



What Do We Know about Green Growth and its Policy Ramifications?

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The concept of “green growth” is currently much discussed and many observers are asking whether this is simply a new sobriquet for sustainable development. A recent Mexico City Conference organized by the World Bank, UNEP, and the OECD brought together academics and policy makers with an interest in green growth (<http://www.greengrowth-knowledge.org/Pages/Events.aspx>). The conferees agreed that there are numerous definitions for the widely shared imperative of generating economic growth. However, they also concluded that growth must not come at the cost of permanently damaging the earth’s natural resource endowments. Each agency has its own definition of green growth, but a workable consensus probably can be built on the desire to go beyond mere output measures, such as GDP, and toward a broader measure of growth based on human and environmental welfare.

The green growth issue can be usefully framed within neoclassical growth theory, which helps emphasize analytic factors. For example, Hallegatte et al. (2011) illustrate the various dimensions of greenness by examining the three basic factors that influence the *production possibility frontier* (that is, a country’s maximum output): (i) labor, (ii) physical and natural capital, and (iii) technology. Neoclassical growth theory is predicated on the idea that output is a product of these three sets of variables. Various intangibles and

unexplained influences are usually imbedded in the technology variable.

Labor. Green elements could increase the efficiency of individual labor inputs into the so-called “production function.” Efficiency-enhancing factors could include, for example, climate mitigation actions, which can reduce destruction of physical capital caused by climate-related disasters; water-conserving measures, which enhance agricultural output; and better air quality, which improves the health of the workforce. These are strong examples of how greening or better management of the earth’s environmental assets can increase the quantity and quality of factors of production and thereby output.

Physical and Natural Capital. More efficient use of the existing stock of physical and natural capital could bring output closer to the production frontier. Such efficiencies could include more appropriate pricing of factor inputs, and technical improvements in the use of the stock of inputs, such as smarter energy use.

Technology. Finally, through innovation and new technologies, the production possibility frontier can actually be expanded. Many such technologies are green innovations. Simple examples include recycling technologies or the development of solar panels, which allow us to produce more with less and hence expand the production frontier.

At the core of the green growth conversation are two key issues: (i) time horizons

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within which to examine alternative economic outcomes, and (ii) the extent to which growth tradeoffs exist between greener and browner policy choices. Of course the two issues are related. They can be condensed and radically simplified into policy choices of “grow now and correct the environment later” or “balance the requirements of growth and environmental preservation.” Even the latter choice, however, does not obviate the need for decisions that involve tradeoffs between the goals when their mutual fulfillment conflicts.

A major dilemma, however, is that unlike other international issues, the global negative externalities of unbridled growth are very dangerous. Individual economic actors or countries cannot be allowed to make completely independent policy choices about the mix of growth and environmental damage or about the timeframe for action. The need for international coordination is daunting since it involves welfare discussions across generations, across countries, and across income groups. Lest we be discouraged, however, some progress has been made on the agreed growth agenda, relying on self-interest, moral imperatives, and the realities of science.

Some analysts have stressed the difficulties of both imperfect information and of what are called principal-agent problems. In the former category we can place the fact that housing prices rarely incorporate energy efficiency. In the latter we can place the reality that landlords have no incentive to invest in energy efficiency while renting to energy users who don't pay for electricity. Other analysts stress the importance of proper pricing, pointing to profligate carbon-generating activities that are encouraged because the externalities remain untaxed. Still others use behavioral economics to explain how green growth decisions can be influenced by social norms, rules, or other cognitive means other than strict cost-benefit calculations. Behavioral analysts thus may suggest going beyond incentive pricing policies and

advocate for ones that rely on fundamental behavioral change.

There are formidable large-scale constraints to green growth. However, one can find positive developments in the decision making of economic entities that need to generate strong but green growth. Their actions could influence the green-brown debate. One useful political unit to focus on is an individual city. Cities will provide the bulk of new economic growth over coming decades. They attract new entrants to the workforce and provide the dynamism and scale needed for economic activity. Furthermore, cities' political constituencies may be closer to the green-brown debate, which could allow some of the difficult tradeoffs to be more practically managed.

Hence we face the need to consider ways of further greening city-led economic growth. Greening should not be seen in some sort of vague pastoral sense but rather as a set of practical issues, such as designing effective waste disposal, enacting energy-efficient housing standards, putting in place zoning that encourages lower carbon-intensive transport systems, and choosing locations and technologies for industrial activity that are less damaging to the air. Managers of cities are confronting these issues on a daily basis, and are searching for practical solutions that are affordable and politically implementable. Of course, these decisions cannot be totally divorced from national policies that set the price of fossil fuels or national pollution standards, but cities offer a more manageable political unit for the green growth debate.

In reality, there has been considerable innovation in managing the green agenda in cities. Solutions have included projects as simple as bike paths and automobile traffic restrictions, to urban redevelopment projects, to adoption of Leadership in Energy and Environmental Design (LEEDS) standards in housing, to recycling programs for water, and to master plans for energy and for air quality

improvement. Cities as diverse as Mexico City, Curitiba, Vancouver, Bogota, Brisbane, and Oklahoma City have succeeded in innovating without sacrificing economic growth.

Why should the issue of green growth concern the Growth Dialogue project? First, the Dialogue aims to help design policies that lead to sustainable and equitable economic growth; and a growth path that doesn't sufficiently consider the preservation of the natural resource base will be neither sustainable nor equitable. Obviously, lower output and higher costs from resource constraints will harm future income and welfare levels. Furthermore, the costs may well be disproportionately borne by the poorer segments of society in terms of declining health, degradation of the land, and worse living conditions.

One may legitimately ask whether this is the right time to address green growth concerns. The global economy has recently suffered the most severe and synchronous economic downturn in 70 years. The pressing national objective of restoring economic growth in many countries might naturally lead to a diminution of interest in green growth solutions, but that would be wrong. The argument that green growth will generate employment is plausible and attractive although not overwhelmingly persuasive. The more convincing argument is that there are many efficiency gains associated with green growth. These gains are immediately accessible in both the short and long run. Smart grids, improved housing efficiency standards, better waste collection and management, and improved mass transit are all investments that pay for themselves. They also generate longer-run benefits that make future tradeoffs more palatable.

A good reason to focus on cities is that it highlights the crucial role of government. By setting the agenda, designing the proper mix of support and incentives, and in coordinating and planning, government is a major contributor to green growth success.

The relationship between government and cities is particularly effective because cities are juridical units that face fewer constraints than do countries. One sees this clearly in the role of government in zoning, carbon charges, housing standards, and the like. As a result, much of the experimentation and many of the tangible green growth successes are occurring at subnational levels.

That said, however, some countries, particularly in northern Europe, have registered impressive strides on the green growth agenda. Do these countries have radically different social discount rates between economic outcomes today and tomorrow, and a greater willingness to invest in a sustainable future? If this is the case, then we should expect countries in East Asia to begin to invest much more heavily in green technologies, even if their adoption may entail a short-term economic cost. After all, these countries have historically saved much more than Western countries, reflecting their national intertemporal tradeoffs. If, however, the decision to deal more aggressively with the green growth agenda reflects other factors, such as a successful process of information and socialization, then political support for the agenda will need much more bolstering to become widely accepted at the national level.

It is noteworthy that in the Republic of Korea, green growth was sold to the public as a way to develop global competencies that would foster future exports. Thus, the Korean government undertook its Green Growth Stimulus Package of 2008–10 with the dual purpose of boosting aggregate demand and strategically positioning itself in this growing technological niche, while its domestic reform agenda has moved much more slowly. In China, by contrast, where energy intensity is high and where carbon emissions now exceed those of the United States, a major policy shift has occurred that at least in the carbon arena is leading to reduced emissions in the name of economic self-interest. Of course

there are myriad other areas where China has yet to come to grips with the longer-term economic costs of its high-growth strategy.

In federal and politically complicated countries like the United States (which is the second largest air polluter), action at the state level is more likely than at the national level. We see this dynamic at work in the adoption of renewable development standards in 20 states that incentivize the use of wind and solar power. These are positive developments; however, they are not necessarily the investments with the highest payoff. Much more can be done in energy conservation and housing standards, and transport policies offer another arena for high returns to green investment and green policies. This work inevitably will involve cities.

A final point should be made on the need to change behaviors. This is obviously the long-term approach to altering demand for costly options in energy and resource use. Social marketing has been successful in many contexts. Yet there are at least two reasons why a reliance on behavioral change may be problematic. First, such change may take a generation, even if adopted, and the science tells us we can't wait 30 years to change patterns of resource use. Second, there are many forces, including vested interests, that influence price setting and thus artificially inflate demand for brown options. For this reason, many countries have opted for government policy changes that reset demand. These decisions can also play a major role in stimulating new technologies that fulfill our earlier requirement of expanding the production frontier and fostering economic growth. We have already seen the benefits of some of these investments in that they have helped place green innovators in competitive leadership positions.

To sum up, we are well aware of the need to rely increasingly on urban-led economic

growth because of agglomeration economies and the reality that the movement of people to cities and their environs is inexorable. If this is the future, then the dual agendas of greening and fostering economic growth should increasingly coincide. Considerable progress has been made in the greening of growth, but the success depends decisively on planning, strong regulation, and private-public partnerships. As in other arenas, these conditions imply a strong, competent, and far-sighted government. Some major carbon-emitting nations are curtailing environmental damage out of self-interest; similarly, cities will by necessity be challenged to deal quickly with environmental issues. How well they manage the green growth challenge will have profound implications for cities and their inhabitants, but also for the climate change agenda more broadly.

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