



International Green Growth Best Practices:

Review & Application to Bangladesh

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Acronyms & Abbreviations

ADB	Asian Development Bank
AEDP	Alternative Energy Development Plan
ASEAN	Association of Southeast Asian Nations
BCCRF	Bangladesh Climate Change Resilience Fund
BDT	Bangladesh Taka
BRT	Bangladesh Road Transport
CAMELS	Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Sensitivity to market risk
CCSAP	Climate Change Strategy and Action Plan
CDKN	Climate and Development Knowledge Network
CDM	Clean Development Mechanism
CHUEE	China Utility-based Energy Efficiency Finance
CPEIR	Climate Public Expenditure and Institutional Review
EIA	Environmental Impact Assessment
ETP	Effluent Treatment Plants
FiT	Feed-in Tariff
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GGBP	Green Growth Best Practice
GGGI	Global Green Growth Institute
GoB	Government of Bangladesh
HHK	Hybrid Hoffman Kiln
ICT	Information Communication Technology
IDB	Islamic Development Bank
IES	Implicacoes Economicas e Sociais
IFC	International Finance Corporation
IFI	International Finance Institution
INDC	Intended Nationally Determined Contributions
LCDS	Low Carbon Development Strategy
LLRF	Loan Loss Reserve Fund
MAPS	Mitigation Action Plans and Scenarios

MDG	Millennium Development Goal
MoEF	Ministry of Environment and Forests
NAFIN	Nacional Financiera
NAP	National Agricultural Policy
NAPA	National Adaptation Programme of Action
NGO	Non-Governmental Organisation
NSDS	National Sustainable Development Strategy
OECD	Organisation for Economic Cooperation and Development
PES	Payment for Ecosystem Services
R&D	Research & Development
RE	Renewable Energy
REDD	Reducing Emissions from Deforestation and forest Degradation
REFF	Renewable Energy Financing Facility
SDG	Sustainable Development Goal
SLMP	Sustainable Land Management Project
UNDP	United Nations Development Programme
USD	United States Dollar

1. Introduction

This report seeks to document international best practices in adopting green growth strategies. It explores why some countries decide to pursue a green growth path and how they transition to such a pathway. For many countries, green growth presents an attractive opportunity to achieve poverty reduction, environmental protection, and economic growth in an integrated way. Governments which are successful in pursuing green growth focus on leveraging the synergies between these three dimensions, while managing the trade-offs efficiently and seeking to facilitate transformational change.

The experiences of countries that have successfully adopted green growth provide compelling case studies. These countries have unlocked the barriers standing in the way of internalising green growth as a key development strategy, while managing the potential transition costs. Some countries have internalised green growth in the sector development plans. A policy mix of incentives and disincentives adopted by some countries have yielded tangible results in reducing the carbon footprint. A few countries have also successfully addressed political economy considerations, backed by political leadership, when adopting a green growth strategy.

This study reviews evidence to showcase what contributed to the transformational change in countries which have adopted a green growth agenda. These experiences provide lessons learned; demonstrate the practical benefits of adopting green growth (as opposed to theoretical); and provide a proven guide of how to adopt sustainable policies as part of a green growth strategy.

This paper will document evidence of benefits that countries have accrued in environment, economy and social dimensions through adopting greener growth, including the co-benefits of going green, with respect to employment generation and poverty alleviation. The study also reviews the potential trade-offs involved in adopting green growth, and how these were addressed. The study is expected to lay the foundation for Bangladesh in adopting a green growth strategy.

The paper is structured as follows. Section 1 summarises the state of green growth in Bangladesh (strategies, policies, institutions and sector activities), and discusses prevailing political economy barriers. Section 2 then reviews international examples of green growth strategy development, institutional coordination and financing approaches that have been successful in other countries. Several sector-level case studies are then presented, before conclusions are set out with regards to how Bangladesh might learn from the lessons identified.

2. Green growth in Bangladesh

2.1. Sector context and impacts

Bangladesh continues to deliver strong rates of economic growth (average rate of 6% over the last decade), lifting 17 million people out of poverty and raising the income levels of millions. Economic development has seen the expansion of the textiles industry (second globally) and grain production remains high despite climate change impacts. Bangladesh stayed well ahead of other developing economies in achieving a good number of Millennium Development Goals (MDGs) and has achieved a strong HDI rating. Bangladesh aims to become a middle-income country by 2021.

However, growth has come at the expense of increasing environmental and social impacts, particularly from the manufacturing (e.g. textiles, pharmaceuticals, cement, steel re-rolling, brick manufacturing) and urban transport sectors. Impacts include rising public health cost, due to air pollution in urban areas, and degradation of the most productive and valuable ecosystems, like wetlands, rivers, soil, coastal and marine estuaries.

Key sectoral impacts include:

- › **Agriculture:** Agriculture is the mainstay of Bangladesh economy, with around 70 percent of the population dependent on the sector. Population growth and food security challenges make the sector a priority for the government. The sector relies heavily on chemical inputs, and is characterised by the overuse of water, fertilisers, insecticides, herbicides and pesticides, which have impacted negatively on soil fertility and crop yields. As a result, agricultural productivity has decreased in many areas, offsetting benefits from improved seed and agro-economic technology improvements. Chemical run-off is polluting natural water bodies and damaging biodiversity. Every year about one percent of agricultural land is lost due to industrialisation, urbanisation and housing.
- › **Forestry:** Forest cover is subject to the pressures of increased population, urbanisation, illegal encroachment and log-felling. Climate change induced rainfall and temperature patterns have already impacted valuable forest ecosystems including the world's largest mangrove ecosystem, the Sundarbans. Consequently, the livelihood opportunities of people dependent on forestry is gradually shrinking and people in the coastal areas of the South Western part of Bangladesh are more exposed to natural disasters including cyclonic storms, high tides and tsunamis.
- › **Fisheries:** Bangladesh, as a country located on a delta, has traditionally been rich in fish biodiversity. However, industrialisation and urbanisation have encroached upon natural fish habitats and degraded them with industrial and agro-chemical pollution.
- › **Water resources:** Bangladesh has historically had significant water resources, with 57 rivers feeding into the large delta, but climate change has altered the dynamics and many river tributaries have lost navigability. Upstream water abstraction from the major river systems has contributed to the disappearance of rivers, and some of the major rivers in the Ganges-Brahmaputra-Meghna system now have minimal flow during the dry winter months. Climate change is also shortening the duration of the monsoon and has contributed to decreased intensity of rains, resulting in lower levels of replenishment of water resources. The water system experiences saline water intrusion along the entire coastal belt during dry months. Fresh water is a critical issue for the people living in the saline affected areas as the fresh water system is also unfit for human consumption because of industrial pollution and waste disposal from major human settlements and cities.
- › **Transport:** Dhaka is the 11th largest megacity in the world in terms of population. With rapid urbanisation and industrialisation the city has witnessed a huge growth of motor vehicles. Large pre-Euro standard bus and truck fleets contribute to high levels of air pollution, particularly during the dry winter months. Transport is the second largest contributor to urban air pollution after brick kilns.
- › **Urban:** It is estimated that by the year 2021 nearly one-third of the population of Bangladesh will be living in urban areas. The urban population is currently estimated at 40 million. The environmental problems of urban areas have direct and immediate implications for human health

and safety, especially for the poor, and for business productivity. Problems include inadequate waste management, poor drainage, air and water pollution, lack of access to safe water and sanitation, exposure to excessive noise level, and traffic congestion.

- › **Energy:** Natural gas is a major source of energy in Bangladesh. Almost 60 percent of total gas is used for power generation. The contribution of renewable energy to the energy mix is only about 20 MW, which is around 0.5 percent. In light of rising energy demand in the country, coal is going to be the major energy source for power generation.
- › **Industry:** The majority of textile and garment factories are highly polluting and are yet to adopt cleaner production paths due to a host of barriers, including lack of finance. Industry remains a major source of air, water and soil pollution.

2.2. Bangladesh green growth strategies and plans

Green growth is a term widely used in Bangladesh, but poorly defined in national strategies and planning frameworks. The Government of Bangladesh does not have a separate green growth strategy, but rather a number of initiatives that collectively contribute to framing the government's approach. At the highest level, the supreme constitution of the country articulates (under Article 18A) that the state shall endeavour to protect and improve the environment and to preserve and safeguard the natural resources, bio-diversity, wetlands, forests and wildlife for present and future citizens. Bangladesh maintains a firm external commitment to mainstreaming the SDGs and climate issues in policy frameworks.

From an institutional perspective, environmental policy, laws and regulations are managed through the MoEF. The Five-Year Plan, initiated by the Planning Commission, activated the National Environmental Council, which is a cross-sector body headed by the MoEF. In addition, environment committees have been established at Division, District and *Upazilla* levels. There are a number of frameworks that seek to protect the environment and promote good practice in sustainable economic development.

The National Sustainable Development Strategy (NSDS, 2008) is the first document that brought together many of the green growth concepts. The strategy seeks to 'ensure sustained economic growth, environmental protection and social justice which implies improvement of livelihood options of the people, reduction of poverty; ensuring wise use of natural resources, good governance and people's participation'. The NSDS has four priority areas— sustainable economic development, agriculture and rural development, social security and protection, and environment and natural resource management.

A number of core plans and strategies address various aspects of green growth. Economic growth and development policies as set out in the Seventh Five-Year Plan (2015–2020) and the Perspective Plan Bangladesh (2010–2021) have explicit green elements. The Five Year Plan document articulates promotion of green growth and sustainable development. The plan recognises the negative externalities of industrialisation and growth from decline in biodiversity, deforestation, destruction of wetlands and fisheries, soil nutrient depletion, desertification and salinity intrusion. The plan acknowledges that there is a 'window of opportunity' for halting the process of environmental degradation through pursuing strategic actions that generate green growth and minimise the adverse effects of climate change simultaneously.

The Perspective Plan of Bangladesh (2010–2021), popularly known as Vision 2021, sets out a long-term development strategy and seeks to balance the opportunities for environmental improvement against economic growth and poverty reduction concerns. The Plan seeks to promote the mainstreaming of environment, climate change and disaster management across government policies to benefit the poor. From a sector perspective, the plan promotes biodiversity through a National Assessment and Action Programme, afforestation in the coastal areas to protect against storm surge, integrated coastal zone management and land desalination. Most of the updated sector policies are being aligned with the Vision 2021 document.

Bangladesh also financed green projects from its own resources through the banking channel. The Bank of Bangladesh's reform initiative (2012) sets out a range of support measures to enable green growth. The bank has developed a green banking cell, and introduced a refinance scheme worth BDT 2 billion (USD \$25 million) to refinance loans for effluent treatment plants, solar panels, biogas plants and Hybrid Hoffman Kiln (HHK) technology in the brick-making industry at a 5% interest rate. On-lending by banks and other financial institutions is provided at a 9% rate (compared to an average 13% market rate). It also integrates an assessment of green management when awarding ratings under the CAMELS system.

From a medium-term budgeting perspective, the Government of Bangladesh has developed a Climate Public Expenditure and Institutional Review (CPEIR) (GoB, 2012) and is currently developing a climate fiscal framework, while UNDP is supporting the government in mainstreaming an environmental and climate change coding methodology into the budget system to allow for the quantifying and tracking of relevant fiscal expenditures. The initial assessment detailed in the CPEIR indicated that approximately seven percent of total public expenditure contributed to green growth type activities. The introduction of a climate budget code is creating a level of transparency, but there is scarce evidence as to whether this information has improved policy-making or the allocation of finance.

There were early examples of mainstreaming, such as the Coastal Zone Policy and National Water Management Plan, but this process was consolidated through the NAPA (2005) and more recently the Climate Change Strategy and Action Plan (CCSAP, 2009). The strategy contains 44 programmes formulated around six themes: food security/ social protection/ health, comprehensive disaster management, infrastructure, research/ knowledge management, mitigation/ low carbon development, and capacity building/ institutional strengthening. One area of specific green growth alignment is the commitment to better understand the macroeconomic impacts of climate change on the economy of Bangladesh, although it is not clear what work has been undertaken as a result. There is also a discussion about improving the resilience of agricultural systems to ensure economic development and food security.

This overarching policy framework supports a number of programmatic and financing structures. The CCSAP saw the operationalisation of a National Climate Change Fund. The Bangladesh Climate Change Resilience Fund (BCCRF) was also established as a multi-donor trust fund to coordinate development partner activities.

2.3. Sector mainstreaming and political economy challenges

Policy-makers in Bangladesh are, in general, well sensitised to environmental protection. However, many continue to see these issues as being about environmental compliance, rather than economic opportunity. Traditional growth models still dominate government thinking, despite the extensive work that has been undertaken on climate mitigation, resilience and finance in the country.

In addition, there is a lack of a strong evidence base that can inform the costs and benefits of green growth strategy, and this prevents policy makers from establishing a strong case for action. The evidence base for climate impacts and policy response is relatively weak, with reliance on historic climate and economic models. From an economic perspective, environmental externalities and the costs of resilience are rarely modelled in sector policy or investment appraisal.

While every project at sector level in Bangladesh requires an EIA, climate risk screening is less common and normally implemented on an ad-hoc basis at the insistence of specific government advisers or donors. Climate risk analysis and programming tends to be concentrated within the established climate-adaptation finance structures (i.e. the BCCRF, CCSAP and NAPA) and to date these approaches have not been fully mainstreamed.

Policy implementation is disrupted by limited inter-agency coordination, and the capacity of the Department of Environment to influence and support other ministries is weak. Sector ministries lack sufficient technical capacity to implement a green growth strategy. Green growth is yet to be grounded in the policy discourse, even though many sector frameworks do have some elements.

Despite green growth objectives within Vision 2021, the five year plans and the National Sustainable Development Strategy (NSDS) laws are often not consistent with broad-based policy objectives.

Some of the achievements made in recent times on the policy front for promoting green growth are set below along with political economy challenges:

- › **Agriculture:** The National Agriculture Policy (NAP, 2013) has clear linkages with Vision 2021, CCSAP and NAPA. The vision document has strong elements of green growth within it, with respect to rational use of agricultural inputs including groundwater. It also calls for reliance of surface water for irrigation purposes. A shift from ground water abstraction to surface water use will require a new set of regulatory measures, with a provision for introducing a water tariff and providing incentives for use of solar energy for irrigation purposes. The introduction of a water tariff may invite resistance from farmers. Rational water usage for agricultural practices combined with better management will substantially cut methane emissions from rice farming. In Bangladesh ensuring food security for a huge population will continue to remain the real challenge.
- › **Forestry:** The draft National Forest Policy (2016), aligned with CCSAP and Vision 2021, seeks to stimulate conservation partnerships involving local communities and the private sector to support sustainable forest management through increased involvement in decision making. The policy recommends the use of 'Payment for Ecosystem Services' for maintaining forest biodiversity, regenerating already degraded forests in protected areas. Illegal felling is still a concern- some powerful actors are not reprimanded by government for their engagement within felling.
- › **Fisheries:** Historically the fisheries sector has been the domain of powerful elites who own the resource who lease the water bodies from the Land Ministry under a separate policy framework. Ideally, this should be under the jurisdiction of the Ministry of Fisheries. To date, no solid efforts are being undertaken to declare other water bodies as ecologically critical areas due to very strong political economy linkages.
- › **Water:** The overarching national documents like NSDS, Vision 2021 and CCSAP recognise the need for sustainable use of fresh water resources. The Vision 2021 document places an emphasis on controlling surface water irrigation (e.g. improving efficiency and adopting new technologies) and using groundwater in a sustainable way. Water harvesting and storage are also supported. In conformity with the national vision, the Bangladesh Water Act 2013 recognises the lack of availability of surface water during the dry winter months when ground water demand increases for irrigation purposes. The law provides for using ground water for industrial and irrigation purposes. As fresh water demand increases (across industrial, urban and rural areas), demand management is required, but there is no mention of water pricing (particularly around ground water abstraction). Bangladesh environment laws do have provisions for disciplinary measures for water pollution by industrial activities; however, there is very little evidence of these laws being enforced. The natural water bodies, including rivers and canals, are gradually being taken over by powerful elites for housing and industrial expansion. The natural flow of water in most cases is obstructed for illegal fishing. It is important that laws are revisited with stringent provisions for measures against offenders. The newly created River Commission needs to be empowered to deal with declining water resources.
- › **Transport:** The Strategic Transport Plan for Dhaka (2005) set out Mass transit BRT plan in three corridors. In general, regulatory regimes and institutional mechanisms/ interagency cooperation for transport remain weak. The City government, with support from Japan, has undertaken some initiatives to introduce ICT application in motor vehicle registration and issue a fitness certificate. There are opportunities to address environmental issues through the introduction of Mass Rapid Systems in Dhaka and other large cities. The political economy challenges are large, with strong vested interests among private fleet operators, and many poorer groups dependent on providing non-motorised transport which might be displaced by more integrated and efficient systems.
- › **Urban development:** Urban development in Bangladesh is regulated by the overarching Municipality Law (2000). It restricts the encroachment of wetlands, rivers, canals, waterfalls and ponds for urban development. Under this law, open spaces and water bodies cannot be leased;

any development on these areas is a punishable offence. However, there is little enforcement during urban expansion, and political economy issues have allowed encroachment by industry and housing, with strong levels of water abstraction and effluence, leading to significant environmental damage (e.g. in Dhaka's rivers). Municipalities lack the capacity to enforce planning rules, and district administrations rarely punish offenders.

- › **Energy:** The power sector roadmap stresses that reserves of natural gas are dwindling and that there is a transition plan for switching to coal for power generation. The overarching national documents Vision 2021, NSDS and CCSAP emphasise the energy mix to transition to nuclear, coal and renewable energy. There is some government-level support for the development of renewable energy: Vision 2021 projects increasing renewable energy from its current level to 3 percent.
- › **Industry:** The 2016 Industrial Policy, in line with Vision 2021 and NSDS, has dedicated an entire section to environmentally friendly industrialisation. It has adopted mandatory provision for the installation of ETPs in industry, with provisions for measures against the offenders. The policy further encourages the 3R principle for all industries and discourages activities that convert land use from agricultural to industrial. The policy comes with fiscal incentives provision for industries using renewable energy through the form of tax exemptions to priority industries and cash incentives to high priority sectors such as RMG. For industries manufacturing alternatives to fuel, the import of solar panels will become duty free. For industries that use renewable energy in their manufacturing processes as well as environmentally friendly technologies and equipment, incentives and facilities will be provided by the Government. The private sector is also provided with incentives to opt for environmentally friendly technologies. For example, duties on green technologies have been reduced. The machineries and raw materials imported to set up waste management capacity also involve a very low level of duty compared to other machinery. Environmentally compliant industries also receive direct and indirect benefits from government. Moreover, the removal of VAT from the purchase of identified clean technologies has been proposed.

2.4. Co-benefits and trade-offs for green growth in Bangladesh

In general, the literature sets out a positive view on the co-benefits between growth, environmental and social policy. However, there may be challenges in developing countries such as Bangladesh to achieving these benefits, and there is the potential for certain trade-offs. Challenges include the size of the formal economy (which may reduce the effectiveness of policy instruments introduced), high levels of inequality and dependence by the poor on natural resources (requiring a greater focus managing the distributional costs and benefits of green growth), and weak competitiveness (potentially preventing innovation and expansion into new growth sectors). There is currently a lack of evidence around the potential trade-offs between growth, environment and social objectives over time.

Economic growth perspectives

The evidence is strong that the impacts of climate change will impact economically on Bangladesh over time. The World Bank (2010) estimated the direct economic costs of climate change at between 0.5-1% per annum without loss of life, with these costs increasing over time and agriculture losing US\$2.9 billion per annum on average. ADB (2014a) also estimated the costs of climate change on different sectors of the Bangladesh economy, with estimates of between 2-9% of GDP by 2100 depending on climate mitigation scenarios, with main impacts being on labour productivity, land availability, water quantity, electricity supply and infrastructure quality. Food security may also be severely impacted. While studies propose a number of interventions to reduce impacts, the modelling of the potential to avoid such economic losses is less robust, and less work has been done on low carbon development pathways.

Social and poverty perspectives

The poor are already being hit by climate change in Bangladesh, living in poorly constructed houses susceptible to storm surge, cyclones and floods. Rural households typically depend on climate-sensitive sectors for their livelihoods. Limited asset bases means it is difficult to recover in the face of a natural disaster. About 80% of losses in agriculture fall directly on household consumption (World Bank, 2010). The ability to improve resilience would largely benefit these groups. Poverty alleviation remains an important policy priority with a focus on scaling up pro-poor indigenous technologies and promoting self-employment in rural areas using labour intensive approaches. Green growth models could further support lower income groups (e.g. affordable renewable energy, mass transit schemes, eco-system service approaches), together with the mainstreaming of green activities into social protection and safety net programmes. However, there may also be challenges where green transition results in lower labour intensity and provides economic opportunities for higher skilled income groups. Policy instruments may not be effective due to the size of the informal economy. Bangladesh does operate a system of progressive price adjustments for commodities such as electricity and fossil fuels for the poor. However, there is currently no monitoring of the potential impacts of green growth on social protection.

3. Green growth strategy: Best practices in design and delivery

This section explores international best practices in relation to the development of institutional, regulatory and policy approaches that can support the development of effective green growth strategies. Several countries have formalised integrated green growth strategies as set out in Box 1.

Box 1: Examples of National Green Growth Strategies

Chile launched the National Green Growth Strategy in December 2013 outlining a set of actions over the short, medium, and long term (2014-2022). Actions include implementing environmental management instruments, promoting the market for environmental goods and services, and monitoring and measuring progress (Government of Chile, 2013).

China has committed to green growth in its 12th Five Year Plan. Actions include investing in natural resource management, with the aim of creating one million new forestry jobs and reducing rural poverty (OECD, 2013).

Germany's green growth policies have been an important engine for environmental innovation, enabling the development of an internationally competitive environmental goods and services sector particularly focused on renewable energy.

Korea has adopted a green growth strategy to drive economic competitiveness through development and use of advanced technologies. The government is investing in innovation and deployment programs for 27 priority technologies guided by a Green Technology Roadmap with the goal of becoming the world's 7th largest economy by 2020 (Young et al., 2013) and a more recent emphasis on a 'creative economy' as the vision for green growth.

Mozambique launched the Green Economy Roadmap at the Rio+20 Conference on Sustainable Development, setting out its vision to become an inclusive, middle income country by 2030. In October 2013, the government approved the Plan of Action for 2013/2014 laying out the actions over the period of one year on the road to a green economy and is in process of linking the Roadmap to the long-term National Development Strategy 2015-2035 (WWF, 2013).

Rwanda released the Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development in October 2011. It aims to be a developed climate-resilient, low carbon economy by 2050, through the achievement of three key strategic objectives: energy security and a low carbon energy supply; sustainable land use and water resource management; and social protection and disaster risk reduction (Republic of Rwanda, 2011).

Source GGBP (2014)

3.1. Drivers of green growth

Evidence indicates that there are a range of motivations that countries share for pursuing green growth strategies. These may be directly climate change related, or refer to economic competitiveness, natural resource protection, energy or food security, or finance mobilisation. Climate and environmental benefits are therefore often co-benefits of a green growth process, rather than the primary reason for policy action. The broader agenda of green growth enables policy makers to shift the climate change policy narrative away from costs and towards economic opportunity.

Each country will have a different range of drivers that reflect its level of development and resource base. Countries may be seeking to:

Address Climate Change

- › **Fulfil political climate change obligations:** The international debate on climate change and international agreements to address GHG emissions (as set out in INDCs and commitments to the Paris Agreement) has had a substantial influence in the framing of policy debates across many countries and has provided impetus to the development of corresponding national targets and strategies. For example, Korea implemented a GHG emissions trading scheme in 2015. China is also implementing a national scheme from 2017 following a series of city and provincial level pilots. Thailand and Indonesia have likewise set up voluntary greenhouse gas trading schemes. Climate change policy allows countries to avoid the potential for stranded assets from future punitive carbon pricing regimes.
- › **Manage the impacts of climate change:** The domestic impacts of climate change represent an important policy driver. The challenge of climate change adaptation features across many climate change strategies, including Korea's green growth strategy. It is an issue of relevance to the most vulnerable low lying countries. Mainstreaming resilience allows better management of long term exposure and vulnerability (e.g. Bangladesh, Small Island States).

Protect natural resources

- › **Protect natural resources from over consumption and degradation:** Forestry preservation and afforestation schemes represent an important entry point for climate change mitigation in many developing countries. The most ambitious schemes are closely linked to the international REDD framework (e.g. Costa Rica, Indonesia).
- › **Reduce the social and environmental impact of industrial and urban growth:** Rapid urbanisation and densification is a key issue for policy makers, and green growth offers a framework to address some of the challenges (e.g. Singapore). For example, the Vietnam Green Growth Strategy (2011) promotes better special planning, more efficient and resilient infrastructure, green buildings, cleaner public transport systems and urban greening activity.

Promote economic development

- › **Improve industrial competitiveness in key sectors:** Green growth may be regarded as a way of driving improvements in competitiveness in key sectors (e.g. industry and transport) through improved resource efficiency, lower costs and higher productivity. For example, the Green Growth strategy in Vietnam is based around the implementation of a "clean industrialisation" strategy promoting the uptake of green technologies and equipment, and strong measures on environmental pollution. Targets are set for compliance and investment.
- › **Build a position in emerging green industries:** Many countries promote green growth as a means of building competitive manufacturing and export positions in emerging sectors (e.g. Solar PV, Biofuels). In South Korea, the 'creation of new growth engines' is one of the three pillars of the country's Green Growth strategy. Renewable energy policy, led by the Ministry of the Knowledge Economy, not only sets deployment targets, but also trade and export targets.
- › **Create green jobs:** Most green growth strategies have an explicit objective to develop jobs (e.g. Rwanda, Korea, and Chile) from industry and agriculture. Job creation is particularly important to offset the impacts of economic transition for poor and marginalised communities in developing countries (e.g. Bangladesh, Rwanda), where automation and commercialisation are reducing the labour intensity of traditional sectors.
- › **Address short term economic challenges:** Many countries use green growth as a response mechanism to recession or other economic shocks. This can be evidenced by the appearance of a number of short term green growth investment strategies immediately after the financial crisis of 2008 (e.g. Vietnam, see CIGAR 2013 for examples). Green infrastructure investment and public spending can have short term economic stimulus effects with Keynesian effects of increased economy activity.

Encourage sustainable financing approaches

- › **Address budgetary pressures:** Environmental taxation and the reduction of environmentally harmful subsidies offer a resource for additional tax revenue and the reduction of fiscal deficits respectively. Given the limited revenue from income-based taxes in many developing countries, this can prove attractive. Examples include the Environmental Tax introduced in Vietnam (2012), together with ongoing reforms of fossil fuel subsidies in India and Indonesia.
- › **Mobilise additional financial resources:** Many countries (particularly smaller and less developed countries) view green growth policy as an effective way of leveraging additional financial resource from international climate funds and donors and the IFIs. In Vietnam, mobilising climate finance is an explicit goal of the strategy. A number of countries have established climate funds (e.g. Rwanda, Indonesia) to pool and allocate resources. Others have engaged more with carbon markets and the CDM mechanism (e.g. China, Thailand).

Address broader security issues

- › **Improve energy security:** The exploitation of indigenous natural renewable resources and a focus on demand side management both have the capacity to improve energy security. Fossil fuel price volatility and supply constraints have driven the uptake of renewable energy in both China and India. Thailand's Renewable and Alternative Energy Development Plan (AEDP) identifies renewable energy expansion as a means of reducing import dependence. Countries with significant geothermal resource (Indonesia, Ethiopia) are seeking to exploit it.
- › **Contribute to food security and rural livelihoods:** Many developing countries are incorporating agriculture and food security initiatives into their green growth strategies. Particularly in food insecure regions (e.g. Ethiopia) (see CIGAR 2013).

Scope and timeframe

The scope of a green growth strategy is an important consideration. Green growth strategies may be sector-based (e.g. Low Carbon Development Strategy (LCDS) in Columbia) or economy-wide (e.g. Mitigation Action Plans and Scenarios (MAPS) in Chile). However, the evidence is that green growth strategies are most effective when they are implemented in an integrated way in national development planning, including budgeting and poverty reduction processes (e.g. Nepal, Rwanda). Green growth should look at wider structural transformation challenges and pathways (e.g. alternative infrastructure, spatial planning, economic transition), rather than just at the costs and benefits of individual interventions. The fragmentation of green growth policy can raise costs and result in uncoordinated approaches.

An important consideration for framing green growth objectives is the timeframe over which they are formulated. Jacobs (2012) notes that there are potentially trade-offs between short term costs and long term benefits. These may encourage policy makers to focus primarily on lower-cost 'no regrets' measures that better align with planning and election cycles. The opportunity to engage with more difficult or expensive infrastructure and spatial planning challenges may be ignored, contributing to high carbon lock-in and/ or longer term vulnerability. Best practice strategies review both short-term (e.g. to 2020) and longer term pathways (to 2050), and seek to develop policy frameworks that address both. For example, the Mexican National Climate Change Strategy sets out a long-term vision, 10, 20, 30, and 50 years into the future, while the Special Action Plan on Climate Change serves as a six-year policy implementation planning document for the country's longer term objectives.

Green Growth Strategy of Rwanda

The Republic of Rwanda released its Green Growth and Climate Resilience National Strategy for Climate Change and Low Carbon Development in October 2011. Rwanda is highly vulnerable to the impacts of climate change. It has a strong reliance on rain-fed agriculture and is dependent on hydropower for more than half of national electricity generation. The Green Growth Strategy built upon work already underway in Rwanda, integrating projects and policies in a holistic national document and setting out both short term (e.g. 2020) and long term (2050) policy actions. The strategy takes a multi-sector approach, including both low carbon development and climate resilience. It also sets a framework to mainstream green growth approaches into national socio-economic planning, and to mobilise funding to finance activities identified. There are three key objectives:

1. To achieve Energy Security and a Low Carbon Energy Supply that supports the development of Green Industry and Services and avoids deforestation.
2. To achieve Sustainable Land Use and Water Resource Management that results in Food Security, appropriate Urban Development and preservation of Biodiversity and Ecosystem Services.
3. To ensure Social Protection, Improved Health and Disaster Risk Reduction that reduces vulnerability to climate change impacts.

Social distribution effects are also considered, with a focus on job creation for the young and other marginalised groups. The Strategy also aligned with other development principles (around economic growth, poverty reduction, welfare, gender equality). Key lessons included the need for extensive stakeholder consultation, and challenges of modelling low carbon pathways for a developing country with limited baseline data.

Source: CDKN (2013)

Leadership

A major feature of successful green growth strategies is that they have strong political leadership. Green growth requires strong champions, due to its cross-cutting nature and the need to overcome institutional barriers or to confront vested political and economic interests (e.g. fossil fuel sector). Green growth can represent a significant shift from business as usual. For example, Green Growth strategies in Ethiopia and Rwanda were both initiated and supported at the highest level. This allowed for effective mainstreaming through budget systems into sectors, and created strong incentives for compliance. Some leaders (e.g. President Calderon of Mexico or President Lee of South Korea) have made green growth a strong legacy issue. Others (e.g. Columbia or Chile) use green growth to influence or align with partners in their regions. Initiatives managed from the President's or Prime Minister's office have a higher level of success, and can help overcome the lack of institutional influence traditionally associated with Environment ministries (GGBP 2014).

Successful leaders build strong coalitions across government, particularly in finance and economic ministries, as well as among more diverse groups such as parliament, industry, media and NGOs. These coalitions can provide strong mandates to support action. For example, the MAPS Chile process was signed off by nine Ministers. Coalition building involves facilitating dialogue and building consensus across different sectors, and creating links that otherwise might not be made. Leaders also seek to engage with emerging interest groups (e.g. companies involved in renewable energy development, environmental goods and services) to counter entrenched opposition (such as from the fossil fuel industry). The development of mandates and coalition building can take significant amounts of time, for example two years for MAPS Chile and 18 months in Kenya.

Green Growth – Political leadership and institutions in South Korea

South Korea has perhaps been more committed to implementing green growth policy than any other country. The country has a high degree of centralisation and top-down leadership which allowed the administration of President Lee Myung-bak to drive it through as a central development agenda. Green growth was positioned as a long-term vision and development paradigm. Green growth was brought to the fore through the creation of a solid governance framework through the Presidential Committee on Green Growth in 2009, allowing for inter-ministerial and multi-stakeholder mobilisation; strengthening the legal enabling environment for green growth by enacting the Framework Act on Low Carbon Green Growth in 2010; mobilising various ministries to formulate comprehensive green growth plans at various levels – sectoral, national, and local – including the National Strategy for Green Growth (2009-2050) and Five Year plans, and setting ambitious GHG abatement targets (30% by 2020). This combination of leadership, institutional frameworks and legislation supported the embedding of green growth as a national policy.

Source GGGI (2015)

Institutions and legislation

However, the role of strong leadership can also be a weakness during times of political transition. Green growth strategy needs to be embedded in an institutional framework that allows long term planning, implementation and review, which can help coordinate with other activities and which can defend long term planning against political interest groups. Where these institutional frameworks are absent, political transition can impact upon effective implementation (e.g. Columbia, South Korea, South Africa, Chile, and Brazil).

To address this, several countries have embedded green growth strategy within inter-ministerial steering or oversight committees (e.g. Chile, Brazil), often coordinated by key economic ministries, rather than within the Ministry of the Environment. This can help improve coordination, as well as create the necessary level of authority and influence. For example, the Chile MAPS project is driven by a full inter-ministerial Steering Committee, and Brazil's IES is supported by numerous ministries. In Columbia, a new institutional framework was developed with the support of the high level National Council for Economic and Social Policy to ensure that green growth was fully embedded in the National Development Plan (GGBP 2014).

The implementation of green growth strategies can be more effective where they are backed by legislation. This is particularly important where they are likely to be opposed by vested interest groups. Examples include UK's climate legislation, Mexico's Climate Change Law, the US Clean Air Act, Japan's Fourth Basic Environmental Plan, and the activity in Australia around its Clean Energy Act. Several developing countries are also incorporating green growth into policy including Brazil, Chile, Colombia, and South Korea. Where institutional arrangements can be supported by legislation, they may be more robust against external pressures compared to those that are initiated by presidential order. For example, Mexico's Climate Change Law would require an act of Congress to change.

The development of such institutional structures that support mainstreaming and engagement can take time, and requires gradual linkages and capacity building. These processes can be supported by embedded advisors in sectoral ministries, or at sub-national level, to allow for continuity and retention of expertise. Green growth strategies are also often dependent on sub-national institutions for implementation and so effective coordination processes also should be established at this level.

4. International best practices for mobilising green growth finance

Green growth programmes must mobilise finance that supports an economic transition pathway. However, a range of financing challenges exist. These include investor risk perceptions, low returns, capital constraints, existing non-green policies and subsidies, capacity and information barriers, regulation etc.

Governments can address financing challenges in several ways. These include the development of a supportive enabling environment; the deployment of public capital, either directly through budget or via financial intermediaries; and by addressing risk concerns of the private sector. Examples relating to each of these issues are set out below.

4.1. Creating the enabling environment

Governments are able to send strong investment signals through long-term policy and regulation that shifts incentives away from high carbon, polluting sectors to cleaner, lower carbon activities and by encouraging longer term investment in R&D. Investors need confidence in binding long-term policy goals and enforcement of regulation to be able to commit capital and alter their investment strategies. For example, to support investment in energy efficient housing, Germany set long term energy performance standards through the Conservation Act, supported by concessional credit lines for banks to lend to homeowners and investors for energy efficiency measures.

Managing the social impacts of RE feed in tariffs on electricity prices in Malaysia

Many countries have introduced Feed-in Tariffs (FITs) to support the development of renewable energy. Most of these systems are funded through surcharges to consumer bills, which have the effect of raising tariffs for consumers. Malaysia was the second country in the ASEAN to launch a feed-in tariff program. The 2009 Malaysian National Renewable Energy Policy and Action Plan set a target of 17 percent of renewable electricity by 2030. It also facilitated the Renewable Energy Act, setting the legal framework for the feed in tariff, and mandated the Sustainable Energy Development Authority to be responsible for its implementation. The surcharge was 1 percent of bills in 2013, rising to 1.6 percent in 2014. Mindful of the potential impact on consumers, the policy exempted lower-income households (below 300 kWh per month) from the tariff, which represented about 67% of utility consumers. The burden was placed on higher consumers, based on the polluter pays principle, with the aim of encouraging behavioural change among those with higher consumption patterns and environmental footprints. For those that pay, the charge is proportional to the size of the overall bill, which is more progressive than a uniform fixed rate which impacts disproportionately on lower consumers of electricity.

Source: Pacudan (2014)

Governments also need to address perverse incentives and create strong pricing signals for green growth. In many countries, carbon intensive industries, deforestation and the poor siting of infrastructure are subsidised and encouraged through the tax regime. Governments need to remove these subsidies, and create alternative price signals for green growth, whether through the fiscal framework, or by mobilising public capital (see below). For example, reforms to agricultural pricing and incentives were central to Costa Rica's forest conservation programmes. South Africa has implemented several taxes and charges on carbon intensive activities (vehicles, fuel, flights) and is currently reviewing the option for introducing a carbon tax. Such measures require a strong level of stakeholder consultation to ensure buy-in.

Governments may also develop support for early stage project mobilisation (though pipeline development facilities, support for feasibility studies or demonstration projects) to help demonstrate the viability of emerging technologies or investments. Dedicated green growth agencies can support this process. For example, the Moroccan Agency for Solar Energy was established in 2010 to support the development of Concentrated Solar Power projects as Public-Private Partnerships.

Fossil Fuel Subsidy Reform in Indonesia

The Indonesian government for many years has subsidised the market price of fossil fuels through a range of subsidies worth up to US\$20 billion per year, acting as a significant disincentive to reduce use and associated emissions. Fossil fuel subsidies represented 15% of budget expenditure in 2014. The government has taken the opportunity to reduce these subsidies, with expected reductions in GHG emissions of between 3-10%. Gasoline and diesel subsidies fell from US\$12 billion to US\$1.3 billion in 2015.

The political space for reform has been helped by a fall in the oil price, together with the introduction of targeted social policies to prevent the potential for negative distributional effects on the poor. Programmes include subsidies for rice, healthcare, education costs (Productive Family Programme), cash transfers and temporary cash assistance. The benefits of fossil fuel subsidies were captured primarily by wealthier households and it is expected that their reduction will allow for greater investment in green growth and social protection.

Source: GGGI (2016)

4.2. Deploying public investment funds

Public funds can be an important policy tool where they are aligned with investment frameworks. They can be used to directly finance green growth activities. For example, the Government of Korea is mandated to spend 2% of GDP on green growth related strategies. Other developing countries, including Bangladesh, are tracking climate change as a marker in national budgets to assess the level of climate relevant public expenditure. Some countries raise funds from taxation on fossil fuels and redeploy these funds in a hypothecated way. For example, 60% of the budget for Payment for Ecosystem services in Costa Rica is derived from taxes on fossil fuels. In the United States, public benefit charges are levied on electricity rates and used by utilities to fund clean energy.

Public funds can be used to capitalise national climate and environment funds with green growth mandates either sector specific, or cross sector. For example, the South Africa Green Fund was capitalised with US\$110 billion of public funds. Development banks can also play a role, such as the Brazil National Development Bank, which manages energy efficiency credit lines and the Amazon Fund.

Establishing an effective national climate fund – FONERWA Rwanda

The Fonerwa climate fund was established in 2013 based on the Green Growth Strategy. It has been capitalised to US\$54 million by the Government of Rwanda, together with commitments from a range of development donors (DFID, UNDP, KFW). The basket Fund is the primary vehicle for the pooling, channelling and monitoring of climate change. The Fund is managed by the Government of Rwanda under a national structure. The fund is overseen by the Rwanda Environment and Management Authority and the Ministry of Finance and Economic Planning. National buy-in was bolstered by the Fund's foundation in Rwandan law (Organic law 4/2005) and alignment with core development policies, such as Vision 2020 and the EDPRS.

The Fund uses several financial instruments, primarily grants and debt, to deploy funds through one of four thematic windows: Conservation and sustainable natural resource management, R&D, technology transfer and implementation, Environment and climate change mainstreaming and Environmental impact assessment monitoring and enforcement. The Fund can be accessed by a full range of government and non-state actors, but at least 20% is earmarked for the private sector and 10% for local districts. In total, 33 projects have been financed to date, leveraging an additional US\$33 million in co-financing.

Source: CDKN 2013

4.3. Mitigating private sector risk

Governments pursuing green growth can use public and international donor capital to support a variety of financial instruments to mitigate the financial risk and increase the returns for private investment. Small amounts of well-designed public funding can unlock larger volumes of private investment. Financial de-risking instruments can include loss concessional loans or equity, grants for investment and for technical assistance, guarantees and insurance mechanisms.

Grants are resources aimed at funding investments without the expectation that the money will be repaid. They have been deployed in various green growth contexts, including to provide technical assistance. **The South Africa Green Fund** was set up in 2011 to manage US\$110 million of public investment over the period 2011-14 and to leverage additional resources. It is administered by the Development Bank of Southern Africa, on behalf of the Department of Environmental Affairs, with a team of ten project and policy professionals. Project and capital development grants were a major focus of the fund, which sought to de-risk opportunities so that they become attractive to commercial finance. Research and policy development grants were also provided. Funds can be provided to project developers, municipalities, provinces, private sector, NGOs, government departments, and academic institutions. A major focus was the provision of initial project development grants and loans at a stage in the project cycle. It funds projects in three areas: Green Cities and Towns, Low Carbon Economy, and Environmental and Natural Resource management. More than 590 applications were made with a total value of US\$1 billion, and the fund was fully committed by 2015.

Concessional loans are provided on conditions more favourable than market terms by offering low or no interest rates, longer repayment and/ or grace periods, or a combination. They can reduce the cost of capital, and improve the returns for other investors, encouraging local banks to enter the market. **The Mexico Renewable Energy Financing Facility (REFF)**, implemented by the IDB, received US\$70 million provided by the Clean Technology Fund and was backed with funds from NAFIN and IDB. REFF aims to leverage more than US\$1.5 billion for renewable energy projects to provide a track of successful projects that help to address risks and cost barriers for early market entrants. NAFIN is a national credit institution nominated to host the Mexican Green Fund, which operates on a learning-by doing basis, and is designed to attract, blend and deploy climate finance. The total proceeds of the REFF will be channelled to end users by NAFIN directly or indirectly, through the intermediation of other financial institutions including Mexican development banks, which will be financed by NAFIN through second tier transactions. REFF provided financial support through two mechanisms: firstly, provision of direct loans by NAFIN to project developers with long repayment terms (10 – 15 years) and fixed interest rates to finance the construction of new RE projects and support their financial needs during the life of the project. Secondly, contingency credit lines cover cash flow deficits (e.g. due to unexpected lower energy generation prices) during the life of the project.

Guarantees and risk sharing instruments are commitments where a guarantor undertakes to fulfil the obligations of a borrower to a lender in the event of non-performance or default by the Borrower of its obligations, in exchange for a fee. They can attract capital that ensures the feasibility of a project. **The China Utility-based Energy Efficiency Finance (CHUEE) Programme**, initiated in 2006, is a successful example of the use of guarantees to support private investment in energy efficiency measures. In cooperation with the Ministry of Finance, CHUEE set up a loan loss reserve fund (LLRF), funded by the IFC and GEF, to share the financial risks Chinese commercial banks face by guaranteeing loans they make to energy management companies who finance upgrades for their customers. The LLRF refunds 75% of the first 10% of the loan amount in case of default, and 40% of any losses on the remaining 90% of the loan amount. The fund has been set up with US\$50 million contributed by the GEF and IFC, which the programme aims to use to mobilise US\$0.7-1.45 billion for energy efficiency project financing from the private sector. As of December 2010, 142 sub-projects had been financed under CHUEE by US\$573 million of loans, backed by the risk sharing facility. This is estimated to have leveraged an estimated total of US\$1.18 billion, with emission savings of 2.3mtCO₂ per year. The impact was also reflected in the growth and quality of the energy efficiency loan portfolio of the participating banks (IIP 2012).

Equity is the injection of capital to increase operation of a project or a firm to leverage resources as it mitigates risk for other investors, used when the probability of failure is high but still with positive probability of success, therefore, of return to the equity holder. For example, **the Indian Clean Energy Equity Fund** was announced by the Government of India in November 2016 at COP 22. The Government is seeking to work with three state-run firms to set up an equity fund of up to US\$2 billion for renewable energy companies to tap into to help India urgently meet its clean energy goals. The fund will invest in both public and private companies and seek to mobilise funds from other investors (including international pension funds). Around US\$600 million of the initial pool will come from the National Investment and Infrastructure Fund, under the finance ministry of the Government of India, and the rest will come from state entities such as NTPC Ltd, Rural Electrification Corp. and the Indian Renewable Energy Development Agency.

5. Sector-level case studies

The following section sets out several short case studies detailing sector-based programmes undertaken by government authorities and private companies in relation to green growth activities. While the scope of green growth is broad, these provide some insights into the type of activities that might be encompassed within a green growth sectors. Five sectors are explored: Agriculture, Forestry, Energy, Industry and Urban Development, with two examples provided for each sector.

5.1. Energy

Feed in Tariffs for decentralised generation: The GET FiT programme in Uganda

The Government of Uganda, together with the national transmission company and regulatory authority are supporting the development of small renewable power projects, supported by the GET FiT programme. The aim is to create a portfolio of distributed power generation assets which can be more flexible and quicker to develop than the addition of larger investments with longer lead times. The programme is supported by KfW and other donors. The project aims to streamline the processes for smaller developers to negotiate and agree financing. This included standardising power purchase agreements and other related project agreements (notably a government implementation agreement, a grant agreement from the donor and lenders' direct agreements) for smaller renewable projects, with technology-specific variations for hydro, solar, bagasse and other biomass projects; and providing grant funding for qualifying projects. Grants are paid on a results basis, with 50% following commercial operation and 10% based on power delivery targets being met. The project is currently supporting 14 hydro projects, two solar PV projects and one bagasse project, and is on track to support a cumulative capacity of 150MW – 170MW, or in the region of 20% of Uganda's existing installed capacity (<http://www.getfit-uganda.org/>).

Decentralisation of renewable energy policy: Jiha Tinou Programme, Morocco

Jiha Tinou is a strategy, launched in 2012 by Morocco's National Agency for the Development of Renewable Energy and Energy Efficiency. The strategy aims to encourage initiatives at local, primarily municipal, levels of government. With an eight-year planning horizon, Jiha Tinou is strengthening the capacity of local actors to engage in decentralised energy production from renewable sources, while also helping them to save and manage energy in local infrastructure, buildings and industry. Three cities, Agadir, Chefchaouen and Oujda, were selected during the pilot phase. Funding support is provided to develop institutional structures, knowledge transfer, awareness raising, project design and financial engineering. The decentralisation of energy strategy reflects a wider regionalisation process in Morocco supporting the delegation or resource authority to the sub-national level. The programme is expected to contribute to mainstreaming energy considerations in territorial and urban planning, promote active interaction between municipalities and international partners, and establish quantitative targets and roadmaps to assess and quantify local impacts (<http://www.aderee.ma>, GGBP 2014).

5.2. Tourism and forestry

Green urban tourism in Hue, Vietnam

The city of Hue in Vietnam is rapidly expanding and is a major tourism site. The city introduced a new tourism model that follows sustainable development principles, under its 'Hue - A Homeland of Happiness' plan (2010–2020). The city policy is heavily influenced by the national government's sustainable tourism framework. This higher-level policy guidance was adapted to suit the city's local conditions. A participatory local process focussed on identifying low carbon opportunities while developing economic opportunities for the poor. This work resulted in the identification and promotion of 'garden houses' as a viable climate mitigation option while also enhancing tourism. This has yielded several environmental, economic and cultural benefits for Hue. Apart from the environmental benefits provided by garden houses, their promotion paved the way for leveraging other low carbon development initiatives such as the use of non-motorised transport. The direction of Hue's

development highlights the importance of a vision for sustainable growth and more importantly, of a champion who will guide the city toward its vision (CDKN 2014).

Payment for Ecosystem Services in Costa Rica

Costa Rica introduced a system of Payment for Ecosystem Services (PES) in 1993, with the aim of reducing the high rates of deforestation on private land. PES schemes offer an economic instrument to support the transition towards a green economy. PES allows private sector landowners and communities to access the economic value associated with ensuring sustainable management of forests, which may not currently be captured in the market price of timber (carbon sequestration, watershed protection, biodiversity conservation). They typically involve 'service users', such as governments, NGOs or the private sector, paying forest owners, or 'service providers', to manage their forests sustainably. The financing of PES in Costa Rica has been from several sources: the Government of Costa Rica has contributed in excess of US\$170 million from the national budget, sourced from incremental green taxes on fuel and water and the National Forestry Financing Fund was identified as the central funding mechanism for collecting and disbursing these payments. Payments have been made for protection (90 percent), reforestation (6 percent), sustainable management (3 percent) and regeneration (1 percent). Forest cover has now returned to over 50 percent of the country's land area, from a low of just 20 percent in the 1980s. Since 1997, nearly one million hectares of forest in Costa Rica have been part of the PES programme. Challenges have included targeting forests most at risk, ensuring that landowners are not overcompensated, and promoting engagement with indigenous and female-led households (IIED 2013, GGBP 2014).

5.3. Urban green growth

Environmental restoration: Taehwa river ecological restoration project, Korea

The Taehwa River flows through the metropolitan city of Ulsan. Originally a farming and fishing community, in 1962 it was designated as a special industrial zone and grew to city status, with unplanned river-bank developments. The river became highly contaminated with industrial and domestic sewage, resulting in large scale biodiversity loss. In 2001, Ulsan begins its full scale Taehwa River Restoration Project under its first environment improvement Medium-term Comprehensive Plan, followed by a second plan in 2004-08 and the designation of Ulsan as having ecological city status. Several programmes were initiated to support a river restoration project, including the establishment of the Taehwa River Water Quality improvement team and the formation of the Taehwa River Citizen Watch Group. Extensive stakeholder consultation was undertaken. Water quality improvement activities included the removal of debris, contaminated sediment, and sludge. Concrete structures along the riverfront were replaced with natural revetments for flood protection, and green lawns and walking paths were introduced in formerly deserted areas along the riverbanks. To further encourage people to engage with the river, observatory towers and a tourist pavilion were constructed. As a result, water quality in the river improved significantly, becoming one of the cleanest rivers in the country, and in 2012, it was selected as one of south Korea's 12 eco-tourism sites (ESCAP 2015).

Integrated urban planning: Singapore Urban strategy: Sustainable Singapore Blueprint

The Singapore Green Plan was established in 1992 to balance environmental and development needs. It set out the policy directions for the city to become a model green city by 2000. It set targets for a range of environmental markers, including GHG emissions, air quality, energy use, waste management and natural resource conservation. These were supported a plan covering better regulations and standards, pricing systems, demonstration programs, consumer behaviour change campaigns, information management, and other policies. A Coordinating Committee and six Action Programme Committees oversaw the development and implementation of action programmes to help Singapore reach its targets. Most of the 2012 targets were achieved. In 2009, the strategy evolved to become the Sustainable Singapore Blueprint which further developed the targets and set out a range of policies and measures. This was further extended in 2015 to cover five strategic areas: Eco-Smart

Endearing Towns; Car-Lite Singapore; towards a Zero Waste Nation; a Leading Green Economy; and an Active and Gracious Community (GGBP 2014).

5.4. Agriculture and food security

Food security in Ethiopia: The Ethiopian Sustainable Land Management Project (SLMP)

SLMP was initiated to reverse the serious level of land degradation by promoting and scaling up successful sustainable land management technologies and approaches. The SLMP is a core part of the climate resilience strategy for agriculture, which in turn forms a core part of the Ethiopia Green Economy Strategy. It piloted an integrated approach to sustainable land resources and integrated watershed management that tackles interlinked problems of poverty, vulnerability and land degradation at the rural community level by overcoming key barriers, including those that pertain to knowledge, technology, policy, legal, institutional, economic and financial issues. The project has a capacity-building component, which includes: developing a sustainable land management knowledge base; and creating the necessary enabling policy and legal, institutional and financial environment within areas that have been identified as being in immediate need of priority attention. The other component of the project entails harnessing social infrastructure for natural resource management to support community participation and the mobilisation of labour-intensive physical and vegetated structural and agronomic land management practices at the watershed level in agricultural, pasture and degraded lands (UNECA 2015a, CIGAR 2012).

Sustainable agricultural policy in Brazil

Brazil achieved a reduction in poverty rates from 20% of the population in 2004 to 7% in 2010, supported by a set of complementary policies and programmes to improve productivity, and reduce the environmental impacts of agriculture (Beddington et al., 2012). Brazil intends to meet most of its GHG emissions reduction targets through agriculture and forestry. Brazil has established ecological and economic zoning plans, as well as a satellite monitoring system to facilitate prompt action against illegal logging. Introduced in 2008, Brazil's National Climate Change Plan is credited with successfully reducing deforestation and making the shift to low-emission agriculture. Agro-ecological zoning laws for sugar cane and palm oil balance competing land uses and address multiple objectives in the agriculture, forest, water and energy sectors. Key policy documents, such as the National Plan, Sustainable Amazon Plan and National Water Resources Plan, prohibit cultivation of sugar cane in protected areas (the Amazon and Pantanal, for example). The Forest Code provides for maintaining forest cover on private property in rural areas. Additional policy elements include: (i) a focus on agricultural R&D and diffusion of knowledge at local levels with the pivotal role of the agricultural research agency; (ii) provision of complementary measures such as agricultural credit and the environment guidelines of the Brazilian Development Bank which make lending conditional on environmental protection measures; (iii) dovetailing agricultural production patterns to the national program on Zero Hunger ensuring consistency of poverty and agricultural policies; (iv) farm-level capacity building policies and mechanisms ensuring stakeholder participation; and (v) supporting trade policies (CIGAR 2012).

5.5. Industry: Energy/ efficiency/ cleaner production

Resource Efficiency: Industrial Energy Efficiency Improvement Project, South Africa

South Africa launched its first National Strategy for Energy Efficiency in 2005, in response to climate change issues and as a way of addressing the looming energy crisis facing the country. The strategy set a target of improving energy efficiency by 12% by 2015 and by 15% for industry. The Industrial Energy Efficiency project was started in 2010, hosted by the National Cleaner Production Centre of South Africa, and supported by UNIDO, the Department of Trade and Industry and the Department of Energy, together with support from SECO and DFID. There was strong involvement from business organisations including Business Unity SA and the National Business Initiative. The government provided the policy framework, while international donors provided resources for technical assistance (e.g. energy audits). The initiative supports the introduction and adoption of Energy Management

Standards in industry, particularly agro-processing, chemical and liquid fuels, mechanical engineering, automotive and mining). The programme has involved formulating a supportive policy framework and financial mechanism for energy efficiency, developing institutional capacity, awareness raising, energy audits and local demonstration projects. The project also supports the supply of energy efficient services through building institutional capacities to accredit and certify EMS compliance, and by training local trainers and consultants in EMS implementation and energy system optimisation. Since 2010, implementation in 54 industry plants has resulted in energy savings of 571 GWh which, when converted to current energy prices, translates to a financial saving of some R344 million (ZAR). The GHG emissions savings equates to around 568,000 tonnes of CO₂ (UNECA 2015b, <http://ncpc.co.za/home-iee>).

Resource Efficiency: Thailand Energy Efficiency Revolving Fund

The Thailand Energy Efficiency Revolving Fund was established by the Department of Alternative Energy Development and Efficiency (DEDE) in charge of implementing energy efficiency under the Energy Conservation Act. DEDE signed a contract with several commercial banks to provide low cost capital and on-lend to industrial and buildings energy efficiency projects. Funds from DEDE were provided as programme loans to commercial banks through the Energy Efficiency Revolving Fund at zero interest for amounts of THB100–400 million (c. US\$3.2–12.7 million). Banks on-lent this financing and could charge interest up to 4% to cover their costs and risk. The initial size of the fund was c.US\$63billion but reached US\$261 billion by 2010. By April 2010, 335 energy efficiency projects and 112 renewable energy projects were financed for a total of US\$453 million (including US\$210 million from the Fund) generating US\$ 54 million of annual energy cost savings (IEA 2011).

6. Conclusions and Recommendations

6.1. Conclusions

Based on the review, the following are the key conclusions to the report:

Bangladesh context: Bangladesh is pursuing a range of green growth activities within its policy and legislative framework. However, these are not framed within a single strategy, and the government lacks the institutional capacity to fully mainstream the implications of green growth into individual sectors. There are political economy issues related to the enforcement of environmental policy, and concerns about the short-term costs and social impacts of transitional change, particularly for poor and vulnerable groups.

Drivers of green growth strategy: Governments are driven to pursue green growth objectives for a range of reasons. These are primarily to do with achieving sustainable development pathways (e.g. reducing the economic, environmental and social costs of pollution and climate change associated with growth). However, investors can also be motivated by the economic opportunity provided by new technology and service markets, and by the potential for cost savings and productivity gains associated with greater energy and resource efficiency.

Potential trade-offs: While there are significant co-benefits between growth, environmental protection and social inclusion, there is also the potential for trade-offs in the short term. The economic benefits of green growth may only be realised in the longer-term due to the initial higher capital costs of alternative technologies and green infrastructure, and the need to pursue distributional policies to protect poor and vulnerable groups during periods of transition. Countries seek to manage these trade-offs to ensure that growth remains equitable.

Strong leadership: Green growth requires strong political champions who can lead potentially disruptive change processes and help manage the political economy impacts of change, particularly where vested interests exist. These leaders need to build effective coalitions among government ministries, parliamentarians, industry and NGOs to support green growth transition, and to ensure that strategies are implemented and accountable.

Strategic positioning: Green growth is most effective when integrated into national development planning, and implemented in a way that aligns with and supports broader economic transition, and allows co-benefits and trade-offs between sectors to be addressed. Green growth strategies need to set out long term goals (e.g. 2050 decarbonisation pathways), supported by medium term implementation plans (e.g. 5 year plans). Strategies are more robust when supported by specific legislation in relation to obligations and targets.

Effective institutions: Green growth strategies must be embedded in strong institutional processes that can manage periods of political transition, and facilitate cross-institutional cooperation, stakeholder engagement and learning. Ministries of Environment may not be influential enough to lead such processes and green growth legislation can support the development of effective institutional structures. Capacity gaps need to be addressed to ensure that policy makers can design and develop implementation pathways, with strong monitoring frameworks to create evidence of potential benefits and costs.

Sector Mainstreaming: Green growth needs to be mainstreamed into development planning and sector policy to be effective. This requires significant investment in sector level capacity through embedded advisors and the allocation of sufficient resources. Much of the implementation of sector policy happens through sub-national entities, and so capacity and linkages at are important to drive effective delivery.

Finance mobilisation: Governments need to focus on ensuring that financing barriers to green growth are addressed. This includes ensuring that there is a strong enabling environment with clear long term frameworks and goals and associated policy instruments, deploying public capital for investment, and mitigating the risks of private sector investors using concessional funds and guarantees.

6.2. Recommendations for Bangladesh

The following recommendations for Bangladesh can be drawn upon the basis of the international evidence:

- › More effective political leadership on the issue of green growth, including drafting a green growth strategy which reflects, and integrates existing plans and the SDGs.
- › Greater embedding of green growth policy in institutional frameworks to ensure a broad range of political champions, and aligning institutional mandates where appropriate.
- › Further support for mainstreaming green growth policy, including aligning sector regulation with higher level strategies, and building more robust sub-national linkages.
- › Greater public investment into green growth sectors through the deployment of public capital, and exploring new instruments (e.g. green bonds).
- › Fully internalising green accounting within the national budgeting system, and linking sector funding to green growth performance.
- › Engaging private sector investment through better use of public funds to mitigate private sector risk and supporting efforts to improve the enabling environment (e.g. fiscal policy).
- › Improved enforcement of environmental legislation, particularly in regards to urban expansion and industrial pollution.
- › Greater investment in monitoring and building the evidence base for green growth, identifying interventions to mitigate the costs of transition for vulnerable groups.

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