ENVIRONMENTAL SCIENCE

Being smart about SMART environmental targets

Focus on the negotiation process, not just the end target

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Global progress toward meeting the Convention on Biological Diversity (CBD) Aichi targets has recently been found wanting (*1*). The Aichi targets were intended to be SMART (specific, measurable, ambitious, realistic, and time-bound), partly in response to the perception that failure to meet the preceding global biodiversity targets resulted from their lack of SMART-ness (*2*). Negotiations are building toward the September 2015 United Nations meeting on Sustainable Development Goals (SDGs), which will influence government and business development priorities for decades. Some argue that scientists must engage with the SDG negotiation process to ensure that the environmental targets (e.g., sustainable food production and water-use efficiency) are not vague, modest, or lacking in detailed quantification (*3*). We caution against focusing only on ensuring that environmental targets are SMART and call for greater attention on the processes that lead to a target being set and met.

POLICY

A major advantage of SMART targets is that they hold signatories to account by determining whether targets have been met. They have proven effective, for example, in guiding the successful phase-out of ozone-layer-depleting chlorofluorocarbons (CFCs) under the Montreal Protocol. However, phasing out CFC use was a politically benign topic because the ecological, social, and economic benefits were clear and noncontentious (*4*). Many proposed SDG targets similarly address relatively noncontentious issues, including "by 2030 reduce the global maternal mortality ratio to less than 70 per 100,000 live births." The high degree of overlap in societal, economic, and ecological values that surround noncontentious issues allow sensible SMART targets to be agreed upon and facilitates collaboration to achieve them.

It is far more difficult to set and meet SMART targets when stakeholder values are diverse and passionately defended and the costs and benefits of reaching a target are disputed. The majority of environmental issues, such as biodiversity loss and anthropogenic climate change, fall into this category, The Copenhagen climate summit in 2009 provides one example of how the interplay between lack of consensus and ineffective use of science can produce a disappointing outcome. More recently, global progress toward those CBD Aichi targets that demand collaboration between conflicting stakeholders has been slow or moving in the wrong direction (*1*). For example, we have failed to reduce the rate of degradation and fragmentation of natural habitats (Target 5), which conflicts with agriculture, industry, and urban development.

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WIGGLE ROOM. A primary focus for international environmental accords should be to promote collaboration, trust, and innovation between stakeholders to enable long-term measurable action toward environmental sustainability. SMART targets provide a potential pathway for achieving this (*3*), but the process of building consensus and collaboration when working toward SMART targets is vital. Without this, contentious environmental issues can force environmental policy-makers to build flexibility into targets as a way to secure agreement. We identify three common pathways for providing this "wiggle room": targets that are ambiguous in definition, ambiguous in quantification, or clearly unachievable.

International signatories readily agree on targets that are ambiguous in definition because a level of increase or reduction required to meet the target is not clearly specified. For example, the 1995 United Nations Fish Stocks Agreement requires signatories to "minimize bycatch to the extent practicable" (*5*). It is possible to measure bycatch, but demonstrating that a nation has failed to meet the target is problematic because there is no agreed-upon level to which bycatch should be minimized, and what is practicable is not defined. The proposed SDG target to "by 2020, substantially reduce waste generation through prevention, reduction, recycling and reuse" is ambiguous in definition because, although the amount of waste generated is measurable, the specific degree of reduction is not specified.

Signatories may find it easier to agree on a target if it is difficult to measure progress toward it. The proposed SDG target to "halt the loss of biodiversity" specifies that there must be no biodiversity loss (a clearly defined level). But measuring changes in biodiversity is extremely difficult (*6*), so quantification is ambiguous, and signatories cannot be held accountable.

Finally, it may be easier to agree on a target so ambitious that it is clearly unachievable. Highly aspirational targets can reduce the pressure of accountability and so encourage stakeholders to become signatories. During the Ramsar Convention on Wetlands in 2002, signatories agreed to a target of "a further 55 million hectares of protected wetlands, as progress towards a global target of 250 million hectares by 2010" (*7*); a SMART target that seemed, and was, unachievable within the 2010 time frame.

Wiggle room can enable diverse stakeholders, who are reluctant to commit to SMART targets, to agree on targets that achieve at least some

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progress toward a common goal (e.g., as achieved by the Ramsar targets—more than 208 million hectares of wetlands protected as of February 2015). However, agreeing on a target that lacks transparency and accountability can lead to failed implementation as unhappy stakeholders look to "wiggle out" of their environmental obligations [e.g., the 2010 Convention on Biological Diversity targets (*2*)]. For this reason, we view wiggle room as a potentially deleterious response to the symptoms of difficult target setting negotiations and not an effective solution to the underlying problems that diverse stakeholder perspectives can cause.

BUILDING CONSENSUS. To improve prospects for developing implementable and environmentally relevant targets, a sole focus on SMART-ness is not required. The strengths of natural and social science should combine, marrying ecological understanding with conflict resolution, consensus building, and negotiation tools to move toward target setting. A number of tools have demonstrated potential to increase the influence of scientific advice in negotiations, accelerate the process by reducing conflict, and lead to more effective science-driven targets.

Game theory can provide insights into why stakeholders adopt certain positions, the conditions under which they are likely to cooperate, and the likelihood that agreement can be achieved (*8*). Smead *et al.* (*9*) used a game-theoretic approach to examine failures of, and prospects for, international climate agreements. They demonstrated that very high initial demands for greenhouse gas reductions made by numerous countries led to negotiations breaking down. They suggested that future agreements are more likely to succeed if countries (particularly large emitters) reach bilateral reduction agreements before major international meetings, as happened in late 2014 between the United States and China.

Management strategy evaluation (MSE) uses socio-ecological models to test alternative management strategies under uncertain states of the world (*10*). For example, MSE improved management of a complex multispecies fishery in southeastern Australia. Before implementing MSE, there was little consensus in this fishery on what strategies and targets were needed to improve ecological, social, and economic performance. MSE led to substantial reduction in the time required for stakeholders to agree on a management strategy from several weeks to a few days, and improved system performance (*11*).

Collaborative learning (CL) is a framework that encourages joint learning, open communication, and constructive conflict management between diverse stakeholders. Instead of demanding absolute consensus on contentious issues, CL assists stakeholders to work through issues that constrain progress toward achieving goals for the common good (*12*). By acknowledging conflict as inherent in most decisions, CL manages conflict so that negotiations are not soured by resentment. CL has been used in the United Kingdom to encourage biodiversity and recreation stakeholders to agree on evidence about effects of domestic dogs on bird populations, and to jointly produce a map showing areas of conflict and opportunity (*13*).

> ***"...[V]agueness serves a political purpose that is not resolved by greater quantification alone."***

In both MSE and CL, rather than science being used selectively by opposing sides to support or refute arguments based on normative positions, frameworks are developed that enable stakeholders to separate factual information from normative views. This facilitates joint exploration of consequences of different actions.

PRIORITIZE THE PROCESS. The geopolitical landscape makes it very difficult to change the way targets are set. To catalyze improvements in the process for future environmental agreements, those formulating targets for negotiation should consider setting explicit targets for the improvement of trust and collaboration. This is particularly important between conflicting stakeholders, given the pivotal role that trust plays at the negotiation table. Scientists can help achieve this by applying negotiation tools that have successfully resolved contentious environmental issues at local and national levels to international negotiations. Because these tools focus on improving processes, this approach may also provide support for translating internationally set targets into national scale implementation, which can be made difficult by a lack of political support or stability or a failure to integrate biodiversity issues into other policy sectors.

There are existing conduits for enabling scientific expertise to inform international policy, such as Future Earth and the Intergovernmental Platform on Biodiversity and Ecosystem Services. With its Summary for Policymakers, the Intergovernmental Panel on Climate Change demonstrates that consensus-building approaches can produce results that are acceptable for governments while retaining scientific credibility (*14*). Such initiatives could recruit researchers who study negotiation and conflict resolution and provide them a platform to support international environmental negotiations.

Science needs to inform environmental targets, to ensure their credibility and effectiveness in reducing environmental degradation. For example, Aichi Target 11—that 17% of terrestrial land area should be protected by 2020—was a negotiated compromise, rather than being based on the best available scientific advice (*15*). But agreeing on science-based targets requires scientists to take responsibility for ensuring that information is understood and constructively used; greater scientific engagement in improving the process of target-setting could help to achieve this. Rather than just providing ecological evidence to inform targets and monitor progress, scientists could have more of a role in supporting the processes of setting ecologically relevant targets and implementing resultant environmental policies.

It may be too late to avoid wiggle room in environmental targets within the SDGs. However, for the SDGs and other future environmental accords, simply arguing for quantified targets may be missing the point that vagueness serves a political purpose that is not resolved by greater quantification alone. Evidence from environmental negotiations suggests that failing to focus on the process of agreeing on targets will lead to stalled negotiations; targets that are ambiguous in definition or quantification or are unachievable; and a subsequent loss of momentum toward measurable environmental sustainability. ■

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