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Steering the Global Partnership for Oceans

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ABSTRACT

The Global Partnership for Oceans (GPO) is an alliance of governments, private firms, international organizations, and civil society groups that aims to promote ocean health while contributing to human well-being. A Blue Ribbon Panel (BRP) was commissioned to develop guiding principles for GPO investments. Here we offer commentary on the BRP report from scholars in multiple disciplines that study the oceans: environmental economics, environmental politics, fisheries science, physical oceanography, and political economy. The BRP is a prominent, unique group of individuals representing diverse interests of GPO partners. We applaud the call for knowledge creation, but identify diverse issues that the BRP omitted: the need for effective governance to address data-poor stocks so that gaps do not dictate solutions; the deployment of projects that facilitate learning about governance effectiveness through program evaluation; and the importance of large-scale coordination of data collection in furthering the BRP's call for capacity building. Commenters' opinions are mixed on the likely impact of the report's recommendations on ocean health, governance, and economic development, but they highlight several key features of the report. A centerpiece of the report that distinguishes it from most previous high-level reports on the oceans is the prominence given to human well-being. The report emphasizes the commons problem as a critical institutional failure that must be addressed and focuses heavily on market-based mechanisms to improve governance. The report successfully acknowledges tradeoffs—across different stakeholders as well as across human well-being and ocean health—but there is little specific guidance on how to make these tradeoffs. Historical tensions among GPO partners run deep, and resolving them will require more than high-level principles. For instance, it is unclear how to resolve the potential conflict between proprietary data and the report's stated desire for transparency and open access to information. Some differences may ultimately be irreconcilable. The report appropriately advocates flexibility for the GPO to adapt solutions to particulars of a problem, avoiding the trap of one size fits all. However, flexibility is also a weakness because the BRP does not provide guidance on how best to approach problems that span multiple scales. Some scales may be beyond the scope of the GPO; for example, the GPO cannot meaningfully contribute to global climate

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change mitigation. Nevertheless, the GPO could play an important role in climate adaptation by facilitating the development of governance regimes that are resilient to climate-induced species migrations.

Key words: Oceans governance, environment and development, ocean health.

JEL Code: Q22.

INTRODUCTION: JAMES L. ANDERSON AND MARTIN D. SMITH

The Global Partnership for Oceans (GPO) is a unique alliance of governments, private companies, international organizations, and civil society groups with broad aims to support ocean health while promoting economic development. The mechanism for achieving the GPO's far-reaching goals is to fund investments in particular projects. As such, guidance on how to choose projects is critical. To seek independent guidance on investments, the GPO commissioned a Blue Ribbon Panel (BRP) of experts spanning a broad range of professional interests and ocean expertise. The BRP summarized its guidance in the October 2013 report, *Indispensable Ocean: Aligning Ocean Health and Human Well-Being* (Blue Ribbon Panel 2013).

The events leading up to the creation of the BRP report began in 2005 with the creation of the Global Program on Fisheries (PROFISH) at the World Bank. Its objective is to improve sustainable livelihoods in the fisheries sector and coastal rural communities. Supported by key partners, such as the United Kingdom Department for International Development, Iceland, France, New Zealand, Norway, Japan, and the Food and Agriculture Organization of the United Nations (FAO), PROFISH actively works with many developing countries to improve fisheries.

By 2010, awareness of the role of fisheries, aquaculture, and oceans in economic development was growing within the World Bank. Publications such as the *Sunken Billions* (World Bank and FAO 2009) began to influence developing nations by making a case for the economic value of reforming fisheries. To highlight the importance of sustainable fisheries and aquaculture in the World Bank's agenda, the mission of PROFISH was revised to promote and facilitate the contribution of fisheries and aquaculture to sustainable economic growth, better nutrition, and poverty reduction (Anderson et al. 2011). PROFISH seeks to accomplish this mission by designing and implementing good governance systems through World Bank investments and international partnerships.

Since the establishment of PROFISH, there has been considerable growth in the World Bank's portfolio in areas related to fisheries and aquaculture in both the amount disbursed and geographical coverage. From 2004 to 2012, the World Bank's portfolio in fisheries, aquaculture, and coastal management increased from approximately \$90 million to nearly \$800 million (fisheries and aquaculture alone: \$30 million to approximately \$500 million). World Bank projects are active in many sub-Saharan countries in Africa, as well as in Indonesia, Vietnam, India, Oman, the Pacific Islands, and Peru, to name a few. Aquaculture, of critical importance to food security in many developing countries, is now also receiving increased focus of regional demand for investment. It is likely that the World Bank's portfolio will continue this exponential expansion, potentially exceeding \$1 billion in the near future.

Since the inception of the PROFISH strategic vision and growth in the World Bank's portfolio, it was clear that the World Bank needed strong international partnerships, but for the partnerships to work effectively (e.g., to unlock the potential for fisheries to contribute to economic growth and food security) there needs to be a global consensus on fisheries governance. PROFISH proposed the creation of an international commission on fisheries governance (a pre-

cursor to the BRP) in January 2011 with an objective to build a common vision among its partners. This vision would include criteria and approaches for ecologically, socially, and economically sustainable fisheries and aquaculture that represented internationally recognized best practice.

In spring of 2011, the President of the World Bank, Robert Zoellick, began to express considerable interest in how the World Bank could do more in the area of oceans. This broadened the agenda from primary fisheries and aquaculture to include the entire ocean, including habitat, biodiversity, and pollution. In February 2012, President Zoellick launched the GPO at *The Economist's* World Ocean Summit in Singapore. A formal GPO Declaration was announced at the United Nations Conference on Sustainable Development (Rio+20) in June (GPO 2012). The GPO objectives and specific goals include:

1. Create sustainable seafood and livelihoods from capture fisheries and aquaculture:
 - a) “Significantly increase global food fish production from both sustainable aquaculture and sustainable fisheries by adopting best practices and reducing environmental and disease risk to stimulate investment;
 - b) Reduce the open-access nature of fisheries by creating responsible tenure arrangements, including secure access rights for fishers and incentives for them to hold a stake in the health of the fisheries; and
 - c) Enable the world’s overfished stocks to be rebuilt and increase the annual net benefits of capture fisheries by at least \$20 billion, including through reducing subsidies that promote overfishing.”
2. Protect critical coastal and ocean habitats and biodiversity:
 - a) “Halve the current rate of natural habitat loss and reduce habitat degradation and fragmentation by applying ecosystem-based approaches to management;
 - b) Increase marine-managed and protected areas, and other effective area-based conservation measures, to include at least 10% of coastal and marine areas; and
 - c) Conserve and restore natural coastal habitats to reduce vulnerability and increase resilience to climate change impacts.”
3. Pollution reduction:
 - a) “Reduce pollution to levels not detrimental to ecosystem function and biodiversity; and
 - b) Support implementation of the Global Program of Action to reduce pollution, particularly from marine litter, waste water, and excess nutrients, and further develop consensus for achievable goals to reduce these pollutants.”

Currently, there are over 150 participants including governments and government agencies (from countries such as Norway, New Zealand, France, Grenada, Seychelles, Mauritius), international organizations (such as FAO, OECD, UN Development Program), civil society organizations (such as the World Wildlife Fund, Conservation International, Rare, The Nature Conservancy, Environmental Defense Fund), and private companies (such as Darden Restaurants, Inc., Caribbean Cruise Lines, Ltd., High Liners Foods, Inc.) that support the declaration.

By the summer of 2012, momentum for the GPO was building, and there was a strong commitment to the goals of the GPO declaration among its partners. However, there was a critical need for defining how to move forward and prioritize partnership investments. Therefore, a ‘Blue Ribbon Panel’ with internationally recognized experts, leaders, and innovators was proposed to

provide clear and objective recommendations to the GPO with “the foundational principles and criteria for prioritizing GPO investments and ocean investment in general, considering ecological, economic, and community sustainability” (The Blue Ribbon Panel 2013, p. 12). They were also asked: Based on current evidence and experiences worldwide, what approaches are likely to work? What are the key knowledge gaps that are a constraint to achieving the GPO’s objectives? How should the GPO measure progress?

Determining who would serve on the panel and how to make sure it was representative of the existing GPO participants was a challenge. A two-stage process for panel selection was devised. First, in October 2012, each GPO participant was asked to nominate a maximum of three highly credible, global experts and thought leaders that they thought should be on the BRP. It was made clear that panelists should be expert in at least one of three areas: (i) natural sciences, (ii) economics, business, and policy, or (iii) general thought leaders and innovators (not necessarily ocean specialists). A total of 105 outstanding ocean leaders and innovators were nominated (excluding duplicate nominees).

In stage two, the GPO participants were asked to select their preferred BRP of 15 members from the 105 nominees. Over 70 panels were submitted. The final BRP members were chosen based primarily on the number of times they were selected to the panels with consideration of regional, cultural, and gender diversity. The final panel consisted of the 21 individuals listed below:

Ove Hoegh-Guldberg	Panel Chair, Director of Global Change Institute, University of Queensland, Australia
Transform Aqorau	CEO, Parties to the Nauru Agreement
Ragnar Arnason	Professor of Fisheries Economics, University of Iceland, Iceland
Thiraphong Chansiri	President, Thai Union Frozen Products PCL, Thailand
Nelson Del Rio	Chairman, Emergent Intelligence Solutions, USA
Henry Demone	CEO, High Liner Foods, Inc., Canada
Sylvia Earle	Founder, Mission Blue/Sylvia Earle Alliance, USA
Mary H. Feeley	Chief Geoscientist, ExxonMobil Corporation, USA
Dimitri Gutierrez	Director of Investigations on Oceanography and Climate Change, Peruvian Institute of Marine Research (IMARPE), Peru
Ray Hilborn	Professor of Aquatic and Fisheries Science, University of Washington, USA
Naoko Ishii	CEO and Chairperson, Global Environment Facility
Chris Lischewski	President and CEO, Bumble Bee Foods, USA
Jane Lubchenco	Professor of Marine Biology, Oregon State University, USA, and former Administrator, NOAA
Kim Anh Nguyen	NOMA-FAME Program, Nha Trang University, Vietnam
David Obura	Director, CORDIO East Africa, Kenya
H.E. Rolph Payet	Minister for Environment and Energy, Pro-Chancellor University of Seychelles
Tuiloma Neroni Slade	Secretary General, Pacific Islands Forum Secretariat, Fiji
John Tanzer	Director, Global Marine Programme, WWF International

Johán H. Williams	Specialist Director, Department for Fisheries and Aquaculture, Ministry of Fisheries and Coastal Affairs, Norway
Dawn J. Wright	Chief Scientist, Esri, USA
Jintao Xu	Professor of Natural Resource Economics, Peking University, China

This panel is remarkably diverse by almost any measure. It is also unique in that it is the first high-profile panel addressing the oceans that includes strong representation from the private sector, the discipline of economics, and the business community. Despite the diversity, there was a great degree of mutual respect and a commitment to be part of the solution. The panel recognized the potential to transform the way the global community views the ocean such that efforts to sustain a healthy and productive ocean must be in alignment with human well-being.

To ensure that the panel was truly an independent source of advice for the World Bank and GPO, the US National Academy of Sciences National Research Council was contracted to manage the panel meetings and report delivery. The panel met three times: once in Washington, DC, April 18–19, 2013; once in Singapore, June 19–20, 2013; and finally in Casablanca, Morocco, July 29–31, 2013. The final consensus report, *Indispensable Ocean: Aligning Ocean Health and Human Well-Being*, was released in October 2013.

In this feature, we solicited comments on the BRP report from prominent scholars who study the oceans and span a wide range of disciplinary expertise. Our commenters and their fields include: Joshua Abbott (environmental and resource economics), Liam Campling (political economy), Elizabeth Havice (environmental politics), Rögnvaldur Hannesson (environmental and resource economics), Susan Lozier (physical oceanography), and Michael Wilberg (fisheries science). The comments below are the independent views of each scholar. They provide academic context for the report, highlight the report's greatest promises and achievements, and point to challenges that the GPO will inevitably face if it seeks to follow the BRP's advice.

THE PROMINENCE OF PEOPLE: JOSHUA ABBOTT

The Global Partnership for Oceans Blue Ribbon Panel Report is the product of a remarkable cooperative endeavor that lays the foundation for an even more ambitious feat—a public-private partnership to invest in the sustainable management of ocean resources. Highly publicized statements on the current state and future of the ocean are commonplace, but few have moved beyond diagnostic proclamations to propose clear strategies and mechanisms for progress. Even fewer have linked their proposals to a network of actors with the reach, capacity, and resources necessary to implement them. The BRP report is distinctive in that it provides a cogent and ambitious set of principles and evaluation criteria to guide the activities of a powerful and growing public-private partnership with the capacity to foster significant transformative change.

The report has many merits, but its defining characteristic is the prominence ascribed to the needs and motivations of *people* in its definition of successful ocean management. Humans are not portrayed as merely a stressor on ecosystems to be constrained. Instead, objectives of “sustainable livelihoods, social equity, and food security” are elevated as the first among five guid-

ing principles. Even in the seemingly eco-centric second objective of “a healthy ocean,” the panel places human welfare front and center, stressing that “people are an essential part of the global ecosystem and that efforts to enhance ecosystem health must align with the goals of all stakeholders involved in the socio-ecological system.” This reframing, while hardly original, is powerful. Prioritizing human needs, without losing sight of our collective dependency on ocean ecosystems, recasts the call for action from one of *constraining* human degradation to *investing* in sustained human well-being. This change of perspective is welcome, as it creates the preconditions for the private sector to add their energy and ingenuity to the search for sustainable ocean solutions as equal partners, rather than adversaries.

In its quest to better align human welfare and ocean health, the panel rightly attributes much of the current misalignment to shortcomings in incentives due to poorly defined property rights, uninternalized externalities, and ineffective governance. To remedy these incentive failures, the report makes a strong case for the use of market-based mechanisms and other incentive-based forms of management. In the context of fisheries management, the panel emphasizes the importance of “user rights structures—such as community fishing rights, harvesting quotas, and territorial use rights.” For broader issues, such as marine pollution and protection of marine habitat, the report also endorses (if somewhat vaguely) “new market systems” where “socio-ecological costs and benefits are properly internalized.” It is gratifying—if not surprising given the composition of the panel—to see such strong endorsement of policy instruments long advocated by economists. Nevertheless, the panelists wisely stop short of enshrining privatization as a panacea. They acknowledge the findings of the vast common pool resources literature, which has shown that a wide array of institutional configurations can align individual self-interest with the long-run collective interests of society. Furthermore, changes to rights structures may interact in complex ways with preexisting features of the socio-ecological system, potentially undermining previously stabilizing forces in resource governance. The nuanced approach of the report to institutional design is best reflected in one of the project selection criteria, which supports “market-based mechanisms or other incentive structures *that are consistent with (or build on) local culture and knowledge* that benefit the people and communities of the target region” (emphasis added).

This quote illustrates another recurrent motif in the report—a determination that GPO investments not only enhance economic returns but also produce broad-based benefits to affected communities and individuals. It is heartening to see sensitivity to distributional concerns coupled with an equally strong appreciation of the merits of rights-based systems. Far too often proponents of market-based reforms have emphasized their efficiency-fostering merits while treating distributional effects as an afterthought; in spite of the fact that distributional arguments and outcomes are often pivotal to the adoption and continued success of reforms. Shallow appeals to the principle of “potential compensation” in the wake of interventions that enrich some while (at least temporarily) harming others are simply unconstructive. Hopefully this report signals a resolve on the part of the GPO to seriously engage with the joint consideration of efficiency and distribution in its investment decisions. Addressing this challenge in the context of public-private partnerships may foster innovative ways of lowering the transaction costs of addressing distributional objectives while enhancing the long-run viability of GPO investments.

As with any brief, high-level document, the BRP report has its share of “blind spots.” These omissions do not critically undermine the promise of the report but raise significant questions about how difficult decisions in its implementation will be addressed. The BRP re-

port emphasizes the complex nature of the challenges facing marine ecosystems, with stressors originating on local, regional, and global scales. However, it provides little guidance for how to prioritize investments to confront this multi-scalar reality within the constrained resources and reach of even such a large public-private partnership. Properly defining the boundaries of the solution space is critical. For example, in many developing countries the agrarian and fisheries sectors may be tightly coupled due to highly interlinked labor markets, with fisheries serving as “employment of last resort” in response to negative shocks in the agricultural sector. Viewed in this light, one of the most effective ways to invest in both ocean health and human livelihoods may be to pursue agrarian reforms, where failure to do so may undercut the effectiveness of seemingly more targeted investments. Defining the “solution space” so that it reflects the systemic scale of the problem, while also recognizing the bounds of effective action for any given public-private partnership, is a critical challenge.

A related concern springs from the fact that some stressors are beyond the influence of even the GPO. Dealing forthrightly with these limits may temper the optimistic appeal of the report, but is necessary to properly target investments in light of exogenous stressors, such as ocean acidification. In the absence of significant global action to abate carbon dioxide emissions, ocean acidification may jeopardize the long-run viability of investments in certain contexts (e.g., capture fisheries in tropical coral reefs). However, if sustaining the livelihoods and well-being of people is a central objective, then investments in *adaptation* that address our limited ability to mitigate all stressors will also be necessary. This may entail investments in alternative forms of marine employment that are less vulnerable (e.g., converting from capture fisheries to aquaculture) or fostering transitions from ocean-dependent employment altogether. The challenge of allocating scarce resources to investments in adaptation to exogenous threats versus mitigation of endogenous threats is formidable. Nevertheless, some guidance for how to address it is badly needed.

Finally, I contend that greater attention should be directed toward viewing GPO projects as *investments in knowledge generation*. The magnitude and diversity of investments contemplated in this report could provide a wealth of information to build transferable knowledge about “what works” in different socio-ecological contexts. However, not all investment plans are equal in this regard. The BRP report calls for establishing “causal links between the investment and the impact . . . to ensure approaches can be scaled up or adjusted.” Learning about such causal linkages could be fostered by explicitly incorporating insights from program evaluation into the design of individual projects and the selection of the overall portfolio of investments. To minimize the role of confounding influences, individual projects should, where possible, incorporate elements of experimental or quasi-experimental research design. The use of “field experiments” has yielded substantial insights in fields as diverse as development, education, and labor economics. Extending this approach to the multi-project scale entails selecting a project not only on its individual merits but also on its ability to complement the knowledge generated by other investments (through intentional similarities or differences in the policy “treatment,” variations in key aspects of the socio-ecological context, etc.). Viewing GPO investments as opportunities for active learning may expose tradeoffs between knowledge generation and achieving more immediate project goals. Fostering knowledge generation at the multi-project scale may also require a sustained degree of coordination across GPO partners and projects that may be difficult to achieve. Nevertheless, meeting these challenges would help to realize the sustained potential of GPO investments.

CHARTING TENSIONS BETWEEN PRINCIPLE AND PRACTICE:**LIAM CAMPLING AND ELIZABETH HAVICE**

The Global Partnership for the Oceans (GPO) selection of eminent oceans specialists to seat a Blue Ribbon Panel (BRP) offers a window into the future of the GPO specifically, and dominant thinking on ocean conservation and planning more broadly. The BRP builds from foundational observations to develop five Principles that the GPO should use to prioritize investments (see Principles, below). The BRP recognizes the multifaceted, multi-disciplinary nature of ocean-based dynamics, pointing out that “[a]pproaches that are sectoral and do not take into account social, political, and ecological interrelationships can only deliver incremental and fragmented solutions insufficient to meet the web of challenges confronting ocean health” (12). To this end, the BRP warns against “one-size-fits-all” approaches and recognizes the diversity of socio-ecological and economic challenges in the ocean and that “economies and governance systems . . . vary greatly in capacity” (1, 6). These are centrally important foundations, especially given that policy recommendations deployed by international institutions have often failed to recognize this diversity and complexity (e.g., Banerjee et al. 2006).

From this starting point, the BRP identifies core components of “solutions” to ocean challenges, which range from general ideals to specific tools. On the former, the BRP emphasizes that solutions should revolve around cooperative management and sharing of ocean resources within “fair” governance frameworks. On the latter, the BRP echoes politically dominant narratives on using market-based mechanisms to maximize economic efficiency, emphasizing: (i) the development and allocation of rights in ocean systems, and (ii) the development of economic and financial metrics and incentives for improvements in the oceans (26–7). Both assume that increasing revenues and monetizing a wider range of costs and benefits will yield improvements, though notions of “solutions” or “improvement” are general, rather than specified.

The BRP recommends public private partnerships (P3s) to mobilize principles into practice. It pays credence to the fact that P3s are not a panacea. It has been well documented that P3s can generate high costs and risks for the public sector while channeling profit to the private sector, including in fisheries (e.g., Doulman 1999; Havice and Campling 2013; Melber 2003). The BRP attributes such problems to flawed design that can be corrected with a technical fix: “well structured” P3s that aim to optimize the yield of common goods; minimize public costs by leveraging assets; and incentivize responsible, transparent, and synergistic behavior (27). This hangs on each partner subscribing to a division of labor that promotes “market efficiency.” Government should create and allocate rights, provide appropriate infrastructure, facilitate community engagement, ensure transparency, and provide enforcement and compliance services. The private sector should execute trade and exchange of goods. Meanwhile, “open access to information can create the pricing structure and incentives that inform the market system” (27).

Partnership is the centerpiece of the GPO. Yet, translating broad principles into sector- and place-specific action requires engaging deep tensions among GPO partners; many of whom will become P3 participants and some of whom arguably have contributed to current ocean conditions. For example, given that prominent P3s in Western Europe—the epicenter of P3 development and a region with highly developed institutions—have been plagued with poor performance in terms of efficiency and equity gains (Arestis and Sawyer 2008), the BRP’s prescription would benefit from examples of existing P3s that meet its ideals. Further, open access to information that the BRP identifies as informing the market system is unlikely to emerge, since information asymmetry (e.g., proprietary data) is a critical component of private sector operations.

Fleshing out the examples of the tensions embedded within the partnership and the BRP's five Principles (and more broadly, the economic assumptions upon which they are based) is illustrative. Such tensions may reflect the diversity of interests in the BRP.

Principle 1 is that GPO-backed investments should yield livelihoods, social equity, and food security. Given that hundreds of millions are employed as fish workers and in ocean-related industries, the BRP rightfully emphasizes job creation as one of several priorities for investments. However, in recent years, concern over the *quality* of employment and working conditions in ocean sectors has heightened, particularly around seasonal and precarious work, lack of representation, and forced and child labor in ocean-related industries (e.g., FAO-ILO 2013; ILO 2013). Poor working conditions are closely related to private-sector profit motives in the context of highly competitive conditions in the world economy, while labor advocacy organizations and some coastal states seek much-needed, high-quality employment relations.

Principle 3's focus on "effective governance systems" speaks primarily to public institutional capacity, emphasizing governments' role in creating favorable investment conditions. By contrast, a definition of a responsible firm is absent from the BRP's analysis, despite growing attention to the role of lead firms in governing global supply chains; a role that is intensifying as financial drivers in global capitalism deepen (e.g., Milberg and Winkler 2013). Ecological and social-accounting standards, including long-term lead firm commitments to sustainable procurement, are simple examples of responsible firm governance; though while expanding in relative terms, their absolute extent is (as yet) limited (e.g., Bush et al. 2013). In short, supply chain governance by firms deserves much greater attention in the partnership framework.

Further, the BRP calls for "governance frameworks that are equitable and fair to all stakeholders" and on "public and private sectors [to] . . . share responsibilities and rights in using and protecting ocean resources" (26–7). This egalitarian objective is laudable, but in practice, might challenge core principles in international fisheries and trade law. For example, marine resources in exclusive economic zones (EEZs) are state property (e.g., Campling and Havice 2014), and the private sector and foreign interests do not share the same rights to these resources as coastal states. Likewise, international legal architectures often institutionalize special attention to the economic and ecologic vulnerability of the least developed countries, giving states the right to define and prioritize national objectives even if they are in tension with what are perceived to be more "efficient" corporate interests.

The BRP's 4th Principle is that investments should create financially measurable and self-sustaining impact, rather than one-off interventions. Projects that create assets that can be invested in or securitized are given high priority. Related, the "internalization of all environmental goods and services costs" (17) will contribute by offering a full accounting of costs and creating new opportunities for investments in ecosystem services through schemes like those developed through REDD+ and wetlands banking programs. This Principle draws attention to the fact that fisheries and other ocean industries are part of the modern financial system; it encourages use of financial instruments to create incentives for investment that rely on the long-range health of the oceans. However, the BRP does not detail how investments in, and financialization of, ocean resources link to local-level food security, economic development, and resource access elaborated in Principle 1. The clearest potential site for investment is in "rights" to ocean resources, raising the question of how Principle 4 marries with the emphasis on governance elaborated in Principle 3, and how holders of such rights and related economic benefits will be allocated. Such complex questions are centerpieces of debate

around land-based resources, commodity booms, and food price spikes (e.g., Clapp and Hel-leiner 2012; Ghosh 2009; World Bank 2009). Lessons from land-based sectors will offer fruitful insights to the GPO.

The GPO and the BRP report raise the profile of dynamics in the socio-ecological systems that cover 71% of the planet. The BRP rightly recognizes the complexity of these systems. It attempts to situate the Principles guiding GPO investments around recovering and augmenting what it defines as lost, depleted, and under-recognized values in the oceans. To do so, its Principles rely on market mechanisms and place actors in very particular, market-enhancing roles. Social scientists are well positioned to identify, engage, and push the assumptions upon which these principles are based. Doing so will contribute to highlighting how, when put into practice, Principles might replicate, deepen, or resolve existing tensions around the creation and capture of value generated from ocean systems.

MORE SPECIFIC GUIDANCE ON CONFLICTING INTERESTS:

RÖGNVALDUR HANNESSON

According to the Introduction, the purpose of the Blue Ribbon Panel (BRP) report is to provide “high level strategic advice on principles and criteria to select priorities to improve the sustainable use of our ocean resources, as well as to identify approaches that will stop and reverse the decline in ocean resources.” Unfortunately, the advice provided in the report is at such a high level that the details on the ground can hardly be discerned. Therefore, the report is unlikely to be of much use when it comes to setting priorities; it is more like a wish list and a long one at that.

It is not difficult to see why the outcome became so disappointing. The Global Partnership for Oceans (GPO) is a broad forum comprising governments, industry, and various environmental organizations. It is no secret that the objectives and interests of all three differ and are often irreconcilable. The environmentalists’ agenda is primarily about preservation. It is for this purpose that marine reserves are proposed. Such proposals are long on the benefits for animals of no commercial interest like penguins, whales, and sea birds. Lip service is paid to the effects on fisheries, but telling the industry that they will make money by being shut out of large areas is a hard sell; the industry knows better than that. While it is possible to conceive of circumstances where marine reserves could benefit fisheries—seeding depleted coral reefs with eggs and larvae from protected areas is one example—these are rather special and unlikely to be typical. The said iconic animals compete with the fishing industry in harvesting various fish stocks, not least small pelagics. Therefore, in the literature one finds proposals that would involve substantial reduction in the industry’s catches from these stocks, which would have major repercussions for the aquaculture industry (Pikitch et al. 2012). Not surprisingly, the latter is a favorite object of criticism by certain environmentalist circles and typically accused of being unsustainable, even if feeding salmon with fish meal is no less sustainable than feeding beef cattle with corn or soy meal.

Given the potential for conflicting interests and opinions within the GPO, it comes as no surprise that they have been papered over with diplomatic language; the BRP report is replete with generalities and meaningless platitudes. Two frequently used ones are ocean health and sustainability. To begin with the basics, over the last 20 years the capture fisheries have been taking almost 100 hundred million metric tons per year out of the oceans, without much trend either up or down. This tells us that we have probably come to the end of the road as far as taking fish out of the oceans is concerned, but lack of ocean health and sustainability does not

stare us in the face from these statistics. That said, we know that behind figures on aggregate catches loom several spectacular collapses. Open access was a contributing factor to some of them, but not all. The collapse of Newfoundland's Northern cod stock happened despite a management regime that was meant to err on the safe side and had the support of arguably the best fisheries science in the world. Defining sustainability and ensuring that fish catches are in fact sustainable is not a trivial task. A publication such as the BRP report might have been expected to offer a definition, but it contends itself with the same sloganeering about sustainability as we have now become accustomed to from innumerable publications.

There are signs that the core problem the BRP report is trying to address is open-access; that fisheries must be controlled in order to avoid depletion of fish stocks, but its formulation of this is less than clear. There are also signs that the authors understand that this problem should be addressed in a way that aligns the incentives of the industry with the conservation interests of society or the world at large; there are references to ocean tenure and rights-based fishing. All of this is well and good, but not very explicit. There are also statements to the effect that one size does not fit all, also well taken. The fisheries of the world are very diverse, even if the open-access problem is a looming threat to them all. In some cases catch quotas are the appropriate response, in other cases they are impractical, and effort controls or spatial rights could be better.

If the BRP report is meant to be an instrument to help prioritize the activities of the World Bank directive to improve world fisheries, it needs to be much more specific. First, the World Bank will have to make up its mind about what it intends to support. Is it the interest of well-fed environmentalists in rich countries in iconic wildlife, or is it the contribution of world fisheries to feeding an increasing world population and supporting the livelihood of often poor people that comes with it? One would think that the role of a bank for economic development was fairly obvious in that context. Next, one would think that a document such as this would state clearly that support should only be given to fisheries managed by a credible management regime and then define credibility. A first, non-negotiable requirement would seem to be that management targets be based on credible scientific advice. Given the Northern cod debacle already mentioned, one would have expected some serious discussion of what such credibility means. Must science be at arm's length from government and the industry? What about transparency of the advising process? What about review mechanisms, etc.? There are many serious problems worth discussing, rather than the generalities offered by the BRP report. Then we come to implementation. What kind of monitoring and enforcement is essential? To what extent are individual access rights necessary? That they will be supportive of fish stock management is one thing, but to what extent are they required? Could they be conditional, and how are they to be defined? Sad to say, on these questions and many others, the BRP report offers no answers and little specific guidance.

Prioritization involves choosing between the good and the less good, the urgent and the less urgent. If it were a choice between the good and the bad, it would indeed be a trivial task. The BRP report fails in making any guidance on such hard choices. It lists 28 criteria related to 5 principles, none of them very clear or specific, which would thus seem to accommodate most eventualities. But just in case, after this listing comes the following statement: "given that not all potential partners have the capacity and opportunity to satisfy all criteria under each principle, meeting the criteria should have a degree of flexibility." One wonders why the World Bank and the GPO took the trouble of putting together this document when they apparently could have made do with the short and concise statement "we'll do as we please."

LESSONS FROM CAPACITY BUILDING IN OCEANS SCIENCE: SUSAN LOZIER

Long visible along coastlines and in the convergence zones of the global ocean where remnants of our plastic society accumulate, the human imprint on the deep ocean has only recently been revealed. Just within this past decade, shipboard measurements of deep waters across the globe have shown that these waters contain anthropogenic carbon dioxide, acquired decades earlier when the waters were last at the surface. In addition to carbon, deep waters have also been accumulating heat over these past many decades. The ocean's capacity as a sink for heat and carbon is a double-edged sword: the benefit of less atmospheric warming is offset by the likelihood of ocean acidification and shifting biomes as waters warm. The scale of this human impact on the ocean highlights the sobering challenges in meeting the goal set by the Global Partnership for Oceans (GPO): to improve ocean health and human well-being. As discussed in the Blue Ribbon Panel (BRP) report, local and regional ecosystems face local and regional challenges to the improvement of ocean health. However, all share the underlying global challenge of the buildup of heat and carbon, a challenge that highlights the most fundamental aspect of the ocean: its fluidity. Regardless of where the excess heat is gained or where the anthropogenic carbon dioxide is absorbed, the ocean's ability to carry heat and carbon with its currents essentially makes this global problem, in the long run, a local problem everywhere.

Fluidity also marks the solution approach advocated by the BRP. The authors conclude that there is no one-size-fits-all solution to the problems faced by the world's oceans, arguing for site-sensitive approaches. Without a doubt, local and regional challenges must be met with solutions tailored to the social, political, economic, and ecological environment of the region. But if we take the BRP's solution approach literally, we might expect that in addition to small-scale solutions at a local level, there would also be large-scale solutions at the global level. In effect, the "size" of a solution aimed at improving ocean health and human well-being must match the scale of the problem. Understandably, the BRP's report focuses on local and regional ocean domains, where problems are arguably more tractable than the unceasing rise of carbon dioxide in our global atmosphere. In the long run, however, it is possible that local solutions will be swamped by this incessant rise. Thus, while the GPO can hardly be expected to offer solutions for this global problem, it should be expected to advocate for solutions. Conservationists and scientists alike understand all too well the dim prospect for a near-term solution to a warming planet, but realism should not deter advocacy for a more habitable ocean.

The BRP points out that for the GPO to meaningfully and optimally contribute to a country or region, knowledge gaps must first be identified. One such knowledge gap is the effect of climate change on regional ecosystems and ocean habitats. A prediction of this effect relies, in large part, on our understanding of how ocean biology, chemistry, and physics collectively impact the spatial and temporal variability of marine ecosystems. Studies with this multi-disciplinary focus have existed for decades, but have more urgency now as the triple threat of excess heat, increasing acidity, and decreasing oxygen has become more evident. But urgency alone does not bring scientific progress. Instead an accumulation of ocean observations is our best bet for progress on the prediction front. Fortunately, the BRP's call for a paradigm shift in how we use and conserve ocean resources comes at a time when the ocean science community has been experiencing a paradigm shift in how we study and monitor the ocean. For centuries, shipboard oceanographers measured the ocean one station at a time, intent on answering a question posed by a single investigator. Today, autonomous instruments and international collaboration are making great strides in a quest for global ocean data coverage. For

example, over 3,000 profiling floats, occupying all major ocean basins, currently monitor the temperature and salinity of the upper water column. Twenty-three different countries contribute to this Argo program, initiated in 2000 under the auspices of the World Climate Research Programme. Argo float data, relayed via satellite and made publically available within hours after collection, has been instrumental in the monitoring of ocean warming. Based on the success of this program, there is currently much interest in and momentum for the addition of biosensors to the profiling floats so that ocean pH and oxygen can also be monitored on a global scale.

The global ocean science community is also coming together to study the variability in the overturning circulation, vital to understanding the ocean's uptake of heat and carbon. While North American and European countries have for years separately studied climate signals in the North Atlantic, there is now a concerted effort to pull resources together to establish an observing network that will monitor the uptake and redistribution of heat, carbon, and oxygen. While resource constraints have certainly motivated these international collaborations, there is an increasing awareness that we are better served by shared, rather than competing, visions for ocean observations.

These recent and planned programs to observe the ocean are aligned with Principles 4 and 5 identified by the BRP, namely long-term viability and capacity building and innovation. Oceanographers recognize the need to build systems that can provide efficient and cost-effective monitoring for the decades ahead. Just as the BRP states that we are "at a unique time in history where technology allows for establishing a network and marketplace for ideas and solutions at a global scale," so too can we expect the measurement of the ocean to become more efficient and cost effective as increasingly sophisticated technology comes on line.

All of these parallels that I mention will hardly matter unless there is a continuing push for a stronger intersection of conservation efforts and ocean science research. The BRP's call for "developing educational networks and initiating shared knowledge platforms that can build global capacity and scholarship on the significant challenges that face ocean ecosystems" is a great opening for such an intersection. The US National Science Foundation has recently instituted Science Across Virtual Institutes (SAVI) to facilitate international collaboration on projects of mutual interest. These virtual institutes are intended "to foster enhanced research collaboration; data sharing; networking; and technical exchanges of students, post docs, and junior faculty across borders." With the momentum garnered from the formation of the GPO and the increasing international collaboration among ocean scientists, the creation of virtual institutes focused on the intersection of science and conservation is timely. In particular, this intersection could inform choices about ocean measurements, whether in the global ocean or coastal waters. Surely a more measured ocean will help create a more habitable ocean.

KNOWLEDGE CREATION AND CLIMATE-RESILIENT INSTITUTIONS:

MICHAEL J. WILBERG

The Blue Ribbon Panel (BRP) of the Global Partnership for Oceans (GPO) has developed a plan to guide investments to promote sustainable use of the world's oceans. The BRP should be commended for their vision and the broad strategic approach they have developed. The five major principles of sustainable livelihoods, a healthy ocean, effective governance, long-term viability, and capacity building should help to identify development projects that pro-

mote sustainable use of ocean resources, in particular for fisheries. The challenges to improving our use of ocean resources, however, remain great.

Businesses and communities that rely on sustainable use of natural resources should have a strong interest in promoting investments in science and monitoring. Sustainable livelihoods and long-term viability of fisheries require practices that do not harm the productive capacity of fish stocks, such as maintaining habitat and adequate adult population size for sustained reproduction. Yet many of the world's fisheries, particularly those in the developing world, collect no or very limited data from which to estimate sustainable levels of harvest. Additionally, large portions of the world lack collection mechanisms for basic fisheries statistics that would allow for monitoring of harvest levels relative to sustainable targets. Even if basic harvest statistics are available without other types of information, very conservative practices need to be used if the problems associated with overfishing are to be avoided (Wiedenmann et al. 2013). In the absence of harvest statistics, the main alternative that has been promoted for data-poor regions is Marine Protected Areas (MPAs). However, MPAs require compliance in order to be effective, and in some situations they could exacerbate problems if they are not designed properly (Tuck and Possingham 2000) or if the spatial dynamics in the system change over time. Thus, increasing the capacity for data collection and practice of fisheries science, as recognized in the report, needs to be a key priority.

We expect unprecedented environmental shifts in the upcoming decades due to climate change and associated processes, such as ocean acidification, but our fisheries systems are largely unprepared to respond to these changes. For example, most fisheries are managed using political boundaries that often are not aligned with important habitat features that affect the spatial distribution of fish and shellfish populations. We are already seeing poleward shifts in temperate populations that are thought to be caused by climate change (Nye et al. 2009). Changing distribution of species poses a particular challenge to most fishing communities that are often anchored to a location, yet rely on resources that frequently move with ocean conditions. Thus, a critical question is how do we develop communities and management systems that are resilient or robust to the types of changes we expect to happen? Even though we often cannot predict the exact nature of changes, we know that they will occur and should focus on building communities that can withstand and respond to the types of changes we anticipate.

Without effective governance structures, it will be very difficult to sustainably manage fisheries. Effective governance needs to include planning and enforcement. Management plans that include objectives, monitoring, and responses to changing conditions are necessary to strategically manage fisheries. Planning also needs to consider the potential unintended negative consequences of investments and incentives to improve fishing capacity and processing (e.g., Gunderson 1984). Many species can support only small-scale fisheries, yet global demand can easily outstrip local supply if the long-term viability of the resource and its associated fishing community are not taken into consideration. Enforcement is also a critical component of sustainable resource use because non-compliance can cause otherwise sustainable management efforts to become ineffective (Gigliotti and Taylor 1990). Even in countries with strong central governments, non-compliance can be an issue, which can affect the ability of policies to achieve their goals. While public-private partnerships have the potential to design and implement effective management strategies and enhance compliance, they are not sufficient for ensuring sustainability. However, public-private partnerships are probably the only way to effectively ad-

dress management in areas without a strong governance structure that can impose compliance. Thus, there is a strong need to develop strategies that enhance governance structures to promote sustainable fishing practices.

The goal of aligning ocean health and human well-being is both noble and necessary, and there is a lot of progress to be made. It will be important to develop capacity for governance and develop communities that can weather the inevitable changes in the environment. If the recommendations of the BRP in the GPO's report are adopted with a focus on sustainable solutions, substantial progress can be made on making our interactions with ocean resources more sustainable.

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