OVERLINE

Being smart about SMART environmental targets

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By S.L. Maxwell[1],*, E.J. Milner-Gulland[2], J.P.G. Jones[3], A.T. Knight[2], N. Bunnefeld[4], A. Nuno[5], P. Ball1, S. Earle[2], J.E.M. Watson[1,6] J.R. Rhodes[1]

1 ARC Centre of Excellence for Environmental Decisions, School of Geography, Planning and Environmental Management, The University of Queensland, Brisbane, QLD 4072, Australia.
2 Department of Life Sciences, Imperial College London, Silwood Park, Ascot SL5 7PY, UK
3 School of Environment, Natural Resources and Geography, Bangor University, Bangor, Gwynedd LL57 2DG, UK.
4 School of Natural Sciences, University of Stirling, Stirling, FK9 4LA, United Kingdom.
5 Centre for Ecology and Conservation, University of Exeter Cornwall Campus, Penryn, Cornwall TR10 9EZ, UK.
6 Wildlife Conservation Society, Global Conservation Program, 2300 Southern Boulevard, Bronx, NY 10460-1068, USA
** Correspondence to: smaxwell@uq.edu.au*

Global progress toward meeting the Convention on Biological Diversity (CBD) Aichi targets has recently been assessed and 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 was a result of their lack of SMART----ness (*2*).The UN is currently negotiating the Sustainable Development Goals (SDGs), which will define the way governments and businesses set development priorities over the next thirty years. Stafford----Smith (*3*) recently highlighted the need for scientists to better 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. However we caution that focusing only on ensuring environmental targets are SMART risks missing the point.

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 chlorofluorocarbons (CFCs). However, phasing out CFC use was a politically benign topic 37 as the ecological, social and economic benefits were clear and non----discriminatory (*4*). Many of the proposed SDG targets similarly address relatively non----contentious issues, including "by 2030 reduce the global maternal mortality ratio to less than 70 per 100,000 live births". Most stakeholders see value in improving maternal health. The high degree of overlap in societal, economic and ecological values that surround non----contentious issues allow sensible SMART targets to be agreed, 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 benefits of reaching a target are disputed. The majority of environmental issues, such as biodiversity loss and climate change, fall into this category, where science is used selectively to underpin stakeholder arguments as they compete to 'win' the policy debate through an ever----escalating data war. The disappointing Copenhagen Climate Change Summit in 2009 provides one example of this. More recently, global progress towards the Aichi targets, that demand collaboration between conflicting stakeholders, has been non----existent or moving in the wrong direction (*1*). For example, we have failed to slow the rate of degradation and fragmentation of natural habitats (Target 5) which conflicts with the agro----industry and urban development. We have also failed to bring excess nutrients to levels not detrimental to ecosystem function and biodiversity (Target 8) which conflicts with industries that profit from pesticides and oil----driven development.

A primary focus for international environmental accords should be to promote collaboration, trust and innovation between stakeholders to enable long----term measurable action towards environmental sustainability. SMART targets provide a potential pathway for achieving this (*3*), but we argue that the process of building consensus and collaboration when working towards SMART targets is vital. Without this, contentious environmental issues can force environmental policymakers to build flexibility into targets as a way to secure agreement.

We suggest that there are three common pathways 67 for providing this "wiggle room" ---- targets that are: *ambiguous in definition*; *ambiguous in quantification*; or *clearly unachievable*.

International signatories readily agree to targets that are *ambiguous in definition* because they cannot be held accountable for failing to achieve them. For example, the 1995 United Nations Fish Stocks Agreement requires signatories to "minimize bycatch to the extent practicable" (*5*). Demonstrating that a nation has failed to meet this target is problematic, because there is no agreed level to which bycatch should be minimized to, and what is practicable is not defined. The proposed SDG target to "by 2030 substantially increase water----use efficiency across all sectors" represents a target that is also ambiguous in definition because the specific degree of increase is not specified.

Targets may also be easier to agree on if they are *ambiguous in quantification.* In 2002, CBD parties agreed on a global target to "achieve by 2010 a significant reduction of the current rate of biodiversity loss" (*6*). Measuring losses and gains in biodiversity is extremely difficult and so quantification is ambiguous (*7*). The proposed SDG target to "by 2030 ensure sustainable food production systems" represents a target for which the quantification of sustainability is ambiguous.

Finally, it may be easier to agree on a target that is so ambitious 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" (*8*); a SMART target that seemed, and indeed 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 progress towards a common goal (e.g. as achieved by the Ramsar targets – over 208 million hectares of wetlands protected as of December, 2014). However, agreeing on a target that lacks transparency and accountability can lead to failed implementation as 97 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.

Getting conflicting international signatories to agree and achieve effective environmental targets may require a new approach – one that focuses more on the processes that lead to a target being set and then met, rather than exclusively on the targets themselves. We envisage an interdisciplinary approach combining ecological understanding with conflict resolution and consensus building. Game Theory, Management Strategy Evaluation and Collaborative Learning are examples of negotiation tools that blend the strengths of natural and social science to develop implementable and environmentally----relevant targets.

These tools have demonstrated their potential to increase the influence of scientific advice in the negotiation process, accelerate the process by reducing

conflict, and ultimately lead to more effective science----driven targets. Despite being currently applied theoretically, or at the local or national level, we believe there is considerable scope for novel interdisciplinary research to apply tools such as these to global environmental negotiations.

Game Theory is a branch of applied mathematics that 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 (9). Smead et al. (10) recently used a game theoretic approach to examine the past failures of, and future prospects for, robust international climate agreements. They demonstrated that the very high initial demands for greenhouse gas reductions made by numerous countries led to climate negotiations breaking down. They suggested that future climate agreements are more likely to succeed if countries (particularly large emitters) collaborate to reach bilateral reduction agreements prior to major international meetings ---- as has just happened with the deal between the USA and China.

Management Strategy Evaluation (MSE) uses socio---- ecological models to test a range of alternative management strategies under uncertain states of the world, and is widely used in fisheries management (*11*). For example, MSE improved the management of a complex multispecies fishery in southeastern Australia. Prior to implementing MSE, there was little consensus in this fishery on what strategies and targets were needed to improve the ecological, social and economic performance. MSE led to a 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 (*12*).

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 diverse stakeholders to identify and talk their way through the issues that constrain their progress towards achieving goals for the common good (*13*). By acknowledging that conflict is an inherent part of most decisions, CL puts a focus on managing conflict so that negotiations are not soured by stakeholder resentment. CL has been used in the United Kingdom to encourage biodiversity and recreation stakeholders to agree on the effects of domestic dogs on bird populations, and to jointly produce a map showing areas of conflict and opportunity (*14*).

Many policymakers will be aware of the problems associated with wiggle room, and the geo----political landscape makes it very difficult to change the way targets are currently set. However, to catalyze improvements in the target setting process for future environmental agreements, we recommend that policymakers set explicit targets to improve trust and collaboration 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 vitally needed support for translating internationally set targets into national scale implementation.

There are existing conduits for enabling scientific expertise to inform international policy, such as Future Earth and the Inter----governmental Platform on Biodiversity and Ecosystem Services (IPBES). Initiatives such as these could specifically seek to recruit researchers who study processes of negotiation and conflict resolution for their expert panels, and provide them with a platform to support international environmental negotiations.

Science needs to be allowed 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 science----based targets requires scientists to take responsibility for making sure that their 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 the ecological evidence to inform targets and monitor progress towards achieving them, scientists could have more of a role in supporting the processes of setting ecologically----relevant targets and implementing the resultant environmental policies.

The UN General Assembly will meet to approve the Sustainable Development Goals in September 2015. It may be too late to avoid wiggle room in the environmental targets contained within the SDGs. However, both for the SDGs and future negotiations towards other 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. The evidence from environmental negotiations to date suggests that failing to take a more interdisciplinary approach – one that combines natural and social science to focus on improving the process of agreeing targets – will lead to stalled negotiations, targets that are ambiguous in definition, quantification or unachievable, and a subsequent loss of momentum towards measurable environmental sustainability.

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