Global Economy and Development at BROOKINGS

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RIO+20: COALITIONS DRIVING BOTTOM-UP CHANGE

JUNE 2012

Acknowledgements:

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Support for this publication was generously provided by the Government of Norway.

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INTRODUCTION

Representatives from world governments, civil society and the private sector will gather in Rio de Janeiro on June 20-22 to address the many environmental challenges facing the global community. The Rio+20 Summit will mark the 20th anniversary of the 1992 United Nations Conference on Environment and Development, and although many gains have been achieved over the past two decades, the climate change agenda continues to move at a glacial pace while at the same time climate risks are increasing. As the Rio+20 approaches, the challenge will be to reenergize international will for meaningful progress in addressing climate change, achieving sustainable growth and development, and protecting the environment.

The United Nations Conference on Sustainable Development (UNCSD), or Rio+20, has identified seven key priority areas for discussion: decent jobs, energy, sustainable cities, food security and sustainable agriculture, water, oceans and disaster readiness. Green growth as a pathway for sustainable development has been proposed as an element to integrate these priorities. Other issues to be discussed include establishing a new development agenda to replace the Millennium Development Goals (set to expire in 2015) with the Sustainable Development Goals, and finding new sources for climate and sustainable development financing.

Joining the debate on the challenges and expectations for the Rio+20 Summit, experts from the Brookings Institution explore the critical issues and offer policy recommendations for leaders to consider in order to promote sustainable growth in both the developed and developing world.

Katherine Sierra outlines why green growth is important and how it can be leveraged by the international community to bolster the global growth, but explains how the outcomes from Rio+20 will be driven by bottom-up initiatives and organizations, often ahead of national governments or international consensus.

Nathan Hultman and Allison Shapiro address how innovations in technology can be used to help least developed countries move onto sustainable development trajectories through regional science foundations, nations business incubators, and dedicated funds to de-risk investment and encourage intellectual property sharing.

Homi Kharas and **David Steven** argue that the Sustainable Development Goals need several years of negotiation and development in order to avoid "the curse of the sequel" and that Rio+20 should only launch the process and not determine the goals themselves.

Bruce Jones describes how the international framework for implementing Rio+20's action items must be reformed in order to achieve success through the creation of a new U.N. Council on Sustainable Development or adaptation of the U.N. Economic and Social Council.

Joshua Meltzer calls for more international cooperation to reduce trade barriers described in the WTO Doha round, however, he explains that countries have the right to act unilaterally in achieving emissions reductions if consensus cannot be reached.

Mark Muro and Devashree Saha examine how cities and regions are increasingly the chief locus of labor force matching, technical innovation and adoption, industrial output, and social opportunity, making them the key drivers of green economies and domestic green growth policies.

William Brown explains the importance of natural capital, like ecosystems, oceans and biodiversity, being incorporated into the economic planning of governments and private enterprise, and calls on Rio+20 participant nations to mandate consideration of natural capital in national wealth accounting.

TWENTY YEARS LATER: WILL GREEN GROWTH BE THE GAME CHANGER NEEDED FOR SUSTAINABLE DEVELOPMENT?

Katherine Sierra

Framing the Issue

In June world leaders will meet in Rio de Janeiro for the 20th anniversary of the 1992 United Nations Conference on Environment and Development—the Earth Summit—in an attempt to provide new political momentum for sustainable development. At Rio+20, they will face a vastly different and more difficult terrain than they encountered when they first met 20 years ago. Population growth and urbanization is putting pressure on the environment and social systems. Growing energy demands and competition for land use thwart efforts to reduce greenhouse gas emissions. The International Energy Agency warns that the world is on a path toward a temperature increase of more than 3.5 degrees Celsius over pre-industrial levels, which is dangerously over the 2 degree Celsius goal set by climate negotiators. Competition for water is straining natural systems while the impacts of a changing climate are already being experienced, with the poorest the most vulnerable.

The ability of international institutions and cooperation to solve many of these issues is under strain as well. International climate negotiations continue to move at a glacial pace and other environmental treaties and agreements are under-delivering. The 2008 economic crisis continues to impact the economies of the United States, Europe and Japan with jobs, debt and deficits consuming political agendas.

These trends have thus prompted new ways of thinking about green growth as a pathway for sustainable development. This green growth agenda looks to meet the world's environmental and social challenges, using technology and innovation as key levers to drive job creation and economic growth. In particular, new technological advances—particularly the rise of information and communication technologies—are beginning to signal ways in which transformative change, if supported by the right set of policies, could meet the sustainable development challenge. Additionally, new coalitions between government, business, academia and civil society are starting to take action, not waiting for global or national consensus.

Policy Considerations

Green growth advocates call for strategies that emphasize efficiency and productivity as important foundational goals. Demand management policies that price energy and water at levels reflective of externalities are needed, starting with removal of fossil fuel subsidies and the implementation of policies that price carbon. Green growth's efficiency goal will be critical as we lay the next generation of infrastructure to support an additional 3 billion people who will be living in cities by 2050, mostly in Asia and Africa. More compact and denser cities will require lower infrastructure and energy costs per capita as density rises, and will need to take advantage of cleaner mass transit solutions that reduce local pollution, with attendant health benefits. Valuation of natural capital in economic accounts will help policymakers make better trade-offs between hard infrastructure investments and solutions that use ecosystems to provide services, such as fresh water sources and natural buffers against water related disasters. Market mechanisms, such a basin-wide water markets, can provide the signals needed to manage resources—especially in water stressed regions.

While these policies have been in the sustainable development toolkit for decades, they have not been widely implemented. Green growth strategies aim to make these policies more attractive by leveraging new technologies to lower costs and transform business models. Renewable energy technologies are the most often discussed, but breakthroughs and advances in information and communications technologies (ICT) may be as important. Municipal leaders are experimenting with "smart city" systems that use ICT to manage water and transportation systems more efficiently while reducing resource use. Smart grids can help manage the flow of renewable energy into the grid, and can also make distributed energy systems possible. Innovations in irrigation system technology can help meet the growing demand for food while also removing a major source of inefficiency in agricultural energy and water use. Developers are experimenting in using energy efficiency and local renewable energy generation technologies to create zero-emission commercial buildings and housing.

Proper pricing regimes, as part of the efficiency goal, will also be a critical element in driving the innovation agenda. Actions could include: public and private investment in research and development; strategies that nurture coalitions between research institutions and entrepreneurs, like business incubation centers and an enabling environment for venture capital; policies like targeted, transitional subsidies to help innovations move out of the "valley of death" or the part of the innovation cycle between invention and commercialization where new technologies often falter; and especially for developing countries, financial mechanisms to help commercialize investments in new technologies by backstopping initial risks as a way of promoting early adopters.

The green growth agenda is still in an early stage of development. Its concepts are being tested in a few national contexts, with Korea being the most notable example. International organizations like the Organization for Economic Cooperation and Development (OECD), the United Nations Environment Program (UNEP) and most recently the World Bank with its latest report "Inclusive Green Growth", are articulating the case for green growth. The Global Green Growth Institute, an international think tank based in Korea, was created to promote these concepts by supporting the development of national strategies and related capacity building.

While these global platforms are important, the most exciting new elements are being driven by a fresh generation of local leaders and multi-stakeholder coalitions. These include the C-40 Cities Climate Leadership Group, a coalition of cities from developed and emerging economies who are committed to taking action. New public-private financing models are being developed such as the Joint Initiative on Urban Sustainability, which is being launched by the United States and Brazil to bring together investors and cities to secure innovative financing for sustainable infrastructure investments. The Sustainable Energy for All Initiative, a global coalition between of government, business and civil society under the auspices of the U.N. Secretary General is looking for breakthrough action on energy access for the poor, renewable energy and energy efficiency. A common thread is the way in which these coalitions are capitalizing on new green technologies; creating new business models that give incentives to the private sector to find innovative sustainable development solutions; and using limited public funds to leverage private investment and finance.

Recommendations for Rio+20

Rio+20 is not expected to result in a set of concrete deliverables. Indeed, negotiations so far have been disappointing and the draft outcome document lacks ambition. Delegates may begin a process to develop sustainable development goals as discussed by Homi Kharas and David Steven later in the packet, but the goals themselves still need significant discussion before they are formed. The main outcome may well be the energy created by concrete bottom-up initiatives that will be formally introduced at the conference and will be driven by coalitions who are not waiting for a global solution. The Sustainable Energy for All initiative hopefully will be endorsed, the type of coalition which Bruce Jones discusses in his chapter on building a new international framework for development. These types of coalitions are not based necessarily on international consensus on one way forward, but rather bringing together the many different initiatives already in existence.

Similarly, issues related to green growth will also lack tangible outcomes. However, at Rio+20, leaders should encourage the green growth agenda by signaling support in a few key areas:

- **Pricing natural resources**. While Rio+20 cannot be a substitute for climate negotiations, leaders can signal the importance of climate negotiators in making progress towards setting national (if not global) policies that set a price on carbon, either through a tax or market mechanism. Leaders should also commit to implementing the G-20 agreement to eliminate fossil fuel subsidies. Moves to introduce natural capital accounting into economic accounts, as discussed by William Brown in this volume, should be accompanied by concrete pledges by willing countries and companies.

- **Leveraging international finance.** Leaders should direct key multilateral funders, like the multilateral development banks and specialized funds like the Green Climate Fund, to direct their funding to country-driven green growth investments. Multilateral and bilateral funders should be asked to more aggressively support the innovation agenda by leveraging private sector action through mechanisms that reduce risk. And, as argued by Mark Muro and Devashree Saha in their chapter, with the generational opportunity to change the emissions trajectory of cities given rapid urbanization, and the importance of cities as drivers of innovation, financial mechanisms to meet the large sub-national needs for green infrastructure investment should be given priority.

- **Investing in innovation.** Leaders in both developed and emerging economies can pledge to step up investment in research and development in their own countries, while also investing to build research and development capacity in least developed countries. As outlined by Nathan Hultman and Alison Shapiro in the next essay, this could be through a combination of direct support to research through competitive grants, while also extending to development of innovation capacities via business incubation centers and financial mechanisms to support venture capital in least developed countries. And further liberalization of trade for environmental goods and services, as discussed by Joshua Meltzer, can also support diffusion and impact of new technologies.

GREEN GROWTH INNOVATION IN DEVELOPING COUNTRIES

Nathan Hultman and Allison Shapiro

Framing the Issue

We are at a promising moment in the development of international policy for green growth and innovation. Despite the ambitious and well-intentioned aspirations of past meetings, over one billion people still do not have access to electricity; water availability and sanitation is improved but not close to universal; and 4 billion people live at the Base of the Pyramid (BOP) on less than $9 per day. Furthermore, the world is not on a pathway to arrest the climate crisis. Climate impacts are already being felt, with the greatest vulnerabilities in the developing world. At the same time, the extended global economic recession has brought fiscal austerity in OECD countries, which has limited public sector's ability to respond.

From this turbulence, however, have surfaced new conceptualizations of development that highlight the role of innovation and new technologies and processes as ways to encourage economic growth while simultaneously transitioning onto a cleaner, more sustainable global economic pathway. The world has renewed impetus, therefore, to build the capacity for green growth innovation into our international and national educational, industrial, governance, and fiscal infrastructures. The need for policy and market innovation for environmentally sustainable development is clear—but the means are complex. The challenges of the 21st century require all countries to move towards cleaner economic trajectories while improving the quality of life of the world's poorest.

Policy Considerations

One critical vehicle for reaching these development, economic, and environmental goals is technological change. Although not sufficient in isolation, technological innovation will continue to advance us toward goals in human health, natural resource sustainability, and social equity. As a result of more widespread economic development in recent decades, global capacity for research and development is evolving broadly across the developed world and emerging economies. Consequently, the diffusion of technological knowledge and devices is shifting away from a unidirectional north-to-south flow to a more networked global innovation ecosystem.

However, we are really only at the initial stages of change, and building on this progress will require action to encourage new ideas and to ensure that those ideas can reach, and

even transform, the market. The challenge of transitioning onto cleaner development pathways is particularly difficult for developing countries, whose need for rapid economic growth often outweighs the importance of sustainable or 'clean' growth. This is one area in which international aid needs to better support developing countries as they design and implement their green growth strategies.

Many policy and intellectual property (IP) tools exist to spur technological innovation, although they vary widely across countries. In addition, dozens of financial products have also been created to diffuse and reduce risk in technology investment. The most effective ones reflect all of the following factors:

- **Relevance to the challenges of green growth at all levels of industry.** The ideal international architecture will be able to support breakthrough technology development at small, medium, and large scales.
- **Capability of stimulating both high-tech and low-tech innovations. Innovations that adapt existing technologies to specific contexts or that enhance their ease of use** could be the key to meeting many LDCs' clean development needs. Policies to stimulate this absorptive capacity would increase the quality of science, technology, and innovation in higher education, retain talent in-country, stimulate technology "discovery" at all levels of innovation (from household through the research laboratories), and to promote economy-wide openness to new technologies.
- **Support for innovation across the technology value chain.** Technology deployment can be encouraged through financial support, logistical support for supply chain development and security, and consumer marketing to improve market penetration. This includes substantial investment in business advisory services to attract international venture capital and to take successful start-ups to full commercial scale.
- **Inclusive financial innovation to de-risk private investment.** Innovative financial products can leverage public investments by de-risking private capital. Examples include first loss funds, sovereign risk insurance, collateralized loans with flexible interest rates depending on project outcomes, etc. There are many funds that are supporting this objective, like the Green Climate Fund of the Climate Investment Funds. The Green Technology Fund, recently approved as part of the United Nations Framework Convention on Climate Change (UNFCCC) negotiations, will likely focus on this as well, possibly through its private sector facility. But most funding has gone to support deployment of proven technologies into developing countries. Little focus has been on providing de-risking support for earlier stages of the research and development demonstration and deployment (RDD&D) continuum.
- **Added value to existing institutions.** It is essential to design a new architecture that compliments existing international initiatives aimed at stimulating clean technology RDD&D. Some such initiatives include the UNFCCC Tech Mechanism, CGIAR, Clean Energy Ministerial, the Green Climate Fund, and Infodev Climate Innovation Centers. It will be important to understand not only the gaps in services provided by these organizations but also which programs have been most successful so they can be replicated in other countries and to other sectors.
- **Attractiveness to investors, policymakers, and developing countries** In this era of fiscal austerity, it will be essential to create an infrastructure with sufficient incentives to leverage public financing from developed countries

From these criteria, three categories of programs offer the most likely value for a renewed international initiative to support green growth innovation: regional science foundations, national business incubators, and dedicated funds to de-risk entrepreneurial investments and stimulate the sharing of intellectual property (IP). These three approaches would, moreover, be more powerful if deployed simultaneously because they address different elements of the innovation ecosystem.

Recommendations for Rio+20

Hundreds of international initiatives exist to promote natural resource sustainability and poverty alleviation in developing countries. However, there remain major gaps in international collaboration. The Rio+20 meeting pro-

vides an almost unparalleled opportunity for expanding the narrative of sustainable development to include the enhancement and restructuring of innovation. The Rio meeting should establish a new international green innovation partnership to hasten the pace and scale of innovation, stimulate international venture capital markets, and broaden international cooperation across public and private partnerships for RDD&D.

Such a partnership could build on the work of existing institutions and be supported by a network of regional science foundations, national business incubators, and investment de-risking funds. This new approach would both build capacity for technology development and adoption, and encourage private sector engagement in developing country research and innovation for green growth.

- **Regional Science Foundations.** Regional science foundations are envisioned as intergovernmental agencies charged with setting regional science priorities, including but not limited to green growth, and deploying funds provided by both member governments and international aid donors to meet these priorities. Such foundations would encourage greater south-south collaboration and applied research into all types of innovation. Funding would cover research grants, scholarships, fellowships, peer-reviewed publications, and cooperative/extension programs with non-profits and firms working in priority areas as determined by the foundation. Such institutions would also support the regular meeting of scholars, practitioners, and funding recipients via research conventions, policy advisory meetings, and other opportunities to share information and network. Possible models include the U.S. National Science Foundation, the European Science Foundation, and the Third World Academy of Sciences, among others. Grant criteria could encourage capacity building and collaboration by requiring researchers to partner with peers at other leading research institutions.

- **National Business Incubators.** To support technology deployment and enterprise development, national business incubators could be established to provide business advisory support, including a full suite of business advisory services and network facilitation to in-country entrepreneurs and start-ups working in all sectors. Such organizations would directly address the need to bridge research and commercialization by entrepreneurs in the private sector. The incubators would be responsible for identifying and conducting outreach to promising entrepreneurs and start-up companies as well as providing a host of business advisory services to them. Services they could provide include but are not limited to: business plan support, networking facilitation, access to international venture capital and supply chains, pitch training, finance training, access to market research, office space, facilitation of technology transfer, and negotiation of IP licenses. Incubators could support and enhance the pipeline quality of existing green technology transfer mechanisms such as the UNFCCC Technology and Clean Development Mechanisms. Possible models include the Infodev Climate Innovation Centers, CIETEC in Brazil, CIEE in India, and university technology transfer offices such as those at the Massachusetts Institute of Technology and Stanford University.

- **Dedicated Funds to De-Risk Investment and Encourage IP Sharing.** Large dedicated funds can encourage private investment in developing country projects or in companies that meet specified social and environmental criteria; in addition they can provide incentives to IP developers to share patent and technology implementation information. A risk capital fund would provide development-oriented financial instruments to investors and project developers for companies interested in deploying innovative technologies. Financial instruments include but are not limited to concessional loans, sovereign guaranteed loans, first loss funds, partial credit or risk guarantees, and equity or quasi-equity investments.

THE SUSTAINABLE DEVELOPMENT GOALS:
"Curse of the Sequel" or "Adopt, Adapt, Improve"?

Homi Kharas and David Steven

Framing the Issue

The Millennium Development Goals (MDGs) set targets and indicators for a global development partnership through 2015. At one level, the MDGs have been an enormous success. They have remained relevant and at the center of the global development discourse for over a decade, they have mobilized significant new resources for development, and they have aligned the efforts of a diverse range of actors from governments to businesses and non-profit organizations along seven main development outcomes. While there are many criticisms of the goals and skeptics who argue that the recent rapid decline in poverty cannot be attributed to the MDGs, few other international economic agreements have achieved more for the most vulnerable.

Thus it is natural to suggest a successor framework to the MDGs. Some have called for MDGs to be replaced with Sustainable Development Goals (SDGs), which would be focused on a much broader set of problems to tackle extreme poverty. Supporters of the SDGs believe they can be a flagship deliverable from the Rio+20 Summit, the first major international forum where this new idea will be discussed. But will the SDGs suffer from the 'curse of the sequel' and fail to improve on the original MDG framework? Or can they adapt experience gained over the past decade and apply it to a much more challenging set of tasks? And if the curse of the sequel is to be avoided, what process will surmount significant political obstacles to achieving consensus while ensuring effective learning takes place?

Policy Considerations

The Secretary General of the United Nations has already argued that the SDGs should be universal (applicable to all countries, rather than just to the poorest) and comprehensive (covering the core interlinked issues of economic development that is socially just and environmentally sustainable). That is a tall order, taking the U.N. into territory that is both complex and highly politically contentious. The challenge is to design SDGs that reflect the many dimensions of sustainable development and are simple and focused enough to frame the broad development discourse with sufficient power to catalyze meaningful implementation.

One problem is how to ensure that the SDGs are relevant to all countries. When the MDGs were endorsed, the prospect of significant new resources being part of

the package (MDG 8) motivated developing countries to sign up. For their part, advanced countries were encouraged by the commitment to more concrete results (MDGs 1-7) in exchange for their aid. In each case, politicians were able to return home from Monterrey (where the agreement was finally reached in 2002) with specific ideas about how to "mobilize financial resources and achieve the national and international economic conditions" needed to meet the MDGs.

Today, it is harder to construct a package that has something for everyone. The advanced countries are showing signs of aid fatigue and may prove reluctant to bind their own societies to global goals. Middle income countries are also reluctant to orient development pathways to international norms, preferring to maintain maximum flexibility for domestic policy. Low income countries worry that the discussions on SDGs could dilute the focus on reducing poverty. Some are also wondering how quantitative international targets can be reconciled with the qualitative improvements in peacekeeping, statebuilding and the strengthened institutions needed to underpin poverty reduction.

Yet there is hope that countries will be brought together by a shared sense that the world today faces risks that require a new commitment to collective action and global solutions. Transnational threats like natural disasters, food price spikes and energy shortages are directly related to local problems such as economic instability, a lack of jobs, especially for the young, and urban blight. Many topics once believed to be purely national in scope, such as income distribution, have become international in their impact thanks to new research linking inequality to credit booms and financial crises. Current growth trajectories, meanwhile, continue to threaten the climate and other planetary boundaries that define 'a safe operating space' for humanity.

The world's leaders could potentially use the SDGs as a vehicle to articulate a new vision that links global challenges and domestic angst, makes a case for how adopting global norms can improve the lives of citizens at home, and sets out practical steps that will help build a development model that is viable over the medium and long-term. The biggest hurdles to sustainable development paths are political, not financial or technical. Thus, the SDGs must be framed in a way that is useful politically and that serves to connect individual citizens, wherever they live, to the great challenges of our day.

This would suggest a focus on: (i) areas such as energy, food, oceans, and biodiversity where global risks are pressing and collective action is essential if we are to maximize human welfare while respecting environmental limits, and where new quantitative targets have the potential to create new focus and momentum (climate may be added if agreements are reached under the UNFCCC process); (ii) topics where there is significant potential for innovation (green growth, sustainable cities, and disaster preparedness, for example) and where learning and dissemination can be accelerated with voluntary pledges of solidarity; and (iii) construction of a global safety net that will build on the MDGs, by protecting the most vulnerable and increasing the stability of fragile states, and where financial transfers against specific criteria are feasible.

The SDGs must also mobilize and be relevant to the large number of diverse actors that are needed to tackle sustainable development challenges. The MDGs were successful because they focused myriad development efforts onto a few major axes. Today, there are even more development actors who must "own" the SDGs if they are to be successful: the private business sector, international and local NGOs, mayors and local government officials, parliamentarians, trade union members, faith organizations and concerned citizens, philanthropists and celebrities.

These actors have different interests and perspectives on development. Some focus on the multi-dimensional nature of poverty and the prospect that it is now feasible to dream for the first time of eradicating absolute poverty within a generation. Others take a human rights perspective as the basic frame and are motivated by core moral principles, such as ensuring all children are healthy, well-fed, properly educated, and live in secure and stable societies. Environmentalists, meanwhile, are focused both on damage to natural systems and the potential impact on the poorest. Perhaps most important—and least engaged as

yet—is the private sector, whose investment decisions are the main determinant of the nature, speed, and sustainability of future development trajectories.

Reconciling these disparate perspectives will not be easy. It calls for a broad and inclusive dialogue, with ample space for prioritization within different countries and in key sectors such as energy, water, or agriculture. It requires 'whole-of-government' support for the SDGs, with Ministries of Finance brought to the center of the debate, Ministries of Foreign Affairs developing new capacity to build consensus across borders, and other government departments (Environment, Energy, Industry etc.) participating in an integrated effort. The international system will also need to experiment with mechanisms for creating, incentivizing, and holding accountable new types of partnership, and especially those that require real commitment from major corporate interests.

Putting all this together is a tall order. Here again, there are lessons to be drawn from the MDG process. By the time of the Monterrey Summit in 2002, there had already been considerable technical and political momentum behind these global development goals. In 1990, the World Development Report had recommended halving global poverty, while the 1990 World Summit for Children formulated a set of seven goals endorsed by governments, relevant U.N. agencies, development banks and a large number of NGOs. The MDGs, in their final form, were derived from consolidating these early discussions and endorsements, rather than as a single process starting from scratch. *Ex post*, it would seem that the most successful MDGs were those that had been subjected to inclusive and professional consultations over a long time span, and which also had committed political champions within influential governments.

Recommendations for Rio+20

What then can be expected from Rio+20 to advance the agenda on the SDGs? We have three recommendations:

- **Endorse a process for arriving at the SDGs that brings together building blocks over time, rather than attempting to force a premature consensus in the short-term.** At least two such building blocks are already in place. The Sustainable Energy for All initiative has technical depth and real political support, and has proposed three objectives for 2030: universal access to modern energy services; doubling the rate of energy efficiency improvements; and doubling the share of renewable energy in the energy mix. The MDGs are themselves another building block, with the potential to move from relative targets to those that aim to 'get to zero' by 2030 on a new set of poverty targets.

- **Encourage innovation and create incentives for new partnerships for sustainable development.** Green growth, sustainable cities and other agendas can bring together governments, businesses and civil society in novel ways and these coalitions are spawning a vast array of experimental approaches. A mechanism is needed to accumulate pledges to contribute; categorize and monitor implementation; and finally evaluate and disseminate lessons and best practices. A proposal for a 'Compendium of Commitments' could fulfill these functions, but only if it provides a sufficiently strong basis for encouraging accountability and for providing recognition for successful innovations.

- **Embark on a process capable of building broad political support for a post-2015 framework.** At best, Rio +20 will only launch a new process. A High Level Panel will then need to take up the baton, doing the hard work of developing concrete options for new goals, sponsoring deliberations on these options at international, regional, and local levels, and beginning the process of building support from political, business, and civil society leaders. The panel can hope to provide a foundation for agreement over the next year or 18 months. Sustained leadership will then be needed from a critical mass of G-20 countries, including rising and established powers, from influential developing countries such as the g7+, which brings together fragile and conflict-affected states, from campaigners, and from the business community. The task is already an urgent one. The MDGs took a dozen years to agree upon. Their replacement needs to be in place in less than a quarter of that time.

THE INTERNATIONAL FRAMEWORK FOR SUSTAINABLE DEVELOPMENT AND GLOBAL ORDER

Bruce Jones

Framing the Issue

In the past 20 years, hundreds of millions have been lifted out of poverty and into the ranks of the middle classes. Positive changes in Africa herald the potential for more progress, and over time, the Arab Spring may create still further opportunities to integrate hundreds of millions more citizens into productive economic activity.

With success comes new challenges. Central among them is a global governance question: how can we make sure the emerging economies and the next wave of developing economies reach their potential while not reaching past the basic physical limits our planet? Many of these countries do not sit at the top tables that deal with climate negotiations (the G-20, the Major Economies Forum), and yet have vital stakes in their outcomes. This is a sweeping, inclusive challenge that will help define international order in the coming era.

Policy Considerations

When the scale of this challenge is understood, it becomes evident why this is the global governance challenge *per excellence*. Two governance proposals have dominated discussion in the lead up to Rio+20—the creation of a new Council on Sustainable Development at the U.N., or adaptation of the U.N.'s Economic and Social Council. Both have their adherents, and some versions of either could add value to the U.N.'s work. But both are, at best, at the margins of the problem.

The major problem the U.N. faces in this arena is the inconsistency in which parts of government pay attention to its decisions, and the extent to which the public and the private sector are affected by signals sent or decisions made in the U.N. This varies from body to body and issue to issue. Decisions by the U.N. Security Council carry the force of international law, and carry political weight in most capitals. While many General Assembly decisions are but dust in the wind, the body does has the advantage of universality and well-prepared outcomes can have a deep normative impact, especially when leaders are involved—as illustrated by the Millennium Development Goals. ECOSOC and the U.N.'s various Commission's enjoy neither advantage.

Their decisions generate attention only in development and environment ministries of capitals, and even then, only to a modest degree. Finance ministries, energy ministries, and trade negotiators rarely pay attention to ECOSOC outcomes. Many private sector actors have never heard of it. The public barely knows it exists. Yet most of the decisions that will shape pathways towards or away from a sustainable future will be made by primarily by individual citizens, private economic actors, and the economic arms of government.

This is an uncomfortable reality for countries that hold dear the notion that the U.N., not just the Bretton Woods institutions, should have a major voice in international economic issues. But even in those countries—Brazil and India have traditionally been at the vanguard of this argument—their own ministries of finance are far more focused on getting better representation at the IMF and in shaping the decisions of the G-20 and the Major Economies Forum. There is no reason to believe that any U.N.-based intergovernmental mechanism would have any different impact on the core financial and planning tools of the major emitters and major economies, established or emerging. Of course, an adaptation of ECOSOC's mechanisms could do a better job than is currently done at coordinating a sustainability agenda across U.N. agencies. However, the U.N. agencies themselves are only minor or modest players in all of this, except in the smallest economies whose activities matter least to global sustainability.

Recommendations for Rio+20

There are two other approaches to address this challenge: one the U.N. is unlikely to embrace, but may hold genuine answers; and one where the U.N. itself is carving out an important lead.

For years, some countries have explored the idea of a World Environment Organization, inspired by the early General Agreement on Tariffs and Trade (GATT). In most proposals, this has been viewed as an all-inclusive body; a concept that has moral merit, but is unlikely to get off the ground. A more practical version has been explored by Brookings Institution's Strobe Talbott and William Antholis: the idea of a General Agreement on Reduction of Emissions (GARE). While drawing on lessons from early GATT negotiations, Talbott and Antholis' proposals for a GARE mechanism bridges inclusion with focus, by starting with core economies but being open to all countries as they meet criteria on standards and performance. With careful design, this could create real incentives for countries to coordinate their efforts to cut carbon.

The second is a bottom-up, multi-stakeholder processes to align norms, regulation, technology and investment—a process the U.N. has used in its High-level Panel on Sustainable Energy for All (SE4ALL.) There are some flaws in the SE4ALL process, and some participants have questioned the feasibility of some of the initial ideas—but it's early days, and the process is being worked on with a shoestring budget. With sustained, creative engagement, well supported by government and industry, processes like SE4ALL could make a substantial difference in charting new pathways, and driving bottom-up goals, which could then be taken up in authoritative ways.

In this as in many areas, we need an iterative process. The largest economies (essentially the G-20) have to be able to negotiate a credible deal to govern the 80-plus percent of global economic activity they control, through a GARE mechanism or similar measure. But they should do so transparently and maintain an information flow to wider bodies like UNFCCC and the General Assembly. Those more inclusive bodies can articulate broad principles, and give voice to smaller economies and those paying the price of environmentally unsustainable growth. Informal mechanisms like SE4ALL can shape pathways in ever more intensive consultation with the energy sector and the financial community. The most influential and committed states can forge connections between these processes where necessary.

The U.N. can play a useful normative role in all of this. Rio +20 could do a power of good by calling attention to informal processes like SE4ALL and making more space for them in the international arena. Well-crafted goals for sustainable development could send an important normative signal—but only if they are carefully prepared and developed from the ground up through genuine

interaction with the private and public sector. Rio +20 can't conclude that process, but it can kick start it.

The search for effective governance shouldn't push us to static inter-governmental forums, especially not ones that link parts of government that have weak roles in economic activity. Rather, we need flexible networks for interacting with the public and the private sector, to drive credible standards, knowledge production, and investment. This isn't what the U.N. is known for, but it's what it's going to have to learn if it's to make a genuine contribution to the most complex global governance challenge of our time.

GREEN GROWTH AND INTERNATIONAL TRADE

Joshua Meltzer

Framing the Issue

A key focus of Rio+20 will be on achieving green growth through policies that promote environmentally sustainable economic growth. International trade is a key driver of economic growth and can have important implications for the environment. The interaction between international trade, economic growth and the environment was addressed in the 1992 Rio Declaration, which states that trade measures to achieve environmental goals should not lead to arbitrary and unjustifiable discrimination, and encourages countries to avoid taking unilateral action to address environmental challenges outside the jurisdiction of the importing country and to address transboundary or global environmental problems based on international consensus.

These principles remain relevant today. But what has changed is the urgency of the environmental challenges such as climate change, loss of biodiversity and the unsustainable exploitation of fish stocks. At the same time progress towards resolving these issues through multilateral negotiations has become even harder, as evidenced by the limited movement in the U.N. climate change negotiations and the World Trade Organization Doha Round. Countries continue seeking to resolve these global environmental issues in regional forums, such as Asia-Pacific Economic Cooperation (APEC) or the G-20. Additionally trade liberalization is now being pursued under free trade agreements (FTAs) that include new rules to address the interaction between trade and the environment. The failure to resolve these global environmental challenges through negotiation has also led to countries acting unilaterally.

Policy Considerations

The impact of international trade on the environment is complex. Trade drives economic growth, a key element of green growth and sustainable development. However, economic growth can exacerbate environmental harms, whether it be through increased greenhouse gas emissions, deforestation or loss of biodiversity. At the same time, trade liberalization can help improve environmental health where it leads to increased competition, a more efficient use of resources and supports transitions towards cleaner and more services orientated economies.

Trade can also lead to improved environmental health by expanding access to environmental goods and services

that support more efficient and environmentally friendly production processes. As a result, reducing trade barriers to environmental goods and services has been part of the WTO Doha Round. Additionally, at the APEC meeting in Hawaii in November 2011, the 21 APEC members agreed to reduce tariffs on green goods. Regional and bilateral free trade agreements are another opportunity to reduce trade barriers and develop new rules to promote green goods and services.

Trade and green growth policies also interact when countries condition or limit access to their markets to achieve environmental goals. This can arise when a country seeks to ensure that the price of a good reflects its domestic environmental harms, and adopts border measures to ensure that these costs are also reflected in the price of imports.

In the absence of international action to address global environmental challenges such as climate change, unilateral action by countries to reduce their greenhouse gas emissions may include trade measures that apply the costs of climate change regulation to imports. This is required to avoid carbon leakage, which arises when industry seeks to avoid climate change regulations by relocating to countries that have adopted less costly (or no) climate change measures. Where industry continues to emit carbon there is no net reduction in global greenhouse gas emissions. Extending the price of carbon to imports can avoid this outcome.

The use of trade measures to achieve environmental goals, however, needs to be balanced against the role of international trade as a driver of economic growth and development.

Recommendations for Rio+20

Green growth links the goals of economic growth and development with environmental protection in sustainable ways. International trade can both drive economic growth and help countries achieve their environmental goals. Restrictions on international trade can also be used to incentivize international action on global environmental challenges. Encouraging international trade as a mechanism of development while recognizing that countries will use trade restrictions to achieve environmental goals involves a balance that is reflected in the rules of the World Trade Organization. Rio+20 provides an opportunity to recognize the ways in which international trade can contribute to green growth by agreeing the following principles:

- Countries should recognize that green growth requires a balance between promoting trade as a driver of economic growth while recognizing the legitimate use of trade measures to achieve environmental goals. Reaffirmation of Principle 12 of the 1992 Rio Declaration would suffice to capture this exchange.
- Countries should also recognize that reducing trade barriers to green goods and services supports green growth goals and commit to finding ways to achieve this goal. Countries should reaffirm the goal in the WTO Doha Round of reducing trade barriers to environmental goods and services.
- International cooperation to address global environmental harms should be encouraged where possible. But countries should recognize the legitimacy of unilateral action by countries to address global environmental harms such as climate change.
- Countries should commit to finding ways of avoiding subsidies that distort trade and harm the environment, such as those that lead to over-fishing

GREEN GROWTH AND THE SUB-NATIONAL DEVELOPMENT IMPERATIVE

Mark Muro and Devashree Saha

Framing the Issue

Nations all over the world face challenging new economic and environmental realities characterized by sharpening resource constraints and growing economic and environmental uncertainties. Confronting these challenges is increasingly driving nations to pursue a strategy of "green growth"—defined as economic progress that fosters environmentally sustainable, low carbon, and socially inclusive development. Dozens of the world's nations from China and India to Brazil and Mexico are now turning their focus to fostering "clean" economic growth and cleantech economic development as a matter of national priority.

However, while the national focus on clean economy is a welcome development, more and more evidence suggests that the new focus too often remains divorced from the true locus of clean economy development: the world's urban economies. National governments, in this respect, have often not only ignored the spatial elements of green growth but have also failed to take into account cities' and city-regions' existing contributions. Yet to be successful, green growth planning needs to become an iterative process, one that adapts to local and regional developments over time and responds to the needs of the local and regional stakeholders who in the end guide the "real" economy.

All of which points to the need for a new, sub-national focus in international green growth interventions. More and more of the most sophisticated nations and industries are recognizing the importance of working at the city and regional level to achieve green growth, and as it happens, the Rio+20 conference offers an important moment for extending and implementing such an emphasis.

Policy Considerations

The facts of world urbanization, as well as the drift of leading-edge economic theory, are thrusting the power of sub-national problem solving into the foreground of green growth and clean economy discussions.

Rapid world urbanization underscores the importance of cities and regions in meeting green growth goals. More than half of the world's population now resides in urban areas, a share that is expected to reach 70 percent by 2050. By the end of the next decade there will be nearly 500 cities of more than a million people, including several "megacities" such as Mumbai, Tokyo, Shanghai, New

York, and Mexico City with populations exceeding 20 million each. Megacities like these are literally "where it's at" in the emerging world order. How these sub-national megacities and regions manage their growth will hugely affect the sustainability of the world's nations. And here it should be said that these urbanized areas—large and small—serve as their nations' principle economic engines. For example, these regions are increasingly the chief locus of labor force matching, technical innovation and adoption, industrial output, and social opportunity. For instance, the largest 100 metropolitan areas in the United States produce three-quarters of the nation's GDP. Similarly, in developed Asia-Pacific countries 24 metropolitan areas account for 64 percent of both their countries' total population and GDP. Add in that environmental problems are both created and solved in these locations and it becomes clear that cities and regions are integral to the transition to a global clean economy.

Generally accepted economic theory further supports the logic of city- and region-scale action. Regions and clusters—geographic concentrations of interconnected firms and supporting or coordinating organizations—draw together the unique variations and specializations that define productive local economies and focus attention on the myriad of actors and the dynamics of their interactions, which also give rise to new innovations and jobs. Hot spots of productivity and collaboration as well as competition, regions and industry clusters are the locations most likely to deliver the next clean economy that will advance environmental sustainability and economic prosperity at once.

Studies from the U.S. support this contention and reveal how national "clean" or "green" economies, far from being placeless, are in reality extremely place-based and manifest themselves in varied configurations. Our recent study "Sizing the Clean Economy: A National and Regional Green Jobs Assessment" found that while the American "clean economy" permeates every corner of the national economy it varies widely in size and shape, region by region, in response to different market and policy dynamics.

Similar stories abound in the rest of the world. Regional cluster development is an important theme of China's 12th Five-Year Plan for its clean energy industry. Seven Chinese provinces—Jiangsu, Hebei, Zhejiang, Jiangxi, Henan, Sichuan, and Inner Mongolia—have leveraged their regional resource advantages and existing industrial bases to emerge as regional industrial centers for China's rapidly growing solar photovoltaic industry. And meanwhile cleantech clusters are sprouting up all across Europe and North America, such as the Copenhagen Cleantech Cluster, Lahti Cleantech Cluster, Amsterdam Ecocluster, CleanTECH San Diego, and Ecotech Quebec, all of which are geared towards positioning their regions to take their place in the new clean economy.

And there is good reason for the regional cast of these green growth stratagems. Quite simply, the clean or green economy performs best where strong industry clusters pack firms and relevant supporting actors densely together in discreet local regions. Along these lines, our U.S. study "Sizing the Clean Economy" noted that companies that are clustered near those in similar or related industries grew at a rate 1.4 percent faster each year than more isolated companies. Examples highlighting this dynamic include fuel cells in Boston, wind in Chicago, professional environmental services in Houston, and solar PV in Los Angeles. In like fashion, Germany's Saxony-Anhalt has one of the world's faster growing cluster of solar cell companies—earning it the nickname "Solar Valley"—with nearly 10 percent of solar cells produce globally coming from this region.

In short, national competitiveness in green growth will emanate most effectively from the sub-national urban areas that are increasingly the world's hubs of such development. Nations that want to pursue such growth amid the unsettled realities of the current world order will therefore succeed best if they intervene at least partially at the sub-national level.

Recommendations for Rio+20

Fortunately many cities and regions are already at the center of making the transition towards a clean economy. From Paris to Jakarta, Copenhagen to Singapore, and Chicago to Sao Paulo, a growing realization is taking hold among local and regional leaders that the well-being of their regions is closely tied to their promotion of a green growth agenda. The C-40 Climate Leadership Group, for

instance, resides at the forefront of designing and implementing meaningful and sustainable strategies that will reduce their cities' carbon and water footprints while also creating jobs and growing their economies. This momentum needs to be affirmed and carried forward and the Rio+20 deliberations offer a signal moment for that affirmation. Along these lines both national and sub-national governments should consider embracing a number possible action steps for advancing green growth through regional strategies. In this connection, they should:

- **Facilitate the development of green regional clusters.** Proximity and complementarities within these clusters would help generate the critical mass to attract, grow, and sustain clean economy industries
- **Explore innovative financing mechanisms,** including ones with a regional linkage, to meet the massive investment needed for green growth strategies. With public budgets under strong pressure everywhere, leveraging private investment will play a crucial role in the transition to green growth
- **Foster green innovation** by devoting more funding for research and addressing barriers to early-stage commercial deployment. Cities and regions themselves remain the world's signal forums for the acceleration of technology development and diffusion. Their innovative power should be leveraged through the careful structuring of place-based partnerships among universities, sub-national governments, and the private sector.
- **Identify potential and actual policy impacts at the local and regional level** by incorporating social, economic, and environmental metrics that can be measured over time and also enable comparisons across cities and regions.

NATURAL CAPITAL RESOURCES

William Y. Brown

Framing the Issue

Forests, wetlands, savannah, coral reefs and other natural ecosystems generate products like wood, fish, hide, and fibers, but also provide important services. Wetlands, for example, recharge groundwater, limit pollution into rivers and seas, lessen storm impacts on land, and are breeding grounds for fish, mollusks, and crustaceans consumed by people. Forests sequester carbon that otherwise would warm the Earth: No growth is "green" if it degrades these ecosystem functions.

Some economists consider natural ecosystems to be economic "capital"—durable goods that are used in the manufacture of products or services but not used up by production. Such "natural capital" is different from what is usually meant by economic capital because it is not man-made and it will not depreciate if its inherent regenerating capacity is uncompromised.

Natural capital is also different because the goods and services provided may be freely available rather than dedicated to the production of particular enterprises. Marine fish have been available to whoever could catch them, and groundwater recharge by a wetland may benefit distant populations and not the owner who drains the swamp for agriculture. The opportunities for tragedy of the commons and distorted markets pose a central question for policy on natural capital. Can the value of ecosystem goods and services be fully integrated into the economic planning of governments and the business plans of private enterprise?

Policy Considerations

Natural capital is currently more a concept for governments, development agencies, academics, and civil society than a mainstream element of economics or business. That ecosystems provide valuable goods and services is not in dispute, and various international initiatives include them in national asset measures. The World Bank determines national wealth based on ecology, education, and resource depletion as well as economics. The U.N. developed a system for comparing national environmental and economic statistics, the System of Environmental-Economic Accounts (SEEA) that builds on the System of National Accounts (SNA), an internationally agreed standard set of recommendations on how to compile measures of economic activity. The World Bank is currently advancing a partnership it calls "Wealth Accounting and Valuation of Ecosystem Services" or WAVES, and an entire new field of research has developed to elucidate the value of ecosystem services. These and private group initiatives, such as

the "Natural Capital Declaration" are part of the discussion running up to the Rio+20 meeting.

However, the usual approach for conserving natural ecosystems has been regulation and land purchase through programs whose mandates do not include integrated economic planning. Most national environmental statutes were propelled by high-profile concerns over pollution (e.g. clean water, clean air), loss of biodiversity (e.g. endangered species protection), and general environmental quality (e.g. environmental impact assessments). The same can be said for multilateral conventions for climate change, biodiversity, endangered species, and waste shipments. Economic assessment and devices for economic efficiency are increasingly features of environmental regulation, such as tradable pollution rights, but these features are ancillary to the policies of the underlying enabling regimes.

Moreover, economic and business performance is not generally measured with reference to natural capital except when it is an auditable institutional asset or liability. Recent government actions to address fiscal crises, for example, paid little attention to the environment, treating its protection more as an impediment than a path to economic recovery. Commercial enterprises remain cemented to conventional measures of profit and loss. Indeed, investors in publicly traded companies are legally entitled to management that maximizes their returns. Businesses have made significant investments in environmental and social responsibility, but most business leaders in private would acknowledge that profit is the ultimate measure of success and of their own tenure.

Recommendations for Rio+20

The Rio+20 participant nations should mandate consideration of natural capital in national wealth accounting and economic planning. Implementation of SEEA is particularly significant because it has been approved by the U.N. for global use.

Those implementing the Rio+20 mandate should focus on the issues that lead international development advocates and mainstream economists and business-people disagree on, including:

- How might measures of natural capital be *integrated* into customary analyses and actions on monetary and fiscal policy, or rapid responses to recession or inflation?
- Can natural capital be addressed in business financial statements other than as currently addressed as auditable assets or liabilities of the enterprise, and can accounting standards be modified for this purpose?
- What would investors accept, and what are businesses required by law to seek?
- How does regulation, as a means to conserve natural capital, stand in the context of "green growth" and interests in non-regulatory integration into economic planning?

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