1

EVALUATING ENVIRONMENT IN INTERNATIONAL DEVELOPMENT

An introduction

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Introduction

The year 2020 was defined by a pandemic that started in China sometime in late 2019. The pandemic, dubbed COVID-19, quickly spread across the world, sparing no continent and virtually no country. By mid-2020, some 8 million people around the globe had been infected. The fatality rates for the pandemic were not as dramatic as in the case of earlier zoonotic viruses, such as Ebola, which kills about half of those infected and up to 90% of the victims in some areas. SARS, the severe acute respiratory syndrome, closely related to the 2020 pandemic—COVID-19 is caused by a virus called SARS-CoV-2—also had a fatality rate of 14–15%,¹ but its spread was contained and it infected less than 10,000 people. COVID-19, in contrast, had by mid-2020 killed some half a million people worldwide—about a quarter of them in the United States—due to its rapid spread.

At the face of it, the pandemic has been seen primarily as a health crisis, leading to severe economic and societal disruptions. The World Bank estimates that COVID-19 may push an additional 71–100 million people into extreme poverty.² Most of these people will be in countries that already struggle with poverty: almost a half in South Asia and a third in Sub-Saharan Africa.

Fundamentally, however, COVID-19 is an environmental crisis. It has provided a very concrete example of how human health and ecosystem health are closely intertwined—and how human systems are dependent on natural systems.

Zoonotic viruses, like SARS-CoV-2 originate in animals and spill over to humans. The frequency of such spill-overs and subsequent epidemics has increased in the past couple of decades because of how we interact with the natural environment (Vidal 2020; Quammen 2012). It is a direct function of increased contact humans have with other animals, both wild and domesticated. COVID-19 may have started at a wet market in the city of Wuhan in China where many kinds of live

animals were for sale—for food or for traditional Chinese medicine (TCM)—kept and slaughtered in crowded and unhygienic conditions. The likely origins of the virus are in bats but there may have been an intermediary host (perhaps pangolin, which is used for TCM). It is also possible that a farmer collecting bat guano for fertiliser was directly infected. Irrespective of the transmission mechanism, which we may never determine with certainty, the root causes of the pandemic—as well as those before it and those yet to come—are known. In fact, such a pandemic was widely predicted by scientists before it happened (Osterholm and Olshaker, 2020).

The root causes lie in the fact that human impact has been constantly expanding deeper into the natural world, as we make more space to accommodate and feed the increasing number of people and seek raw materials for continued economic growth. Cities and suburbs, transport networks, agriculture, logging and mining all penetrate deeper into hitherto undisturbed ecosystems thus bringing people into closer contact with new species—and their pathogens. At the same time, ecological balance is disturbed. As large predators (like wolves or big cats) are killed off, the animals that benefit are those that thrive alongside humans: rats, bats, raccoons and the like. They are also the ones whose viruses are most susceptible to jump over to humans. In Africa, hunting bush meat for human nutrition includes primate species whose genome is very similar to that of humans, making spill-over all that easier.

It is obvious that in order to prevent future pandemics, we need a better way of interacting with the natural environment. This is not true only for pandemics, although it is a concrete matter that has finally caught the attention of policymakers and the wider populace as well. Healthy ecosystems and biodiversity are essential for the well-being of humankind in a myriad ways providing ecosystem services from clean air and water to climate regulation and protection against floods and storms. Yet, anthropogenic climate change caused by the burning of fossil fuels for energy and transportation, deforestation and cattle ranching, and the destruction of natural habitats pose constantly increasing threats to global sustainability. There are indications that these unsustainable developments already threaten the very drivers of these developments: wanton drive for economic growth, the continued increase in human numbers and wealth. Global excess mortality caused by air pollution has been estimated at 8.8 million people annually (Lelieveld et al. 2020).

The pandemic has also brought to the forefront drastic inequalities in societies all over the world that pose hindrances to sustainable development. An analysis of CDC (Centres for Disease Control) data in the United States found that the crude death rates from COVID-19 for Blacks was twice that for whites, and that for Hispanics/Latinos about the same as for whites. However, given that these populations have much younger age structures than whites, a huge gap emerges: the age-adjusted death rate for Black people was 3.6 times and for Hispanic/Latino people 2.5 times for whites (Ford, Reber and Reeves 2020). The factors behind these differences reflect endemic and entrenched inequalities that have left especially Black residents impoverished, with fewer jobs, and in poor health (Eldeib et al. 2020). Many minority people also work in occupations, such as services and transport, which do not allow for distance work. In Singapore, which saw a rapid rise in infections following

a highly successful curtailment, 90% of the infections were among migrant workers. In Mexico, despite rapid measures taken by the government, people in the informal sector, including street vendors many of whom are women, were not able to stop working and thus suffered disproportionately from the pandemic. These examples reveal the close relationship between economic, social, environmental and political issues that determine the outcome of what on the surface is simply a health crisis.

The potential of evaluation

Evaluation as a discipline and practice has the potential to contribute to finding solutions to these problems. However, to do so—for it to continue to be relevant—evaluation must up its game. Evaluation must change to become part of the solution, rather than part of the problem (Patton 2020). Evaluation has the specific role of bringing forth knowledge and understanding of what works, under what circumstances and for whom based on past experiences. At a basic level, this is looking at past programmes and projects: What strategies worked, where and why? What helped interventions adjust successfully to changing conditions—including sudden crises—so that they could continue supporting the people on the ground?

Traditionally, evaluation looks at the past to inform future. This has become an increasingly challenging endeavour as global situations change and as past development efforts—especially the most ‘successful’ ones—are the ones that have got us into this situation. Identifying and replicating what is often called ‘best practices’ thus no longer makes sense (if it ever did). Such thinking is based on the notion of continuous improvement, defined as progress, inherent in Western thinking since Enlightenment, irrespective of political ideology (Mishra 2017: 39). The imperative of growth—both economic and population—epitomises this (Uitto 2020). Such linear thinking is no longer possible. Environmental destruction and climate change have introduced uncertainty and unknown discontinuities into the global system.

On the social side, the prevalent development model has resulted in huge inequalities that in themselves threaten stability and sustainability. Evaluation as a discipline and practice has a longer history dealing with social issues. Therefore, they tend to be better covered than environmental matters. For instance, the United Nations Evaluation Group (UNEG) has provided guidance on integrating gender and human rights in evaluations, as well as evaluating institutional gender mainstreaming, which are widely applied in the UN system (UNEG 2014, 2018). Such guidance on the environmental side is still under preparation.

Furthermore, what has proved challenging is operating in the coupled human and natural systems (CHANS), which requires a broad understanding of both. This limitation holds true for evaluation, as well as programming more generally, and stems from both the complexities involved as well as the different cultures that prevail in social and natural sciences (Rowe 2019a)

If evaluation is to learn from the past, it must start looking more broadly beyond assessing whether individual interventions have achieved their stated goals and instead analyse how such interventions—as well as broader policies and

strategies—contribute to or hamper sustainability. Evaluation must shed its project mentality.

It is imperative for evaluation to look systematically for unintended consequences of any intervention, including notably the consequences on the natural environment. It is safe to assume that all interventions irrespective of their focus will have an impact on the environment.

At a higher level, evaluation must be able to provide evidence of how actions in the development domain affect the environment and vice versa. We must be able to demonstrate the close interlinkages between social and economic development and the environment in light of evidence from the real world. In this task evaluators must base their work on scientific knowledge as well as analysis of concrete examples from the field. This is not an approach that comes easily to all evaluators who have been used to looking at discrete interventions in isolation through their internal logic. Instead, we now need to place these interventions in the broader landscape and analyse how they interact with the larger natural and human systems. We need to be on the lookout for unanticipated results and unintended consequences, not just those foreseen in the project or programme's own theory of change.

This second updated edition of the book, *Evaluating Environment in International Development*, sheds light on how evaluation can contribute to environmentally sound sustainable development in the international cooperation context. It focuses on approaches and experiences from the field with leading international organisations, non-profits and multilateral and bilateral aid agencies. Understanding context is important, as programmes work differently in varying situations through different change mechanisms (Pawson and Tilley 1997). To fully achieve these objectives, evaluation must move beyond assessing individual interventions in isolation and contribute to the understanding of how environmental concerns can be incorporated into development efforts in the national, regional and global contexts.

The book will familiarise readers with approaches, challenges, choices and tools that focus on environmental results in international development. It provides novel and in-depth perspectives on evaluating environment and sustainable development mostly in the global South. Moving beyond projects and programmes, it also considers aspects such as evaluating normative environmental work. It makes a strong case for considering the wider environmental and sustainability consequences of development efforts, including both intended and unintended impacts as well as trade-offs between them. The book emphasises praxis and brings together leading international thinkers and practitioners who have decades of experience working in the field. The book offers both conceptualisations and practical examples based on lessons from the field regarding evaluation and environment.

Sustainable development and the environment

In 2015, world leaders adopted the 2030 Agenda for Sustainable Development and the attendant Sustainable Development Goals (SDGs) under the auspices of the United Nations (UN). To date, 193 countries have signed on to the agenda, which

is intended as a universal set of principles to move humanity towards a sustainable future. The 2030 Agenda³ preamble starts with the following:

This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. We recognise that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development.

The three Ps—people, planet and prosperity—reflect the interlinkages between human and natural systems. The 17 SDGs are all construed as standing on three pillars: social, economic and environmental. While each of the SDGs approaches development from its unique entry point, the three pillars or dimensions are present in every goal in different ways. The achievement of all of the goals depends on every one of the three pillars to remain solid. In fact, it has been suggested convincingly that a better analogy than a stool resting on three legs, would be a cake with three layers (Rockström and Sukhdev 2016). The bottom layer of the cake consists of the biosphere goals on which the social and economic layers rest.⁴ If the bottom layer collapses, the layers upon it will by necessity collapse too.

In practice, however, the attention that the pillars—or layers—have received is far from equal. Most attention has gone to the economic goals and unabated growth in gross domestic product (GDP) remains the main focus of most governments and the predominant way in which development is measured. Some progress has been made in the social domains and discussions about distribution of the proceeds of the economic growth, as well as gender equality, have made headway in some fora, albeit tentatively. The environmental dimension for its part is almost entirely relegated to a subservient role (Reid et al. 2017). Deforestation and destruction of ecosystems continue unabated, as does loss of biological diversity (Caballeros, Ehrlich and Dirzo 2017). When the environment is mentioned, it is usually only with reference to climate change, while other important aspects—biodiversity loss, overfishing of oceans, persistent organic pollutants, air pollution and others—are forgotten.

The Intergovernmental Panel on Climate Change has issued dire warnings that we are moving fast towards irreversible and severe consequences for both the planet and people in terms of disturbances to weather patterns and sea-level rise lest we limit anthropogenic global warming to less than 2°C as compared to pre-industrial levels (IPCC 2018). The Paris Agreement that went into effect in 2016 with 195 signatories under the UN Framework Convention on Climate Change (UNFCCC) has the stated aim to do just that. However, there is meagre chance that this will materialise under the current regime. The Paris Agreement is based on voluntary, intended nationally determined contributions, which even if fully implemented would not add up to sufficient reductions in greenhouse gas emission reductions to reach the goal. Marred by a free-rider problem, the agreement is unlikely to reach even the nationally determined commitments (Nordhaus 2020).

In addition to setting insufficiently ambitious goals for emission reduction and not following through with them, countries continue to promote practices that are

directly harmful to the climate and the environment. It is estimated that the G20 countries have provided at least US\$77 billion in public subsidies to oil, gas and coal projects annually since the establishment of the Paris Agreement (Oil Change International and Friends of the Earth 2020).

The consequences of climate change are already being felt and bear a true and measurable cost to society. They are not limited to poor countries, as clearly demonstrated by the wildfires caused by extended drought in Australia in 2019 and California the year after. While it is impossible to attribute any specific hurricane or typhoon to climate change, scientists are able to calculate likelihoods of such storms happening and linking these likelihoods to trends in global climate. In 2020, two strong tropical storms—Arthur and Bertha—formed in the Atlantic already before the season officially started in June. The massive Cyclone Amphan slammed into India in the Bay of Bengal causing heavy damage in May 2020, also un-seasonally early.

Sea-level rise that is caused by melting icecaps at the poles and thermal expansion of seawater with warming temperatures will inundate low-lying islands and coasts. Small island developing states (SIDS), such as the Marshall Islands and the Maldives, bear the brunt of the onslaught of the sea, risking disappearance under the waves. Sadly, the SIDS are among those countries least responsible for climate change (Uitto, Kohlitz and Todd 2017). Sea-level rise also threatens major urban conglomerations from Miami and New York to Tokyo and Shanghai. These cities are also the drivers of the global economy so damage done to them will be felt across the world in terms of significant economic disruptions. The reinsurance giant Swiss Re estimates that claims due to natural disasters in 2017 amounted to US\$144 billion.⁵ With advancing climate impacts, such claims will only increase.

As it becomes increasingly evident that efforts to mitigate climate change will not be sufficient, attention has turned to adaptation and to increasing societal resilience to impacts of changing climate. The Global Commission on Adaptation, a high-level body bringing together public and private interests, released its landmark report in 2019 (Global Commission on Adaptation 2019).

More broadly, it has been argued that the achievement of the SDGs in general is threatened by the pandemic (Naidoo and Fisher 2020). The 2030 Agenda, alongside other ambitious global accords like the Paris Agreement and the Sendai Plan of Action for Disaster Reduction, were adopted by countries at the height of globalisation when both economic growth and international cooperation were seen with significant optimism. All of this started to change already before COVID-19 but the pandemic has certainly made things more dire. Governments will have urgent priorities to rebuild their national economies after the immediate shock.

Evaluation can play a more important role than ever in feeding in lessons from development efforts and helping to ensure building back better, with sustainability principles, benefiting both the people and the planet.

Valuing natural capital

The lack of attention to the environmental dimensions reflects broadly societal values. As we only measure changes to the GDP and make decisions based on it,

financial and economic capital get the lion's share of appreciation. Social capital receives attention to the extent that it gets measured in quantitative ways. Natural capital, despite the fact that it provides almost all raw materials for economic growth (from timber to minerals to medicines) as well as a variety of essential ecosystem services, usually does not get valued at all. Its depreciation is only seen as an externality. We focus on economic capital and less on social capital. Natural capital is just simply ignored.

Over the past years, environmental economics has emerged as an important field of inquiry (Heal 2007). Much of it is based on economic valuation of ecosystem services. In standard economics, most environmental factors are considered to be externalities, and as such do not feature in economic calculations. This is a root cause of much environmental destruction. Companies and governments do not factor in the costs of pollution into their cost–benefit analyses, largely because pollution's effects are not seen as directly bearing on individual operations. The costs are often long term and shared by many actors and the society as a whole—a classic case of the tragedy of the commons (Hardin 1968). Climate change provides an extreme example of this, as the emission of greenhouse gases from energy generation, transportation, industry and agriculture will result in widespread and devastatingly costly impacts on regional and global scales—the brunt of which will be disproportionately borne by the poorer countries and the poor people, rather than the polluters themselves.

In recent years, there have been some signs of hope, as companies are sometimes moving faster than governments to curb the environmental damage their operations are causing. Partly this is because their leaders realise the risks associated with climate change and other environmental (and social) disturbances to their business models. Partly it is because of genuine concern for the environment. The private sector is huge and spans a vast range of different types of companies. It has been calculated that three agricultural commodities—palm oil, soya beans and beef—account for almost 80% of tropical deforestation (Brack et al. 2016). Markets of these daily commodities are dominated by a handful of multinational firms, some of which have taken sustainability at heart. At the same time, they depend on thousands of smallholders for their supply chains and are not able to control their environmental practices.

There are also specific challenges to environmental economics stemming from uncertainties. Pindyck (2007: 47–48) has identified three factors that are crucial to policy design and evaluation:

1. Environmental cost and benefit functions tend to be highly non-linear (i.e. the likely damage from environmental pollution may increase exponentially, and there is uncertainty about the existence and/or position of a 'tipping point', which has policy implications and emphasises the importance of the 'precautionary principle');
2. Environmental policies usually involve important irreversibilities that often interact with uncertainty in complex manners; and

3. Environmental problems tend to involve very long time horizons, which exacerbate the uncertainties inherent to policy costs and benefits.

Conservation of biological diversity often relies on the proper valuation of ecosystem services (Braat and de Groot 2012). For example, adding the value of different products and services from a forest, including that of the forest as a carbon sink offsetting climate change, may make it more economical to leave it standing than to clear cut it for timber or new agricultural land. The concept of payments for ecosystem services has emerged to signify that the beneficiaries of ecosystem services (be it clean water or recreational uses) pay others for adopting resource use models that preserve the ecosystem (Ruijs, Dellink and Bromley 2008).

However, there are limits to how one can—and whether one should—put a monetary value on everything. From a practical point of view, how do you calculate the value of, say, a rhinoceros horn? Is it the price it gets on the black market in Hong Kong or Bangkok? If so, shouldn't there then be a legal market that would reduce the price and to make rhinoceros' horns more abundant on the market? At the same time, incentive and disincentive structures should be built to make trade in rhinoceros horns less lucrative. That way, poaching and illegal trade could be regulated and, perhaps, rhinoceros populations stabilised at a sustainable level.

Nadeau (2008) provides a penetrating critique of environmental economics based on the fact that the sub-discipline is grounded in mainstream economic theory, which itself is based on assumptions that do not stand up to any scientific scrutiny. Environmental economists assume that the relative price of an environmental good, service or amenity reveals its 'real marginal values'. Environmental economists then use cost-benefit analyses to place a value on environmental externalities—or environmental goods and services that are 'external' to market system. The problem is that the damage done to the natural environment cannot be valued in simple monetary terms in comparison with the direct economic benefit arising from the damaging activity. Therefore, environmental economists employ methods to estimate the 'use-value' of the environmental resources. The results are often absurd. Citing a number of studies, Nadeau shows results that suggest that, based on survey results regarding household willingness to pay to preserve or use natural resources, the marginal cost of air pollution is just US\$26 per year or that preserving the species of bald eagle (which apart from its ecosystem value holds high symbolic value to Americans) is indeed only US\$11 per year.

There is an argument that the valuation of ecosystems and species should consider other aspects, including, in the example above, the aesthetic value of rhinoceroses and their niche in the ecosystem. There is an intrinsic value to species diversity, which goes beyond its instrumental value to humans (Washington et al. 2017). Relying only on economic valuation of species and ecosystems risks undervaluing this intrinsic, existence value. Furthermore, calculating the current economic value will not take into account the precautionary principle, that is, the possible and unknown key role of a species or ecosystem, the loss of which may trigger unexpected, even irreversible consequences.

Still, in a world that seems largely unmoved by the loss of unique species or ecosystems, and where many people are willing—or indeed compelled due to poverty and deprivation—trade environmental amenities to immediate economic benefits, the economic value of natural capital cannot be ignored. When there are many competing priorities for a limited amount of money—and in the post-pandemic world these demands are even more severe—it is important for environmental evaluators to be able to back their claims about the importance of environmental conservation, ecosystem services and tackling climate change with concrete dollar figures. The Independent Evaluation Office (IEO) of the Global Environment Facility (GEF), for instance, has pioneered methodologies for calculating the value for money of investments into biodiversity conservation, sustainable forest management and land degradation (GEF IEO 2018, 2019). These studies demonstrate that GEF projects have had global net positive impacts on both forest cover and vegetation productivity with measurable positive economic valuations in terms of carbon sequestrations and soil retention.

Evidence also supports the conclusion that political, social and economic inequalities tend to translate into environmental damage, and that addressing disparities in power and wealth is a necessary, although not sufficient, precondition for sustainability. Boyce advances two hypotheses regarding this case: (i) environmental harm is not randomly distributed across the population, but instead reflects the distribution of wealth and power, and (ii) the total magnitude of environmental harm depends on the extent of inequality (Boyce 2008: 274–275). Citing a number of empirical studies in the United States and at international levels, Boyce is able to find strong evidence that inequality is bad for the environment. He concludes that ‘rectifying the market failures and governance failures that lead to environmental harm requires repairing the disparities of wealth and power that enable these failures’ (ibid: 284). Along the same lines, COVID-19 has shown how even the impact of a pandemic is not randomly distributed. In the United States, a highly disproportionate share of the infected persons and fatalities has been among African Americans.

All of this shows how environmental, social and economic sustainability are intertwined in complex ways. Business as usual, simply pursuing economic growth at any cost will have detrimental outcomes for all three. Instead of eternal growth as an objective, we should aim for a steady-state economy that will operate within the natural limits (Hickel 2018; Czech 2020). We need to focus on creating an economy that is regenerative, where resources are reused and recycled, and redistributive, so that those still living in poverty can be lifted out of their situation, while we ensure that we do not overshoot the ecological boundaries of the planet (Raworth 2017).

There are a number of efforts to develop measurements to value the non-monetary (or at least not directly monetised) aspects of life. The suggestion of expanding measurement of human well-being beyond GDP has gained strength. One of the earliest and most successful efforts has been the Human Development Index launched by the United Nations Development Programme (UNDP) in 1990,

which defined human development as a ‘process of enlarging people’s choices’ (UNDP 1990). It further elaborated that the most critical and wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living. UNDP later introduced the concept of sustainable human development in order to integrate environmental concerns into human development measurements (UNDP 1992). Another innovative concept is the Gross National Happiness that the small Himalayan Kingdom of Bhutan uses to measure its development (Centre for Bhutan Studies and GNH Research 2016). As reported by the Guardian newspaper in May 2020, the majority of Britons would like quality of life indicators to take priority over economic indicators.

Evaluating the environment beyond projects

Evaluation suffers from the same lack of attention to the environmental foundations of sustainable development. Evaluation as a profession and practice has its roots firmly in social sciences, either through social inquiry into the determinants of social outcomes (notably in the fields of education and health) or through econometric impact evaluation using experimental and quasi-experimental designs to determine correlations between policy and programmatic actions and outcomes. Both approaches have tended to be narrowly focused on the direct outcomes of a well-defined intervention. While the former may often use a variety of methods, including participatory approaches, the latter tend towards a mechanistic exploration of correlations in specific situations (Donaldson, Christie and Mark 2009). In recent years, there has been a trend in evaluation theory towards acknowledging the importance of taking account of complex systems (Bamberger, Vaessen and Raimondo 2015). Networks such as the UN Evaluation Group⁶ have also developed solid approaches to evaluating social aspects, such as human rights and gender, in all interventions irrespective of the field in which they take place. Such approaches focusing on the environmental effects are missing.

The close interlinkages between environment and development pose specific challenges to the evaluation community. Some of these pertain to particular characteristics of environmental issues, as well as the programmes and projects designed to address them. Birnbaum and Mickwitz (2009: 3–4) categorise them as follows:

1. Differing and frequently long time horizons;
2. Disparities in scaling;
3. Data quality and credibility issues; and
4. The problem of research designs for assessing attribution in environmental policies and programmes.

The different time horizons for observing changes in natural and social systems and the often short policy and programme cycles are challenging for evaluating environmental programmes. Similarly, the spatial scales of environmental problems

(e.g. pollution or climate change often do not match the scales of political jurisdictions, migratory species move across national boundaries), which makes evaluation at appropriate scales challenging. To address these issues, Rowe (2012) has proposed a two-system evaluation approach that takes into account the different temporal and spatial frames of the human and natural systems.

As for issues pertaining to data availability and research designs, environmental programmes are often not amenable to be evaluated using experimental designs. Still, evaluation rigour can be significantly enhanced by formulating complex theories of change (e.g. by including causal hypotheses with explicit assumptions or by making observations regarding baselines and key indicators) (Vaessen and Todd 2008; Ferraro 2009). Focusing specifically on evaluation of environmental conservation programmes, a Foundations of Success team makes a case for rigorous design alternatives using qualitative, non-experimental approaches (Margoluis et al. 2009). They emphasise the context in the conservation situation, purpose of the evaluation, programme structure and circumstances, resources and capacity in selecting the most appropriate design option.

Climate change poses additional challenges to evaluation—notably a greater focus on risk, uncertainty and complexity. It also implies shifts in the objects of evaluation (e.g. new metrics and more emphasis on the policy dimensions of rich countries' engagement with poor countries) and a judicious evaluation of governance arrangements (Picciotto 2009).

Efforts to mitigate climate change and to adapt to its impacts are closely related to economic development, particularly in developing countries. Evaluating climate change-related initiatives requires different approaches (van den Berg and Feinstein 2009). Evaluation can help keep an eye on the big picture, both in development and environment, and consider relevance, effectiveness, impact and long-term sustainability.

For the above reasons, evaluating at the nexus of environment and development is challenging, as it requires operating comfortably in the coupled human and natural systems. Few individual evaluators have competencies in both and, as noted above, the cultures and methodologies of social and natural sciences also differ considerably making collaboration hard (Rowe 2019a). Most evaluators have their background in social sciences, based either in social inquiry or in quantitative economics favouring experimental and quasi-experimental research designs.

On the other side of the divide, a lot of research is carried out that relates to the effectiveness of strategies and efforts towards environmental conservation, climate change mitigation and adaptation, energy transitions, management of harmful chemicals and so forth. Most often, this is not framed in terms of evaluation, which in itself reflects the divide in language used. Similar needs have been recognised by natural scientists. Bennett et al. (2016) identify four types of barriers to mainstreaming social sciences into conservation science: ideological, institutional, knowledge and capacity. They call for more inclusive and integrative conservation science that will enable more ecologically effective and socially just conservation.

Apart from the particular challenges of evaluating environmental programmes and projects, there is a strong argument for moving beyond evaluating only individual interventions. Environmental concerns, which should feature in all national development strategies to render them sustainable, must be evaluated. First of all, there is a need to move beyond focusing on development cooperation projects into a broader vision of sustainable development (with and without development cooperation).

The implication to be drawn from both the evaluation and environmental research traditions is that evaluating at the nexus will most often require collaboration and multidisciplinary teams using multiple mixed methods (Uitto 2019; Patton 2020)

Picciotto (2007) has argued that the main unit of account for evaluation should shift from the project level to the country level, making development evaluation a country-based and country-owned process instead of a donor imposition. The country focus is also built into the evaluation of the SDGs (Uitto 2016). The downside of this approach is that aggregating all county-level results will not add up to a global picture. This is particularly true given the fact that the SDGs have lent themselves to a menu of options from which countries can choose to prioritise some over others.

In the climate change arena, the nationally determined contributions are similarly not readily rolled up to a global level in a meaningful way. Evaluation must also address the issue that though many individual interventions seem to succeed in reaching their objectives, there is little to show by way of solving the broader national- or global-level problems.

Another powerful option to using the country as the unit of analysis is evaluating portfolios of interventions addressing related problems (Patton 2020: 115–116). This approach has been taken by many agencies (such as the World Bank, UNDP, Climate Investment Funds and the GEF) that have portfolios of similar projects or programmes implemented either globally or regionally. Such portfolio-level evaluations can be particularly useful for extracting lessons for future programming strategies.

When it comes to approaches and methods, it is time for evaluators to put aside battles about ‘gold standards’ and the superiority of certain types of methods. Evaluating at the nexus of environment and development requires a broad range of methods that capture the complex interlinkages between natural and human systems. This mixed methods approach should be based on the selection of those most suited to answer specific evaluation questions. Too often, it seems, it is vice versa: the methods choice is determined by the preferences and abilities of the evaluator, and it in turn determines what kinds of questions are asked. Context matters in evaluations and there is a huge variety of situations that demand a variety of approaches. Patton (2020: 101–103) has called for eclecticism—a *bricolage* methods principle—in choosing among a wide range of tools, both quantitative and qualitative, to answer the right questions. In environmental evaluation, such methods include geospatial tools, which can be used in combination with other more traditionally utilised approaches, including household surveys and participatory approaches (Lech et al. 2018; Sidman, Fuhrig and Batra 2020; Runfola et al. 2020).

Themes

This book is organised into two sections. The first section consists of chapters that address conceptual issues related to evaluating international cooperation around environment and development. Following this introduction, in Chapter 2, Rob van den Berg traces the historical shift in development cooperation towards a sustainable development perspective that considers global public goods at its centre. The chapter emphasises the need to consider risk when evaluating sustainability. Climate change has added new elements of unpredictability that pose the need to turn sustainability into an adaptation issue to be considered when evaluating how to best address global public goods. The chapter places the discussion in the context of the 2030 Agenda and the SDGs as well as the Paris Climate Agreement, tracking the new thinking on sustainable development and how this relates to managing and evaluating global public goods.

In Chapter 3, Andy Rowe discusses the poverty–environment nexus, analysing factors such as connectivity and scale, differing worldviews and a weak intellectual infrastructure for evaluating natural resource interventions. He considers how evaluation needs to adapt to enable it to contribute to sustainable development for which the urgent deployment of the full phalanx of evaluation methods and capacities is needed. The chapter reflects the changing landscape following the adoption of the SDGs and experiences in the field applying the principles and approaches for sustainability-ready evaluation.

In Chapter 4, Hazel and David Todd explore the increasingly damaging effects of climate change on the global environment and observe that it is the poor, who are most severely challenged by it. Weather-related events are increasing in frequency and severity, and in regions such as Asia-Pacific and the Caribbean disaster risk is outpacing resilience, posing severe limitations on poverty reduction. They observe that many international interventions attempt to address the overlaps between climate change adaptation and disaster risk reduction within a poverty reduction framework. Evaluation among international agencies has struggled to assess the progress and results of these efforts, given their exceptional complexity. While theory-based evaluation approaches have proved useful, they have often failed to find a suitable level of theory, which can provide clear findings and actionable lessons and recommendations. The chapter recommends an approach in which different levels of theory, from project through to the global environment, can be ‘nested’ within each other, so that each addresses a specific aspect, while contributing towards evaluation of higher levels of social and environmental change.

The second section of the book focuses on approaches and challenges to evaluating environment in development programmes bringing together cases from actual evaluations in the field. In Chapter 5, Anupam Anand and Geeta Batra suggest that remote sensing and geospatial methods are useful, innovative tools for measuring environmental impact. They provide reliable and cost-effective baseline information, help detect changes over time and track progress towards the achievement of environmental and other development targets. Given scarce

resources and time constraints, remote sensing and geospatial data and tools are valuable in complementing other qualitative and quantitative evaluation methods. Using data on interventions implemented by the GEF, they present the application of geospatial approaches in addressing relevance, efficiency and effectiveness of interventions on forest cover, habitat quality and carbon sequestration.

Impact evaluation has gained importance as a way of analysing whether programmes and projects make a change in people's lives. However, the use of impact evaluations in international cooperation around environment and development is challenging, because such programmes are seldom amenable to counterfactual analysis that forms the basis of experimental evaluations. A rare exception from a large-scale programme is the impact evaluation of the GEF's support to the South China Sea, the object of Aaron Zazueta and Jeneen Garcia's chapter (Chapter 6). The evaluation sought to assess the progress towards impact in this large and complex setting by establishing causal linkages between the programme's interventions and the changes observed in the field, and by identifying GEF interventions' specific contributions in relation to other actors and confounding factors. The chapter looks at the extent to which the assumptions of the GEF-supported interventions and the evaluation's theory of change have remained valid over the ten years since the evaluation took place. Taking a longer time perspective, the chapter reflects on how contextual developments in the South China Sea have affected the long-term objectives and outcomes of the interventions under evaluation.

In Chapter 7, David Todd and Rob Craig present an approach to gauge progress towards impacts in environmental programmes utilising a theory of change methodological approach. This field-based Review of Outcomes to Impacts (ROtI) takes into account the lengthy time span of environmental change and the complexity of impact pathways, which complicate evaluation of environmental programmes. The approach has benefited from practical application in the GEF impact evaluation programme. The revised chapter introduces the application of the ROtI methodology in the climate change arena, beyond the original focus on biodiversity and natural resources management, drawing upon a concrete example from Jamaica.

In evaluating climate change mitigation interventions, many questions revolve around the impacts on the emissions themselves (e.g. Did the intervention actually produce emission reductions? Who can claim credit for the reductions?), even though the interventions themselves are often systematic, and the impact of specific intervention aspects on greenhouse gas emissions is hard to identify and attribute. Assessing various aspects' relative contributions requires a clear understanding of the reasons why (and in what context) more sustainable technologies are used and what hampered the use of the technologies prior to the intervention. In Chapter 8, Christine Wörten develops a programme theory for climate mitigation interventions that does not rely on outcome-based positive contributions to poorly tangible intermediate project objectives, but on an assessment of the situation in which a market for sustainable energy products or services does not exist. By representing a full programme theory for market development, the 'theory of no change' is able

to assess whether or not an intervention contributed to a more favourable framework for the market for a sustainable energy technology. It can be transferred with small modifications to other types of behaviour or systems change. The framework is able to integrate the context of a project into the assessment and can help optimise the match between interventions, barriers and change (or the lack thereof).

Not all international cooperation takes place through projects and programmes in the field. An important field of work pertains to developing global governance frameworks and to influencing international and national policy-making processes. Evaluation of such normative work has received even less attention than the evaluation of projects and programmes. In Chapter 9, Segbedzi Norgbey and Michael Spilsbury argue that there are no major differences between methods to evaluate normative work in the environment and methods to evaluate operational activities. Their ideas are informed by the evaluation work conducted in the UN Environment Programme (UNEP), a major actor in global environmental governance.

In Chapter 10, Carlo Carugi and Heather Bryant discuss the opportunities and challenges of conducting joint evaluations in the SDG era. The integrated nature of the SDGs calls for greater synergy, harmonisation and complementarity in development work, which is increasingly being reflected in evaluation. While the SDGs have brought the social, the economic and the environmental closer to each other in discourse, development practice and evaluation are often carried out with a focus on the human or the natural system, rather than both, which does not bode well for sustainability. Carugi and Bryant argue that one way to address the integrated nature of the SDGs is through joint evaluation where diverse institutions bring together their corporate skills, data, technical knowledge, expertise and experience to the assessment of the social, economic and environmental dimensions of development initiatives. The chapter describes how, despite challenges, joint evaluations offer significant advantages that can lead to important institutional and strategic changes with a view to strengthening development results in both the human and environmental spheres.

In Chapter 11, Michael Stocking examines the theoretical and practical issues faced by evaluators in Africa. After reflecting on the scope and approach of the Evaluation of UNDP Contribution to Environmental Management for Poverty Reduction and challenges of evaluating such a complex, cross-cutting topic, he highlights the evaluation's overall findings and what they mean for organisations attempting to integrate poverty and environment in their programming.

Launched in 1991, the GEF Small Grants Programme (SGP) helps developing countries to protect the global environment and contribute to sustainable development through mostly community-based small projects. Since its inception, SGP has funded some 24,000 small projects in over 120 countries. In Chapter 12, Sulan Chen and Juha Uitto highlight issues related to the relationship between global environmental objectives and national and local development results within the context of SGP. The authors question the assumptions behind evaluating the programme on the grounds of aggregating its direct environmental impacts—whether with regard

to protecting fragile ecosystems or promoting development that reduces greenhouse gas emissions—from thousands of small projects to the global level. Instead, they argue for taking a broader approach to defining SGP results to include national-level effects on policy and institutional development and on advocacy and inclusiveness.

An important element of sustainable development and the transition to a green economy is knowing how to assess the implicit trade-offs among economic growth, environmental sustainability and social equity. Efforts merely perceived as ‘green economy’ may not deliver other promised social and economic outcomes. In Chapter 13, Ronal Gainza and Simon Lobach demonstrate how evaluation requires a thorough understanding of the outcomes and measurement framework that helps to assess the magnitudes of such trade-offs. Using four case studies, their chapter presents a framework for such measurements and provides examples from Latin America and the Caribbean of how the framework may be used in international and national decision-making.

A significant amount of the world’s freshwater resources is located underground. The urgency of better aquifer management is widely recognised, especially as more regions become acutely water stressed. Efforts have been underway over the last two decades to focus greater attention on the wise management of aquifers, and to forge greater cooperation among nations sharing transboundary aquifer resources. The GEF has been an important funding source for this work, sponsoring projects focused on improved aquifer management. These projects aim to better understand the boundaries, volume, extraction rates and pollution risks to aquifers, and forge agreements among nations to better manage their shared resources. In Chapter 14, Alan Fox draws important lessons from the evaluations of GEF-sponsored aquifer projects, emphasising the challenges to better stewardship of these vital resources. While some progress has been made in groundwater modelling and mapping, in the development of methodologies for aquifer protection and replenishment, and the establishment of a few cross-border institutional frameworks, the overall picture is negative. There remain wide gaps in understanding about groundwater systems, and effective governance and institutional frameworks are scarce.

Natural disasters have a disproportionate impact on the poor because the risks and human costs are strongly associated with poverty. The SDGs and the Sendai Framework for Disaster Risk Reduction have provided a renewed impetus by recognising disaster risk as one of the key constraints in reducing economic loss, sustaining development gains and reducing poverty. The extent to which international agreements resulted in national policies that promote integrated approaches to development, to reduce disaster risk and enable climate change adaptation is evolving. In the area of climate-related disasters including slow-onset disasters, disaster risk reduction and climate change adaptation have similar goals, which calls for more coordinated programming at the national level. There has been increasing financing for climate change adaptation through various funding mechanisms further strengthened by Paris Agreement in 2016, while

there remain resource challenges for similar goals in the area of slow-onset disasters. This highlights the importance of combined efforts in the area of adaptation and climate-related disaster risk reduction efforts, specifically integrating such efforts as part of key development strategies rather than as stand-alone efforts. Facilitating humanitarian and development nexus to enable linkages between disaster response and long-term development has been on the agenda of the national and international agencies for over a decade. Drawing on evaluations of the UNDP, in Chapter 15, Vijayalakshmi Vadivelu revisits the disaster risk reduction efforts at the national level and at UNDP since the adoption of the SDGs and Sendai Framework. The chapter examines the extent to which disaster management and adaptation and their intersecting dimensions are integrated into development efforts.

In Chapter 16, Roberto La Rovere outlines the approach to the evaluation of climate change, environment and natural resource management in the context of the Consultative Group on International Agricultural Research (CGIAR). Evaluating the impact of research activities poses specific challenges that differ from evaluating development programmes or normative work. Given the nature of the work of the CGIAR system, it is important to take a systematic and common approach to evaluation that covers the network's various dimensions—including its environmental, social and economic dimensions. Over the last decade the relative importance, urgency and share of the CGIAR investments in climate change research in agriculture has grown dramatically, together with the gearing up of the Research Programme on Climate Change, Agriculture and Food Security (CCAFS) and its various evaluations.

Conclusion

Environment and development are intrinsically interlinked. Even in the post-industrial societies in the global North, economic development rests on a healthy natural resource base. This relationship is even more pronounced in poorer communities and among poor people who eke out a living from agriculture, fisheries, forestry and extractive industries—people whose livelihoods depend directly on ecosystem health. We also know that gender considerations are at the centre of sustainable development. Women form the majority of small farmers in developing countries responsible for cultivating land and feeding their families. Indigenous peoples in many parts of the world often live close to the nature. Their worldviews also often reflect a holistic perspective that sees humankind as part of the natural world (Rowe 2019b).

There is an environment–poverty nexus that is often neglected in development endeavours that aim for economic growth and/or poverty reduction. Too often activities that aim for economic development end up destroying the very environmental and natural resource base on which the people and, ultimately, the economy depend.

More than three decades ago, the World Commission on Sustainable Development⁷ introduced the concept of sustainable development to our vocabulary, calling for making 'development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs' (United Nations 1987). Their work clearly recognised the linkages between environment and development and the importance of preserving the natural resources that sustain the Earth and its people. Still today, no country has fully adopted these principles. On the contrary, destruction of the natural environment and rampant pollution continue unabated. Many people in both the global North and South believe that there is a necessary trade-off between economic progress and preserving natural resources, despite evidence to the contrary—especially when taking a long-term view. The COVID-19 pandemic has provided a brutal warning of what hardships ignoring the natural environment inevitably brings.

The environment is a global public good that gets short shrift as the world pursues economic growth, as in the short term it is seen as an externality. Natural capital is routinely ignored in economic calculations. There is a tendency that development projects ignore the environment, whereas environmental projects operate in isolation and, consequently, fail to instigate larger, meaningful change that broadly benefits people. There is a need to be better able to demonstrate the economic value of the environment and natural resources, while not losing sight of the intrinsic value of nature that cannot be measured in monetary terms. Such valuations must also take into account the non-linearity and uncertainty associated with environmental change and unknown tipping points.

Evaluation must contribute to a better understanding of how environment and development interact and to identifying win-win solutions and approaches to the problems. Evaluation must also consider the big picture, the larger impacts that all of our projects, programmes, strategies and policies aim to contribute to. Although providing accountability for results and resources used at the level of individual interventions continues to be needed, it is important to ensure that these interventions effectively contribute to the overall goal of a more sustainable and just future. Evaluation should not be seen as a control function, but as an essential tool among others to improving the design and implementation of development efforts.

To remain relevant in the increasingly complex and interconnected world, it is absolutely essential for evaluation as a profession and as a practice to engage in the discourse at the nexus of human and natural systems. That is where we as a community can contribute, with our practical knowledge anchored in research, to a transformation towards a more sustainable development path. As evaluators, we must play a role in ensuring that, after a crisis such as the COVID-19 pandemic, we build back better towards a society that is environmentally more sustainable and socially, economically and politically more just.

It is my hope that the chapters in this collection will make a useful and interesting contribution to how to better utilise evaluation for achieving development that is more sustainable for people, the planet and prosperity.

Notes

- 1 <https://www.cidrap.umn.edu/news-perspective/2003/05/estimates-sars-death-rates-revised-upward>.
- 2 <https://www.worldbank.org/en/topic/poverty/brief/projected-poverty-impacts-of-COVID-19> (accessed on 20 June 2020).
- 3 <https://sustainabledevelopment.un.org/post2015/transformingourworld>.
- 4 Biosphere goals: 6 – clean water and sanitation, 13 – climate action, 14 – life below water, 15 – life on land; Society goals: 1 – no poverty, 2 – zero hunger, 3 – good health and well-being, 4 – quality education, 5 – gender equality, 7 – affordable and clean energy, 11 – sustainable cities and communities, 16 – peace, justice and strong institutions; Economy goals: 8 – decent work and economic growth, 9 – industry, innovation and infrastructure, 10 – reduced inequalities, 12 – responsible consumption and production. Note: Goal 17 – global partnerships is cross-cutting to all.
- 5 https://www.swissre.com/media/news-releases/2018/nr20180410_sigma_global_insured_loses_highest_ever.html (accessed on 17 January 2021).
- 6 <http://unevaluation.org/>.
- 7 The so-called Brundtland Commission, named after its chair, the former Norwegian prime minister Gro Harlem Brundtland.

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