Green Growth: A sustainable pathway for economic and environmental harmony

Sustained growth is necessary to achieve the urgent development needs of the world's poor and that there is substantial scope for growing cleaner without growing slower. Green growth is necessary, efficient, and affordable. It is the only way to reconcile the rapid growth required to bring developing countries to the level of prosperity to which they aspire with the needs of the more than 1 billion people still living in poverty and the imperative of a better managed environment. Indeed, green growth is a vital tool for achieving sustainable development. But sustainable development has three pillars: economic, environmental, and social sustainability. We cannot presume that green growth is inherently inclusive. Green growth policies must be carefully designed to maximize benefits for, and minimize costs to, the poor and most vulnerable, and policies and actions with irreversible negative impacts must be avoided. Green growth also requires improved indicators to monitor economic performance. National accounting indicators like GDP measure only short-term economic growth, whereas indicators like comprehensive wealth - including natural capital help us determine if growth is sustainable in the long run.

GREEN POLICIES CAN CONTRIBUTE TO GROWTH

Green policies and practices can contribute to growth through three channels: First, they can help to increase the amount of natural, physical, and human capital available. Healthier environments result in more productive workers. Second, they can promote efficiency. For instance, imposing environmental taxes (taxing "bads") and removing distortionary subsidies creates fiscal space for governments to lower labor taxes or subsidize green public "goods" such as public transport or renewable energy. Third, green policies stimulate innovation. Well-designed environmental regulations stimulate innovation by firms, as measured by R&D spending or patents. Similarly, international sustainability standards can help local firms to upgrade their environmental practices, a form of catch-up innovation. In developing countries, green policies can also encourage the adaptation and adoption of greener technologies that have been developed elsewhere. Finally, green policies also accrue non-growth gains to welfare. They can reduce inequality through job creation and poverty alleviation, and they can reduce output volatility by increasing resilience to environmental and economic shocks, like natural disasters or spikes in commodity prices.

GREEN INNOVATION AND INDUSTRIAL POLICIES

Innovation and industrial policies are potentially useful tools to spur green growth, as they can correct market (environmental and nonenvironmental) failures, but they should be designed to minimize risks from capture and rent-seeking behaviors. More advanced countries need to invest in frontier innovation through research and development; lower-income countries (with more limited technological capacity) should focus on adapting and disseminating technologies already developed and demonstrated. Although green growth and trade interact, it is not through the much publicized but seldom observed "pollution haven" effects. Green policies create opportunities for developing exports of green products; meanwhile, imports facilitate the adoption of greener, more efficient technologies.

Many market failures may justify the broad innovation policies and more targeted innovation and industrial policies that aim to support a specific green industry, firm, or technology: Knowledge externalities and capital market imperfections. Absent government intervention, knowledge spillovers create a gap between the private and social returns to producing knowledge that typically leads to under-provision of knowledge. And this is amplified by information asymmetry in capital markets. Competitive innovation projects may struggle to find financing, making it difficult for new businesses and activities to start. This is especially true because young businesses have more difficulty securing financing than large established companies, even though they may be very innovative. Latent comparative advantages and increasing returns. Latent comparative advantages that is, future as opposed to current comparative advantages are sometimes cited as a justification for industrial policies. Industrial policies may be warranted if the advantage includes learning or increasing returns to scale, which require support at an early stage. The idea is that developing a comparative advantage in an activity can depend on another activity in the region or country. Some industries are international rent shifting characterized by fixed costs or indivisibilities limiting the number of entrants and creating oligopolies, with significant rents for installed businesses. Industrial policies are frequently used to promote regional balance and stimulate job growth and other economic

activity where unemployment is worse, the population poorer, or a geopolitical reason exists to promote production in an area. Industrial policies are also used to smooth economic transitions.

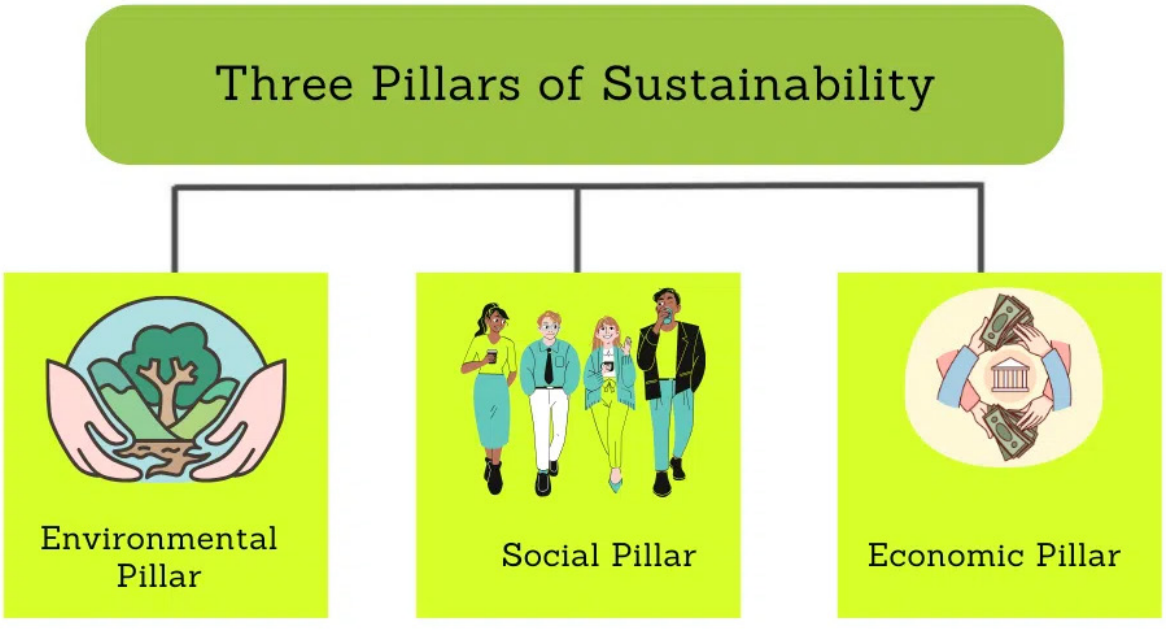
SHEDDING LIGHT ON GREEN INNOVATION, TECHNOLOGIES, AND INDUSTRIAL POLICIES

Green innovation is the development and commercialization of new ways to solve environmental problems through improvements in technology, with a wide interpretation of technology as encompassing product, process, organizational, and marketing improvements. In addition to frontier (new-to-the world) innovations, this definition includes catchup (new-to-the-firm) innovations also known as absorption which covers the diffusion (both across and within countries), adoption, adaptation (to local contexts), and use of green technologies. Green technologies comprise many fundamentally different technologies to achieve more resourceeffi cient, clean, and resilient growth. They include technologies needed to achieve the following goals: Reduce pollution and achieve greater resource efficiency in buildings (thermal insulation and new materials, heating, energy-efficient lighting); production processes (new uses of waste and other by-products from firms); agriculture (from improved and resilient crop and livestock breeds, water management, and farming systems to mechanical irrigation and farming techniques); and infrastructure and urban design (such as land use zoning). Mitigate climate change through a cleaner energy supply (wind, solar, geothermal, marine energy, biomass, hydropower, waste-to-energy, hydrogen fuels); low-carbon end use (electric and hybrid vehicles, climate-friendly cement); and carbon capture and storage. Reduce vulnerability and adapt to climate change with tools for understanding climate risks, better early warning systems, and climate-resistant technologies. Support wealth creation from the more productive and sustainable uses of biodiversity, including natural cosmetics, pharmaceutical products, other sustainable bioprospecting, nature-based tourism, more sustainable production of plants and livestock, and ecosystem protection. Green innovation policies are policies seeking to trigger green innovation by encouraging innovation broadly (horizontal policies) or supporting a specific technology (vertical policies). Green industrial policies are policies aiming to green the productive structure of the economy by targeting specific industries or firms.

IMPLICATIONS OF GREEN GROWTH POLICIES FOR LABOR MARKETS AND JOB CREATION

Green growth cannot substitute for good growth policies, and employment is no exception: shortcomings in labor markets will not disappear with the adoption of environmental policies. But even if green jobs will not be a panacea, environmental regulation need not kill jobs either, and the net balance can be positive. To smooth the impacts on labor markets of the transition to green growth, policy makers need to tackle potential skill shortages and impediments to worker mobility both of which have constituted barriers to other types of economic adjustment, such as trade liberalization.

The effect of green policies on employment depends on labor market structure and the specific policy considered the problem



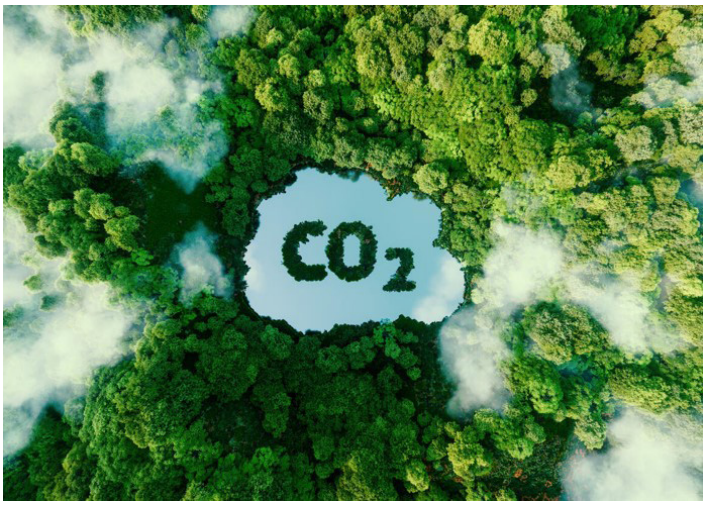
with studies that discuss job markets is that they tend to either model them as perfectly competitive, and thus adapting instantly to all shocks with no involuntary unemployment or as having involuntary unemployment that could be cleared with a fiscal stimulus. The first set of assumptions implies that green jobs are likely to displace as many jobs elsewhere in the economy. The second, that there will be no crowding out of jobs by green fiscal stimuli. Neither approach is realistic. Most developing countries have surplus labor economies, so estimates limited to direct employment creation in the green jobs literature might be less misleading for developing countries than for industrial economies closer to full employment.

Fears that environmental regulations will lead to massive job losses or loss of competitiveness are probably as unfounded as the hope that green jobs will single-handedly solve countries' employment problems.

MANAGING RESOURCES FOR SUSTAINABLE GROWTH

Sustainable management of natural capital underlies green growth in key sectors such as agriculture, manufacturing, and energy and is vital for resilience and welfare gains. Different resources require different types of policies. For extractable but renewable resources, policy should center on defining property rights and helping firms move up the value chain. For cultivated renewable resources, policy should focus on innovation, efficiency gains, sustainable intensification, and "integrated landscape" approaches. The elements of natural capital cannot be regarded in isolation. Integrated landscape approaches can increase production of both "regulating" and "provisioning" services of natural capital. In some cases, growth and green outcomes such as cleaner air, cleaner water, less solid waste, and more biodiversity will involve tradeoffs. But not all of these tradeoffs are inevitable: innovation, which can be supported through smart subsidies, can help minimize or eliminate some of them.

Managing natural capital can promote green growth. It looks at four broad categories: extractable renewable resources (capture fisheries, natural forests, soil, and water); cultivated renewable resources (crops, livestock, aquaculture, and forest plantations; nonrenewable resources (oil, gas, coal, and minerals); and ecosystems that



provide regulating services (watershed management, climate regulating services, and nature-based tourism). The first three categories provide "provisioning" services (those that directly produce goods and services, such as food and water); the fourth embraces "nonprovisioning" services (those that provide regulating services, supporting services, and cultural services).

Infrastructure policies are central to green growth strategies, because of the huge potential for regret (given the massive infrastructure investments required and the inertia they create) and substantial potential for co-benefi ts (given the current gap in infrastructure service provision). The infrastructure gap offers opportunities to "build right" and leapfrog; but huge unmet needs also can imply diffi cult trade-offs between "building right" and "building more," particularly given fi nancing and fi scal constraints. A framework for green infrastructure must build on efforts to address overall constraints on infrastructure finance (including cost recovery issues) and must develop strategies to both minimize the potential for regrets and maximize short-term co-benefi ts to address social and political acceptability constraints.

The pathway to sustainable development makes the case that greening growth is necessary, efficient, and affordable. Yet spurring growth without ensuring equity will thwart efforts to reduce poverty and improve access to health, education, and infrastructure services. Countries must make strategic investments and farsighted policy changes that acknowledge natural resource constraints and enable the world's poorest and most vulnerable to benefit from efficient, clean, and resilient growth. Like other forms of capital, natural assets are limited and require accounting, investment, and maintenance in order to be properly harnessed and deployed. By maximizing co-benefits and avoiding lock-in, by promoting smarter decisions in industry and society, and by developing innovative financing tools for green investment, we can afford to do the things we must ▪

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