailed financing planning, even though there is ample evidence that these foundations are lacking in many countries.<sup>14</sup> The lack of reference to monitoring contrasts with deficits in international monitoring of targets 6.3–5, 6a and 6b; and of the unrealised potential of national monitoring to enhance policy, programming and practice.

The SDG framework for water should stimulate progress on all major water challenges. However sustainable water resources management to satisfy all water needs is weakly represented by Target 6.5, which resembles an Mol. Overdraft of aquifers is a major concern; and local conflicts on water resources may multiply and worsen. International cooperation (here transboundary water management) is reflected in the Mol of several SDGs. However, while the notion of an inter-sectoral 'Nexus' among water, energy, food and climate is increasingly recognised,<sup>14</sup> intersectoral action, while implicit in SDG6.5, is otherwise absent among Mols.<sup>15</sup>

## RECOMMENDATIONS

There are precedents for major changes to development goals. For example, the inexplicable omission of sanitation from the Millennium Development Goals in 2001 was remedied in 2002 by a simple insertion into the target wording.<sup>16</sup> Similarly, other fundamental issues, such as affordability, were sequentially deleted and reinserted.<sup>16</sup>

The SDG6 Mol targets and associated indicators could be substantively improved. We call on the international community to consider such improvement, including:

- Revise 6a to reflect the need for: (a) considerable investment to achieve SDG6 that will not come exclusively from ODA; (b) government leadership and planning, and the obligation for entities wishing to accelerate progress on SDG 6 to foster them; and (c) breadth and quality, in development effectiveness terms, of international cooperation, disaggregating financial and capacity-building assistance. Further, to adopt indicators that are applicable to governments in both aid-providing and aid-receiving countries, as well as non-governmental aid-providing entities, in the spirit of mutual accountability. Data are increasingly available for some of these components and adoption of appropriate targets would encourage refinement of data collection and adoption of best practices.
- Revise 6b to better reflect the rights to information, voice and remedy. Develop an associated indicator that would better reflect the proportion of the population with effective access to these rights, rather than the proportion of administrative entities with policies and procedures of unknown implementation.
- Insert an Mol target, with appropriate indicators, reflecting the role of the state, and the need for: (a) national planning; (b) innovation in areas of deficiency, including sharing of innovation; and (c) the necessary human capacity through capacity building with emphasis on renewal and updating. Incorporate into this a converted SDG Target 6.5 'By 2030, implement integrated management of water resources at all levels, including through transboundary cooperation as appropriate', and develop appropriate indicators that

encourage acceleration of the pace of progress, including resilience and adaptability to stressors such as climate change and population movements.

Each of these targets and indicators is universally relevant—applicable to countries at all stages of development; and reasonable in that each is underpinned by principles that are established and widely accepted. Further, they are collectively sufficient to dramatically accelerate progress overall and towards equality within and between nations—itsself a major feature of the evolution from the MDGs to the SDGs that is not reflected in the SDG6 Mols. Adapting and adopting them would set the basis for a shared water-secure future characterised by cooperation, resilience and adaptability.

The consensus achieved by UN member states in formulating and agreeing to the SDGs is considered miraculous by many. It is fragile, and deserving of all possible support—as such this critique is intended to contribute positively to their effective implementation and beneficial impact. Amending targets is discouraged, but indicators are more amenable to revision, and there are precedents for collecting data on additional indicators in order to shed light on important issues. The associated monitoring efforts, including GLAAS, should continue to experiment, evaluate and learn, to provide evidence to inform actions for improvement as well as to refine the monitoring enterprise itself. We recommend adjustments, aligned with the universal nature of the SDGs, with less differentiation between 'donor' and 'developing' countries, that provide incentives to give all people voice in decision-making around water and sanitation, track progress in investing in both capital and operational aspects, and highlight the leadership role of governments in tackling climate change, adjusting to population growth, and ultimately reaching universal access to water and sanitation.

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All authors contributed to the initial conceptualisation of the work. All authors contributed substantively to the final written version and agree with its content. J.B. and C.B. prepared the first full draft of this manuscript, are co-first-authors and serve as guarantors.

## ADDITIONAL INFORMATION

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## REFERENCES

1. Sustainable Development Goals. <http://www.undp.org/content/undp/en/home/sustainable-development-goals.html>. Accessed 6 Feb 2018.
2. Department of Economic and Social Affairs and the United Nations Development Programme. TST issues brief: means of implementation; Global partnership for

- achieving sustainable development. [https://sustainabledevelopment.un.org/content/documents/2079Issues%20Brief%20Means%20of%20Implementation%20Final\\_TST\\_141013.pdf](https://sustainabledevelopment.un.org/content/documents/2079Issues%20Brief%20Means%20of%20Implementation%20Final_TST_141013.pdf) (2014).
3. Key concepts on ESCRs - What are the obligations of States on economic, social and cultural rights? <http://www.ohchr.org/EN/Issues/ESCR/Pages/WhatAreTheObligationsOfStatesOnESCR.aspx>. Accessed 19 June 2017.
  4. UN Committee on Economic, Social and Cultural Rights (CESCR). General comment no. 3: The nature of States Parties' obligations (Art. 2, Para. 1, of the Covenant), 14 December 1990, E/1991/23. <http://www.refworld.org/docid/4538838e10.html>. Accessed 19 June 2017.
  5. Bain, R., Luyendijk, R., and Bartram, J. *Universal Access to Drinking-water: The Role of Aid*. WIDER Working Paper no. 2013/088. ISBN 978-92-9230-665-6. (UNU-WIDER, 2013).
  6. Paris Declaration on Aid Effectiveness and the Accra Agenda for Action. <http://www.oecd.org/dac/effectiveness/34428351.pdf> (OECD, 2005/2008).
  7. Anon. *General Assembly Resolution 70/1—Transforming Our World: The 2030 Agenda for Sustainable Development*. (United Nations, New York, 2015).
  8. Anon. *OECD Principles on Water Governance*. (OECD, Paris, 2015).
  9. De Albuquerque C. *Realising the Human Rights to Water and Sanitation: A Handbook by the UN Special Rapporteur*, Introduction, p. 31 (2014).
  10. Briscoe, J. & Ferranti, D. *Water for Rural Communities: Helping People Help Themselves*. (World Bank, Washington, DC, 1988).
  11. Chowns, E. Is community management an efficient and effective model of public service delivery? Lessons from the rural water supply sector in Malawi. *Public Adm. Dev.* **35**, 263–276 (2015).
  12. Muller, M., Simpson, R. and Van Ginneken, M. *Ways to Improve Water Services By Making Utilities More Accountable to Their Users: A Review*. Water Working Note No. 15 (World Bank, Washington, DC, 2008).
  13. Hutton, G. & Varughese, M. *The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene*. (World Bank, Washington, 2016).
  14. Anon. UN Water Global Analysis and Assessment of Sanitation and Drinking Water. *Financing Universal Water, Sanitation and Hygiene Under the Sustainable Development Goals*. (World Health Organization, Geneva, 2017).
  15. Dodds, F., Bartram, J. (Eds). *The Water, Energy, Food and Climate Nexus: Challenges and an Agenda for Action*. (Routledge, Abingdon and New York, 2016).
  16. Bartram, J. et al. Global monitoring of water supply and sanitation: a critical review of history, methods, and future challenges. *Int. J. Environ. Res. Public Health* **11**, 8137–8165 (2014).



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