

Chapter 4

Green Economy and Domestic Carbon Governance in Asia

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1. Introduction

The search for solutions to climate change problems will not be found in climate policy alone, as greenhouse gas (GHG) emissions profiles are influenced not only by climate-specific policies but also by the mix of development choices made and the development paths along which these policies lead (IPCC 2007). Many countries believe that controlling GHG emissions will damage their prospects for economic growth rather than open up new opportunities for a different form of growth. Concerns that stringent commitments to climate change mitigation will erode economic competitiveness prevail among policymakers and industries in both developed and developing countries. Thus, tackling climate change issues in the context of sustainable development is particularly important not only for developing countries but also for developed countries. More recently, the concept of green economy has taken centre stage as one of the stepping stones to sustainable development. The essence of the green economy is a transformation into a low carbon, resource efficient, and social inclusive economy, while stressing job creation and long-term prosperity (UNEP 2011). Thus, the concept of green economy is also expected to alleviate the concerns about the negative impacts of climate change mitigation actions. This chapter examines how these concepts have been referred and operationalized in domestic mitigation actions and the operation of the clean development mechanism (CDM) in selected Asian countries.

Over the past decade there have been several important developments in the

Key Messages

- Climate change issues must be addressed in the context of sustainable development to meet the concerns of government and industry in countries of all types.
- Among the international climate change regime developments that have led to changes in greenhouse gas governance, the creation of the CDM stands out and has begun to change the national institutional landscape. The establishment of a Designated National Authority (DNA) in most Asian countries, which approves CDM projects, has provided an institutional foundation for designing domestic market-based mechanisms.
- Nationally appropriate mitigation actions (NAMAs) have given rise to potentially even more ambitious national reforms in the past few years.
- This chapter analyzes how such reforms have supported the concepts of sustainable development and green economy and proposes a regional institutional platform to promote low carbon development.

international climate change regime that have led to subsequent national level changes in carbon governance. One of the more prominent—the creation and the operation of the CDM—began to change the national institutional landscape with the establishment of a Designated National Authority (DNA), the governing body which provides host country approval for the CDM projects. Another more recent set of reforms, the advent of nationally appropriate mitigation actions (NAMAs), has given rise to potentially even more ambitious national reforms in the past few years. It is also important to note that most developed countries have been pursuing the emission reductions targets of the Kyoto Protocol and discussed their mid-term emissions reduction targets under the post-2012 climate regime. Having specific emissions reduction targets also led to significant changes in domestic institutional arrangements.

This chapter will consider how domestic carbon governance in Asia can be aligned with sustainable development by exploring the relationship between green economy, low carbon development and sustainable development. Due to the rapid pace of growth, Asia has become a leader in both climate change negotiations and responding to consequent reforms from those negotiations. Second, while there has been a great deal of activity at the national level, there are differences across countries.

The chapter is structured as follows. Section 2 provides the background of discussion on low carbon development, green economy and sustainable development. Section 3 examines how the concepts of low carbon development, green economy and sustainable development are mirrored in the context of domestic mitigation policies in Japan, the Republic of Korea, China and India. Section 4 empirically reviews how institutional arrangements for CDM within the country have been designed to contribute to sustainable development in host countries in Asia. Section 5 briefly summarises the status of domestic carbon markets in some developing countries. The chapter will conclude with section 6 in which a regional institutional platform is proposed as a tool to achieve sustainable development in the region.

2. Low carbon development, green economy, and sustainable development in the context of climate change discussions

The need to address climate change and simultaneously achieve sustainable development is one of the guiding principles that govern the implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. There are many provisions referring to sustainable development and related concepts (e.g., sustainable economic growth) in the UNFCCC (Preamble, Article 2, Article 3.4, Article 3.5, and Article 4.2(a)), the Kyoto Protocol (Article 2.1, Article 10 and Article 12.2) and various decisions by the Conference of Parties (COP), including the Bali Action Plan, the Cancun Agreements and the Durban Agreements. As stipulated in Article 3.4 of the UNFCCC, the right of promoting sustainable development is warranted for all the Parties under the UNFCCC.

However, no clear definition and criteria for sustainable development are provided by the current international climate change regime (Na 2010). While the World Commission on Environment and Development (WCED) provided a well-known definition of the sustainable development, i.e., “development that meets the needs of the present without compromising the ability of future generations to meet their own needs,” the concept per se is still contentious. It is difficult to reach any agreement on the interpretation of the concept among countries, let alone its concrete indicators or criteria. Nevertheless, it was agreed that developing countries would develop nationally appropriate mitigation

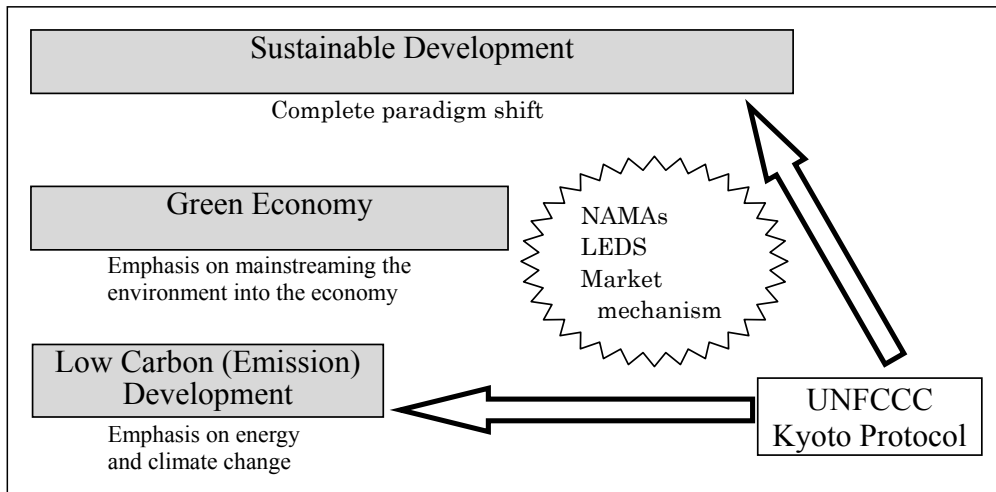
actions (NAMAs) in the context of sustainable development, aimed at achieving a deviation from business as usual emissions in 2020, but it is essentially developing country governments that determine the form that NAMAs should take and whether they are consistent with sustainable development reflecting their own national circumstances. In the case of the CDM, while one of its objectives is to contribute to sustainable development in host countries, it is also for the national authorities to establish criteria for assessing the contribution of CDM projects to sustainable development. Despite the lack of a clear working definition, sustainable development can be seen as an overarching concept, representing a paradigm shift from the current unsustainable state of mass-production and mass-consumption.

The green economy concept has been the focus of growing attention, especially following the global economic slowdown of 2008 and in preparation for the 20th anniversary of the 1992 UN Conference on Environment and Development (UNCED). Initially, a similar concept—green growth or green stimulus packages—was introduced as an emergency measure to address the 2008 global economic slowdown by investing more money in green energy and green industries. However, recognising its possible long-term impacts on a country's development trajectory, the United Nations Environment Programme (UNEP) launched the Green Economy Initiative, with a view to providing the analysis and policy support for investing in green sectors and in greening environmental unfriendly sectors. UNEP defines a green economy as “one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive...A green economy is not an alternative to the concept of sustainable development. But rather, it is only a means to achieve the goal of sustainable development” (UNEP 2011, 16). Although the international climate regime has not explicitly referred to the concept of green economy, in practice, many countries which implement mitigation actions tend to emphasize potential growth in income and employment is driven by public and private investments that reduce carbon emissions and enhance energy efficiency—a key element of green economy, while limited attention is paid to other environmental issues such as biodiversity and ecosystem services.

Another concept revolving around sustainable development is low carbon development (or low emission development, in the language of international negotiations). Again, there is no internationally agreed upon definition for low carbon (or emission) development. Reviewing various attempts to define low carbon development, King (2009) points out some common elements which could be included in a consensus definition: (i) reducing energy demand; (ii) moving away from carbon-intensive fossil fuels and their associated GHG emissions; (iii) continuing to meet the development needs of all groups in society, but especially those that are poor and/or vulnerable; (iv) ensuring energy security; and (v) adoption of appropriate technology and policies that continuously lead toward a low carbon society. While low carbon development can be part of sustainable development, its emphasis on energy distinguishes the low carbon development concept from more general sustainable development paths. Low carbon development has been featured recently in international negotiations, with the use of the term of “low emission,” rather than “low carbon,” development. The Copenhagen Accord of 2009 first recognized that a low emission development strategy was indispensable to sustainable development. The Cancun Agreements requested developed countries to develop low emission development strategies or plans (LEDS) and encouraged developing countries to develop LEDS in the context of sustainable development, though no definition for LEDS was provided.

Figure 4.1 shows how low carbon development, green economy and sustainable development are related. Sustainable development is an overarching concept, representing a situation where a complete paradigm shift occurs. A green economy can be thought of as an interim milestone on the path toward sustainable development. Compared with low carbon development, the concept of a green economy is more comprehensive with greater emphasis on mainstreaming various environmental issues into the economy. Low carbon development is also an element of sustainable development, but its focus is more narrowly on the energy-climate nexus.

Figure 4.1 Conceptual relationship among low carbon development, green economy and sustainable development in the context of climate change policy



Notes: LEDS = low emission development strategies or plans; NAMAs = nationally appropriate mitigation actions; UNFCCC = United Nations Framework Convention on Climate Change

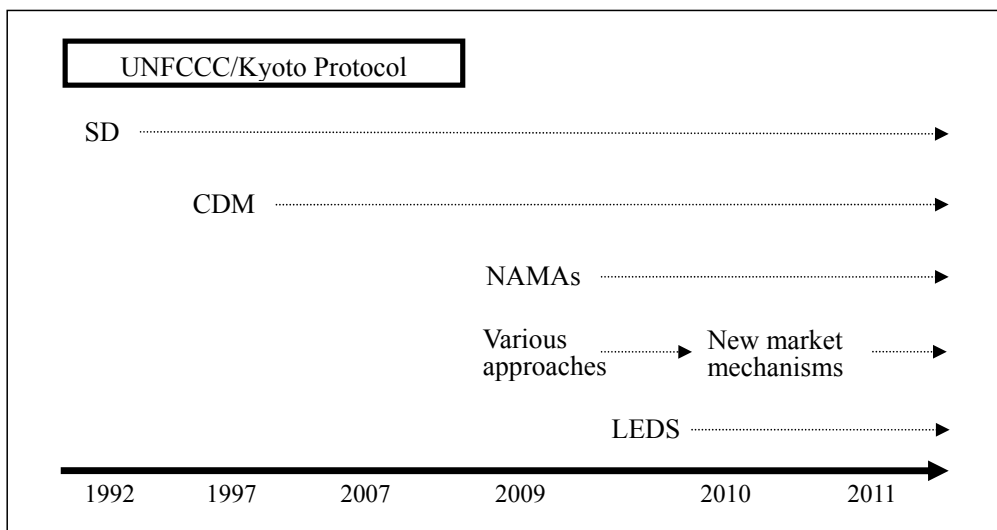
Source: Authors.

These three concepts—low carbon development, green economy and sustainable development—need to be addressed in a comprehensive manner, for example, when international society makes an effort to keep the global average temperature rise to below 2 degrees Celsius relative to pre-industrial levels. Indeed, at the 17th Conference of the Parties (COP17) of 2011, it was agreed to launch a new process—the Ad Hoc Working Group on Durban Platform for Enhanced Action—to adopt a protocol, another legal instrument or an agreed outcome with legal force applicable to all Parties by 2015 and to have it come into effect and be implemented from 2020. It was also agreed that this process shall raise the level of mitigation ambition. Options proposed to raise the ambition level include the implementation of the high end of existing mitigation pledges (including NAMAs) and the implementation of LEDS. While raising the level of mitigation ambition, each country should focus not only on low carbon, but rather should consider improvement in human well-being, social equity and other environmental consequences—key components of a green economy. Thus, it is important to examine how these concepts of low carbon development, green economy and sustainable development have been actually interpreted and adopted in key Asian countries in the context of domestic mitigation policies.

The CDM provides a good example of the actual implementation of low carbon emission

development and the implication for the green economy in the context of achieving sustainable development. The CDM is designed to attain the twin goals of cost-effectively reducing GHG emissions while contributing to sustainable development in developing countries. The CDM has created a certain amount of investment flows from developed countries to developing countries: CDM credits transacted in 2007 and 2008 were worth USD 7.4 billion and 6.5 billion respectively, almost seven times larger than the total size of the fourth replenishment period of the Global Environment Facility (GEF) Trust Fund (USD 1 billion in total between 2006-2010) for a climate change area. Thus, the CDM reduces GHG emissions and simultaneously promotes investments in green sectors with a view to contributing to sustainable development, though there are certain limitations due to the nature of a project-based mechanism. Therefore, it was natural that investments flowed to those projects which can generate very cost-efficient reductions regardless of their contribution to sustainable development. However, it is important to note that different Asian countries began to adopt different methods to promote sustainable development benefits through the CDM. Furthermore, the experience of the CDM can provide lessons and on-going efforts to establish new market mechanisms with a view to contributing to sustainable development (Figure 4.2 below shows the chronology of key terms under the climate regime.)

Figure 4.2 Chronology of key terms under the climate regime



Notes: CDM = clean development mechanism; LEDS = low emission development strategies; NAMAs = nationally appropriate mitigation actions; SD = sustainable development; UNFCCC = United Nations Convention on Climate Change

Source: Authors.

3. Domestic mitigation policies

This section examines domestic mitigation policies by selected Asian countries: China, India, Japan, and the Republic of Korea (ROK). Japan is the only Annex I Party in Asia, and therefore, commits itself to the internationally legally-binding emissions reduction target under the Kyoto Protocol. Since China, India and ROK are non-Annex I Parties, they are not subject to internationally legally-binding emission reduction commitments. However, they have submitted their NAMAs to the UNFCCC secretariat as voluntary pledges.

3.1 Japan

In Japanese policies, the terms green growth and green economy came into use around 2009. Prior to that, most policies were discussed in the context of sustainable development and low carbon development, following the principles adopted internationally at conferences such as the Earth Summit and UNFCCC. The concepts of green growth and green economy gained popularity as a means to stimulate the Japanese economy by large-scale public and private investment in “green business,” when the Japanese economy was hit by the financial crisis in late-2008. In comparison to the United States and Republic of Korea, Japan experienced a slight delay in popularizing the use of the terms green growth and green economy, partly due to the fact that economic shocks from the financial crisis arrived in Japan months after. Recent examples of related policies are below.

The Regional Green New Deal Fund,¹ a Japanese version of the Green New Deal, was developed and announced by the Ministry of Environment (MOEJ) in April 2009, to promote global warming countermeasures and to create local employment opportunities. The allocation of JPY 55 billion was announced for development of energy-saving homes, environmentally friendly traffic systems and energy infrastructure projects, improvement of disposal systems for waste containing asbestos, unauthorized dumping and low-concentration PCB waste, improvement of collection systems for drift waste, and installation of solar panels financed by local residents. The fund is meant to help local governments comply with the Law Concerning the Promotion of Measures to Cope with Global Warming, a law mandating local governments to implement environmental measures.

The concepts of green growth and green economy were also largely adopted and used in the New Growth Strategy (Basic Policies),² developed by the Democratic Party of Japan in December 2009. In this strategy, green innovations were spotlighted as a way to revitalize the Japanese economy. Green innovation was one of the key themes employed by the Democratic Party of Japan, after the Party was elected to power in August 2009. This strategy included specific targets for creating green business worth JPY 50 trillion yen, with 1.4 million new employment opportunities and 1.3 billion tonnes of GHG emissions reductions globally using Japanese technology. Aspirations such as creating a “world’s top environment and energy nation” through a comprehensive policy package, “green cities,” and “sustainable lifestyles” were listed in the strategy.

A bill for the Basic Law on Climate Change³ was developed following a speech by the former Prime Minister of Japan, Yukio Hatoyama (Democratic Party of Japan), at the UN Summit on Climate Change in 2009, in which he stated that Japan will reduce its GHG emissions by 25% by 2020 compared to 1990 levels, based on the premise that a fair and effective international framework in which all major economies participate is established and all participating economies have ambitious targets. Key goals of this bill included a 25% emissions reduction below 1990 levels by 2020 and 80% by 2050, and the share of renewable energy out of the total primary energy supply to be increased to 10% by 2020. This bill also suggested policy measures such as the introduction of domestic emission trading scheme (ETS), greening of the tax system such as through the introduction of a global warming tax, and a Feed-in Tariff (FIT) system for all renewable energy. As of this writing, this law has not passed the Diet. Although there has been no disagreement on a long-term vision to create a sustainable low carbon society, the 25% emissions reduction over a period of ten years sparked off controversy, and was particularly not welcomed by energy-intensive industries.

A Mid-to-Long-term Roadmap⁴ subcommittee was established under the Global Environmental Committee of the Central Environment Policy Council in 2010, to discuss how to accomplish the Hatoyama initiatives, based on the assumption that the bill for the Basic Law on Climate Change will be enacted. While over a hundred academic, business, and governmental representatives were invited to develop the roadmap, this subcommittee was disbanded, as the bill did not pass the Diet. In 2011, it was renamed as a “subcommittee to discuss policy measures after 2012”⁵ and discussions resumed.

Since the primary objective of the “roadmap” subcommittee was to set milestones to achieve the 25 and 80% emissions reduction targets, most discussions were centred toward low carbon development. However, under the “subcommittee to discuss policy measures after 2012,” the focus of discussions was expanded from low carbon to sustainable development, and green growth and green economy. This was partly due to comments made by committee members that short- to mid-term emissions reduction targets should not interrupt a pathway to create a competitive economy and sustainable society. Yet, it was largely due to the reality that it was difficult to form a consensus to set a cap on emissions, to which energy-intensive industries were fiercely opposed. Discussing long-term visions was easier than setting numerical targets for a specified term, and reduced tension between MOEJ and energy-intensive industries.

After the 2011 earthquake on the Pacific coast of Tohoku, the concepts of “safety and security” became highly prioritized at the “subcommittee to discuss policy measures after 2013” and the Global Environmental Committee under the Central Environment Policy Council. The tsunami caused by the earthquake took approximately 20,000 lives, destroyed much of the area’s infrastructure, and caused a devastating nuclear accident, which in turn caused serious power shortages. The ongoing level 7 meltdowns at the Fukushima nuclear power plant complex affected hundreds of thousands of residents in associated evacuation zones. This series of disasters changed the momentum of Japanese policy discussions, and safety and security issues are now discussed as an important part of national policies—as important as sustainable low carbon development, and green growth and green economy.

Table 4.1 summarizes the past twenty years of Japanese policy development with a focus on sustainable development (SD), low carbon development (LD), green growth/green economy (GG), and safety and security (SS). In Japan, non-carbon related environmental policies such as “society in harmony with nature,” achieving a balance between environmental preservation and economic growth, and improvement of eco-efficiency, etc., have been discussed in the context of sustainable development until recent years. The terms, green growth and green economy, started to be included in Japanese policies around 2009, after the global financial crisis. From 2011, after the triple disaster of the earthquake, tsunami, and nuclear accident, the concept of safety and security began to be highlighted. The history suggests that Japanese policies were linked with both long-term development of international policies and ad-hoc events such as the 2009 financial crisis and 2011 natural disaster. Safety and security issues are now widely shared among many countries, following the transboundary concerns of the nuclear plant accident in Japan. This may become a new trend in environmental policies internationally.

Table 4.1 History of Japanese policy development

	Key policy developments & events	SD	LEDS	GE
1992	<ul style="list-style-type: none"> • Earth Summit held in Rio de Janeiro. The concept of "sustainable development" was shared, and Agenda 21 was adopted. • Signing of United Nations Framework Convention on Climate Change started. 	x		
1994	<ul style="list-style-type: none"> • The 1st Basic Environmental Plan was created. Overall objectives and structure of Japanese environmental policies were written down. 		x	
1997	<ul style="list-style-type: none"> • Kyoto Protocol was signed, and Japan agreed on an internationally-legally-binding emissions reduction target of 6% (rel. 1990). 		x	
1998	<ul style="list-style-type: none"> • The Law Concerning the Promotion of the Measures to Cope with Global Warming was created, mandating the national and local governments, businesses, and citizens to contribute to the achievement of the Kyoto target. 		x	
2000	<ul style="list-style-type: none"> • The 2nd Basic Environmental Plan was created, and included the concept of sustainable development. 	x	x	
2005	<ul style="list-style-type: none"> • The 1st Kyoto Target Achievement Plan was created to set a milestone to meet the Kyoto Target. 		x	
2008	<ul style="list-style-type: none"> • The 3rd Basic Environmental Plan was created with the concept of sustainable development. • The Kyoto Target Achievement Plan was fully-revised, as the 1st commitment period started in 2008. 	x	x	
2009	<ul style="list-style-type: none"> • The bill of the Basic Law on Climate Change, which states Japanese mid-to-long-term emissions reduction targets of 25% by 2020 and 80% by 2050 was created by the Democratic Party of Japan. • The Regional Green New Deal Fund was established by MOEJ to promote countermeasures against global warming and to create local employment opportunities. • Prime Minister Hatoyama (Democratic Party of Japan) announced his initiative that Japan will reduce GHG emissions by 25% by 2020 and 80% by 2050 at the UN Summit on Climate Change. • The New Growth Strategy (Basic Policies) was approved by the Cabinet, setting green innovation as one of main pillars of Japanese growth strategies. 		x	
2010	<ul style="list-style-type: none"> • The bill on the Basic Law on Climate Change was sent to the national diet; failed. • The Mid-to-Long-term Roadmap sub-commission was established under the Central Environmental Council, to discuss a Japanese roadmap to achieve emissions reduction targets of 25% by 2020 and 80% by 2050. 		x	
2011	<ul style="list-style-type: none"> • The triple disaster of the earthquake, tsunami and nuclear reactor meltdown occurred on 11 March. • The "roadmap" sub-commission was renamed as a commission to discuss policies after 2013 to continue discussions on Japan's path towards sustainable low carbon development and green growth. • The 4th Basic Environmental Plan is under discussion. The inclusion of the concept of green growth and green development is discussed. 	x	x	x
2012	<ul style="list-style-type: none"> • Earth Summit (Rio+20) will be held in Rio de Janeiro. 	x	x	x

Note 1: SD, GG, LD and SS stand for sustainable development, green growth, low carbon development, and safety and security.

Note 2: Checks to SD, GG, and LD were made by the author to illustrate which concepts were largely adopted and used in individual policies and directions.

Source: Authors.

3.2 Republic of Korea

With presidential leadership, the Republic of Korea (ROK) has become one of the leading proponents of green growth in the world. ROK has conceptualised green growth in its own country context and has initiated a series of policy initiatives to promote the concept domestically and internationally. The operation of green growth in terms of support for the country's NAMAs, on the other hand, remains modest so far.

3.2.1 *Launching the Green New Deal*

A declaration by President Lee Myung-bak in August 2008 on the 60th anniversary of the country's founding attracted international attention not only because it ushered in a new long-term national development vision for another sixty years, but also because it bid farewell to the country's conventional quantity-oriented, fossil-fuel dependent "brown economy" and marked a fundamental shift to a quality-based "green economy." The motivation for greening the country's new growth path is embodied in the following three points: to create new wheels of economic prosperity, to address climate change through energy independence, and to raise the quality of life and enhance ROK's international standing (PCGG 2009).

The opportunity to fuel green growth arrived when ROK's economy was plunged into the worst setback in a decade caused by the global financial crisis in September 2008, which happened right after the pronouncement of the new growth vision by the President. The government launched a Green New Deal in January 2009 to overcome the crisis with an injection of a massive public investment of KRW 50 trillion (USD 38.5 billion) in total for the period of 2009 to 2012—equal to 4% of GDP—to create 970,000 new jobs as a stimulus measure. This policy package consisted of major business projects planned by each related government agency, and was also expected to be highly effective for job creation. Eighty per cent of the investments were allocated to nine major projects related to the environment, such as water and waste management, green transportation and buildings, and renewable energies.

On the other hand, among those projects, large-scale engineering projects and the construction of nuclear power plants have triggered critical debates over what truly qualifies as "green." For instance, a Four Major Rivers Restoration Project to which the government allocated the largest budget and from which the highest number of new jobs is expected (about 280,000) has come to the fore of opposition from citizens and environmental groups.⁶ Opponents criticised the government's dismissive attitude towards their concerns on the hasty project planning process, including the environmental impact assessment. Some academics and media outlets pointed out that most jobs were unskilled labour in construction and civil engineering works that would not fundamentally solve the recent high unemployment rate and that of the young people in particular who tend to cling to white-collar jobs. The government stressed that such job creation was commonly seen in "new deal" policies in other countries like the U.S. and the U.K., and insisted that the government also support human resource development for the research and development (R&D) sectors.

The green stimulus package, in conjunction with income and corporate tax cuts, has so far performed well and contributed to the economic revival of the country in the short-term, resulting in a sharp annual GDP growth upturn from 0.2% in 2009 to 6.2% in 2010. Concerning the need to recover a declining growth rate after the Asian economic crisis in the late 1990s, these green projects stimulated the revival of momentum in promoting growth for the long-run by helping the transformation into a more advanced knowledge-based economy.

3.2.2 Institutional and policy development

To manage and further strengthen the momentum of the new green growth initiative, the government initiated a process to launch the legal and institutional basis for green growth in the month following the President's announcement. To handle this process, the Presidential Committee on Green Growth (PCGG)⁷ was established in February 2009 to coordinate government works and discuss diverse issues related to pursuing green growth, including setting national strategies on climate change, sustainable development and international cooperation in the area. In the same month, the Cabinet decided to pass a bill entitled "Framework Act on Low Carbon, Green Growth" to be deliberated by Parliament.

In the policy making process, the government announced a Five-Year Plan for Green Growth (2009-2013) in July 2009 as the near-term plan to carry out a long-term National Strategy for Green Growth (2009-2050) and as the highest-level government plan to implement the Framework Act. The Five-Year Plan outlines three core components of the new growth strategy: measures for climate change and energy independence, creation of new growth engines, and improvement of quality of life,⁸ supported with 10 policy directions and 50 corresponding projects. The plan absorbed the aforementioned Green New Deal projects and calls for spending 2% of GDP per annum from 2009 to 2013, amounting to USD 86 billion (KFW 107 trillion) in total.⁹ The vision and responsibilities were shared with local governments and they were required to develop their own green growth action plans which needed to be approved by the PCGG. However, the numerical GHG mitigation target was included in neither the National Strategy nor the Five-Year Plan, although they mentioned the necessity of such a target.

After a year-long launching process and repeated deliberations in the Diet, the Framework Act on Low Carbon, Green Growth was enacted in April 2011. The Framework Act created a comprehensive implementation system for measures pursuing green growth, climate change and energy issues towards a low carbon sustainable future by allocating responsibility for actions by the state, local government, private entities and citizens.

3.2.3 Setting NAMAs

In September 2009, the PCGG decided to reduce GHG emissions by 30% from the business-as-usual scenario by 2020 (which was estimated to be equal to a 4% reduction from 2005 levels). The government took almost a year to determine the target after consideration with less-intense target options of a 27% reduction (return to 2005 emission levels) or a 21% reduction (8% increase from 2005 levels). The selected 30% target is the highest level of mitigation efforts recommended by the Intergovernmental Panel on Climate Change (IPCC) for non-Annex I Parties in order to contribute to stabilising a global temperature rise under 2 degrees Celsius. Although ROK's target was voluntary and not internationally legally-binding, the mid-term GHG reduction target and implementation processes was set in the Framework Act (Article 42) and would be implemented regardless of international agreements and support. These mitigation efforts are also expected to create a more conducive atmosphere for engaging other developing countries and securing further commitments from developed countries.

3.2.4 Aligning green growth support: Achievement in the past three years

Although private companies criticised the 30% reduction target as too ambitious, they were generally supportive to the green growth initiative because they regarded it as a

good opportunity to advertise their green products to the world market. One of the most promising signs is seen in the increased volume of investments in the environmental sector. Investment in green technology by the top 350 Korean companies marked 34% growth between 2008 and 2009 (PCGG 2010). The recent report by the Ministry of Knowledge Economy (MKE) indicates that sales of green products marked a remarkable increase from KRW 1.25 trillion (USD 1 billion) in 2007 to KRW 8.08 trillion (USD 6.7 billion) in 2010 (MKE 2011). Much of these investments have been directed to energy efficiency improvement and renewable energy development with a long-term perspective.

The ROK now has several international gateways which it can utilise to disseminate its green growth actions and support to a broader range of beneficiaries in developing countries. The establishment of the Global Green Growth Institute (GGGI) by the President as a non-profit laboratory is a symbolic achievement in the country's promotion of green growth. The GGGI currently supports partner countries for national- and business-led progress on climate change and other environmental priorities within the green growth strategy. Moreover, the ROK is currently hosting the newly-established United Nations Office for Sustainable Development, the UN research and training facility.¹⁰ Although the short-term goal of the Office is to support developing countries and major groups in their preparation towards Rio+20, providing this support as they pursue sustainable development to accelerate economic growth while improving quality of life and protecting the environment is in line with ROK's green growth slogan. Those efforts should be aligned to support efforts in greening growth over the long-term.

ROK has demonstrated its notable leadership by devoting massive financial assistance to implement the green projects under the Five-Year Plan, and setting ambitious GHG emissions reduction targets and other goals. It remains debatable, however, if the government's low carbon and green growth initiative will yield environmentally and financially sustainable results to achieve GHG mitigation targets (NAMAs) through the implementation of sector-wide individual projects and proposed emission trading scheme.

3.3 India

Considering the developmental objectives of India and the need to pursue environmental responsibilities, the concept of the green economy is of great significance as it can guide the country along the long-term sustainable path where environmental health is secured with the achievement of economic targets. The green economy approach attributes critical importance to the key pillars of sustainable development—economic, environment and social factors. While the government of India has recognized the importance of inscribing green economy principles into its development policies, it is widely recognized that for the green economy to be effective and legitimate it must capture the underlying differences in the scale and scope of the economies of developed and developing countries.¹¹ It further points to the stance that common but differentiated responsibilities and respective capabilities need to be the guiding force behind this.

3.3.1 *Mainstreaming the green economy concept in India*

Being one of the highest populated countries in the world, a significant policy thrust on the economy is specifically outlined in the domestic development plans in India. However, being a developing economy, it faces a multitude of challenges in terms of balancing its economic growth with environmental health. While close to a double digit GDP growth is important for India, a sustainable development path is necessary to ensure inter-generational equity of natural resources and environmental health. But the commitment to ensure intergenerational equity of natural resources is often put on the

back burner as immediate economic benefits take priority in government policies. This eventually undermines the necessity to balance environmental health and economic targets. Moreover for India, as a growing economy, there is often strong resistance seen in sacrificing economic growth for the sake of protecting the environment for the future.¹²

While these cautious approaches to a green economy exist, the green economy concept is receiving growing attention in India. The concept means different things to different sections of society, and is sometimes regarded as similar to earlier ideas of sustainable development. However, the new ingredient may be that the green economy is an “idea whose time has come” with financial and political opportunities for real change in response to the twin crises of economic decline and of climate change.¹³ In India, the green economy is perceived to aim at well-being, in the context of pursuing and achieving the Millennium Development Goals, as it promotes equity in common but differentiated responsibilities, as an expanded policy space for diverse sustainable development, and as providing a win-win economic-environmental model that ensures that economic and environmental synergies prevail over trade-offs.¹⁴ Moreover, the green economy concept is ushering in the perception that environmental management responsibilities are not limited to the conventional role of government but necessitates the larger commitments of various sections of society including industry, business sectors and the people. The transition to the green economy is not only an academic theme for intense debate but is also seen as a potential policy element for the country to address socio-economic and environmental challenges, such as unemployment, energy, poverty, balancing economic development and protecting natural capital, and ensuring stable environment health.

3.3.2 Climate mitigation actions in India and the green economy

Despite its relatively low per capita GHG emissions in the world, India has made remarkable progress in cutting down its own emissions. The National Action Plan for Climate Change (NAPCC) set forth by the Prime Minister’s Council and the communication made by the country to UNFCCC subsequent to the COP15 on voluntary pledges to cut down emission intensity by 20-25% from that of 2005 levels, are key pillars of climate change mitigation actions. The NAPCC lays out strategies not only to address climate mitigation but also to aim at sustainable growth for the country. The eight missions of NAPCC proposed actions in areas such as solar energy, energy efficiency, sustainable habitat, water, Himalayan ecosystem, green India, sustainable agriculture, and strategic knowledge for climate change, to run through to 2017 with an aim to support the country’s actions towards climate change mitigation, while also keeping in view long-term economic development. The mission plans have brought in a range of policies and guidelines for time bound action in various key sectors such as solar energy, energy efficiency, urban habitat, and agriculture.

The climate mitigation action plans under NAPCC have aimed to take care of long-term developmental objectives. These policies provide ample scope for the inscription of green economy principles. According to the NAPCC, to have an ecologically sustainable development pathway, India envisions the creation of a prosperous, but not wasteful society, an economy that is self-sustaining in terms of its ability to unleash the creative energies of the people and is mindful of its responsibilities to both present and future generations.¹⁵

However, it is important to note that the mission plans are specifically targeted to two points: first, addressing the long-term energy security concerns by enhancing renewable energy generation and improving energy efficiency in the country, and second, addressing GHG emission related issues. Interestingly, these targets are broadly defined

as long-term, low carbon policies rather than branded as green economy initiatives. The Solar Energy mission under NAPCC keeps a target of installing 20 gigawatts of solar power generation facilities by 2022, while the Enhanced Energy Efficiency mission targets various energy efficiency concerns in the country. Similarly, other missions also are designed to address specific areas and issues in India. Apart from specific targets, the current climate change policy in India does not have a comprehensive approach towards promoting green economy.

The term “low carbon development” has been used more frequently than “green economy” in literature and government documents that describe policies towards sustainable development in India. It is important to note that although the government position towards adopting green economy policies has not been negative, a cautious approach is visible in including this term in policies. For India, as poverty eradication and economic growth override development priorities, the country perceives that enabling mechanisms such as financial, technological and capacity building support are a must for embarking on the road to a green economy.¹⁶ A similar cautious perception was also highlighted by the former Environment Minister, Mr. Jairam Ramesh, who stated that India is on the highway to economic growth but a green economy that does not generate 8-10 million green jobs each year is not sustainable.¹⁷ Despite these differences the country has been pursuing low carbon strategies as the guiding concept for its economic growth, and ensuring significant reductions in greenhouse gas emission intensity in the years to come.

3.4 China

The issue of climate change has never been a stand alone issue in the national policy agenda in China. The government recognized the close link of this issue to other problems related to energy consumption, economic growth, and environmental protection. While the overall consistency of climate change mitigation with national sustainable development goals was recognized, there remained concerns about the negative impact of GHG emissions reduction on economic growth in China because of the coal dominant energy structure and the role of the energy intensive sector as a driving force for the country's growth. These facts had led to the government's reluctance to conduct significant proactive climate change policies. However, the direction of such public policy has changed in recent years.

3.4.1 Sustainable development in the Chinese political context

For the Chinese Government, the overriding concern is the maintenance of the Chinese Communist Party's (CCP) rule. Economic growth, poverty elimination, and social stability are all critical to maintaining that rule: rapid economic growth creates jobs, alleviates poverty, improves living standards, and thereby strengthens public support for the CCP. Since the free market reforms of the late 1970s, export-oriented industrialization served as the engine to help support this goal. However, over the last decade, there have been a number of unintended consequences of fast-paced, export-oriented growth. These include widening income disparities that fuelled a steady increase in social unrest. They also include a raft of serious environmental problems that provided an outlet for these rising social tensions.

When President Hu Jintao and Premier Wen Jiabao took power in late 2002, they were all too aware of the potentially volatile mix of regional disparities, resource scarcities, and environmental stresses confronting China. It was hence decided to shift the focus of the national development policy from single-minded economic growth to a broader concept

of development-social harmony (Fewsmith 2008). Toward this end, in January 2004 Hu Jintao introduced the Scientific Development Concept referring to “comprehensive, coordinated, and sustainable development,” which was incorporated in the 11th Five-Year Plan (2006-2010) in 2005 and was also included in the revised Party Constitution in October of 2007.

On face value, the Scientific Development Concept was a practical policy response to the deepening crisis of faith in China’s economic-first development strategy. It was a deliberately broader formulation that encompassed social and ecological dimensions of development and complemented that reframing with the international language of “sustainability.” On a deeper level, however, the concept could be seen as “broader reaction to perceived challenges to the legitimacy of CCP rule” (Holbig 2009). In particular, in the domestic context, the “scientific” nature of the concept was emphasised, thereby indicating the CCP’s top-down decision to formulate and implement a strategy to tackle perceived problems from growth. Thus, the Scientific Development Concept not only pointed the way to sustainable development in China, but also offered a normative justification for CCP playing the lead role in this process.

Importantly for the chapter’s main argument, the Scientific Development concept not only established a link between sustainable development and political legitimacy, it created conditions ripe for energy efficiency and climate policy reforms. As mentioned previously, the 11th Five-Year Plan adopted the Scientific Development Concept. Under this high profile normative guideline, the Hu-Wen administration was able to make a strong commitment to tackle energy conservation and environment problems. The 11th Five-Year Plan featured compulsory targets to reduce energy intensity and pollution from their 2005 levels by 20% and 10% respectively. Other similarly directed targets, albeit not compulsory, included increasing the share of renewable energy in the energy mix to 10% from 7% by 2010 and to 15% by 2020.

It is also worth pointing out that national institutional reforms occurred in a direction toward enhancing a climate-energy tie. Perhaps the most important of these reforms was the 2003 decision to create the National Development and Reform Commission (NDRC) out of the two key energy and economic commissions and give it the climate portfolio. The NDRC, as a single, powerful national agency, played a pivotal role in implementing domestic energy saving measures and establishing systems for monitoring and reporting the effects of these measures. In addition, the creation of an incentive mechanism to promote energy-saving measures by the local governments was key to successful implementation (Tamura 2011). The 20% energy intensity target of the 11th Five-Year Plan was subsequently delegated to sub-national officials, and compliance with the allocated target became the key criteria for personnel evaluation of local officials. This created a strong incentive for local leaders to attain the allocated target of energy efficiency. While the linking of the evaluation system with the energy efficiency goals created some perverse incentives—on occasion sub-national officials cut off energy supplies from residential users to achieve the targets (*The Guardian*, 19 September 2010)—they are largely credited with efficiency gains that brought China very close to the 20% target.

3.4.2 *Low carbon development and green economy in China*

Emphasizing a climate-energy tie, it was natural that in the context of climate change debate in China, the idea of low carbon development began to gain currency. As a group of prominent scholars regards the concept as “a development pathway that has highly energy efficiency, low energy consumption and low emissions” (CAS Sustainable

Development Strategy Group, 2009), the concept lies in an energy-climate nexus. The Standing Committee of the 11th National People's Congress in August 2009 adopted the "National People's Congress Standing Committee Resolution on Actively Tackling Climate Change" as the first resolution concerning climate change by China's supreme authority and legislature. In this resolution, coping with climate change was regarded as a long-term mission for the realization of sustainable development, and the development of a "low carbon economy" was specified in an official document for the first time (Li 2009). Subsequently, at the State Council's Executive Meeting in November of the same year a binding domestic target to reduce carbon emissions per GDP by 40-45% by 2020 compared with 2005 was adopted and a carbon intensity target was incorporated into the 12th Five-Year Plan (2011-2015).

Furthermore, in China, the idea of low carbon development has begun to be discussed widely and explored as a means of solving resource, energy, and environmental challenges in the rapid industrialization and urbanization process. Macroeconomic consequences of a low carbon development have been examined with the expectation that it may also have positive side effects such as stabilizing growth, creating jobs, and developing competitive advantages (Hallding, Han et al. 2009). It also dovetailed with another feature of the Scientific Development Concept that called for making China into an "innovation society." An innovation society was seen as a prerequisite for maintaining competitiveness in the global marketplace. In practice, this meant that the Chinese leadership sought to move the economy from low-end assembly industries toward higher indigenous technology and higher value-added products; otherwise, it would be locked into the most polluting and least profitable segment of the international value chain (Lieberthal and Sandalow 2008). Low carbon development therefore matched nicely with the intention of making China a global player in innovative, clean energy industries (Hallding, Han et al. 2009; Bradley 2010; Busby 2010).

Attention to positive macroeconomic effects of low carbon development is consistent with a key element of a green economy: growth in income and employment is driven by public and private investments that reduce carbon emissions and enhance energy efficiency, while limited attention is paid to other environmental issues such as biodiversity and ecosystem services. Indeed, the Chinese government also became the biggest player in green stimulus packages during the world economic slowdown after 2009. HSBC estimated that countries were spending more than USD 500 billion on green projects as part of their stimulus packages for 2009, and China alone set aside USD 211 billion for green energy projects in its domestic stimulus spending (HSBC 2009). The Center for Strategic and International Studies, using a narrower definition of green spending, estimated about USD 350 billion in green spending, out of which China set aside USD 177 billion for green projects (excluding water/waste investments) (Ladislaw and Goldberger 2010). This episode indicates how China has tried to tackle climate change by promoting the green energy sector and linking with industrial and economic policy.

4. Market mechanisms for climate policy: Lessons learned from the CDM and implications for low carbon development and green economy

This chapter looks at the experience of implementing the CDM in the context of sustainable development, LCDS and green economy while reviewing the development of the institutional framework for implementing the CDM, in order to present proposals to increase sustainable development benefits through changes in governance. A case study on the use of CDM in the context of sustainable development reviews various approaches to promote sustainable development and indicates that the certification

approach has an advantage over other approaches as it can fully utilize the original function of a market mechanism, which is an efficient allocation of resources through an internalization of sustainable development benefits into certified emissions reduction (CER) prices. Therefore, it is recommended that the certification approach be fully utilized both domestically and/or internationally, in addition to the use of CERs with certification made compulsory or treated favourably in emission trading and carbon offsetting schemes. These changes in the governance of CDM could effectively increase the benefits of sustainable development within the current form of CDM and keep a fair balance between cost-efficiency and its contribution to sustainable development.

4.1 CDM as a market mechanism and actual consequences: Unequal distribution

As CDM is a voluntary market-based mechanism, private sector investment tends towards countries and projects where transaction costs and investment risks are low. As of July 2011, China accounts for 45% of total registered projects, followed by India with 21% and Brazil with 6% of the total (IGES 2011a). Among the top ten countries, eight are in Asia, which accounts for 79% of the total projects. The other two countries are in Latin America, accounting for 17% of the total. Africa, the Middle East and Near East regions have only a tiny 3% share of the projects. In terms of issued CER,¹⁸ as of July 2011, China is also the dominant country. As for registered projects, India ranks second, while the Republic of Korea and Brazil account for most of the remaining projects. In terms of regional distribution, Asia has 86% of total issued CERs. Therefore, it is clear that CDM projects are intensively concentrated in two Asian countries, namely China and India.

4.2 Case study in Asian countries

In this section, the actual measures that aim to ensure sustainable development benefits at both national and international levels are summarised. Such measures can be categorised as assessment, fund, and certification schemes as shown in Table 4.2. Measures taken in host countries are summarised in Table 4.3.

Table 4.2 Three categories for promoting sustainable development benefits from CDM

Category	Description
Assessment Scheme	DNA evaluates proposed projects based on sustainable development and its indicators
Fund Scheme	CERs from specific projects are earmarked for activities related to sustainable development, such as research, or raising public awareness
Certification Scheme	If a proposed project is certified by fulfilling a sustainable development standard, the project is assumed to contribute to sustainable development and the CERs would be value added.

Source: Authors.

Table 4.3 Summary of each host country's scheme

	Countries	Category	Document submitted related to SD	Presence of monitoring of SD	Number of approved projects by DNA or Organization	Reference
Domestic	China (DNA)	Assessment	NO	NO	3,051	NCCCC (2005)
	China CDM Fund Management Measures	Fund	NO	YES	16 (2008)	China CDM Fund (2007)
	India	Assessment	NO	NO	1,561	CDM India (2005)
		Fund	NO	-	-	UNFCCC (2004a) UNFCCC (2004b)
	Indonesia	Assessment	NO	NO	133	NCCCI (2010)
	Philippines	Assessment	YES	NO	86 (as of 1 November 2010)	Goco (2006)
	Thailand (DNA)	Assessment	YES	NO	131	Seresathiansub (2008)
	Thailand (Crown Standard)	Certification	YES	YES	17	TGO (n.d.)
	Cambodia	Assessment	YES	NO	7	CCD (2011)
	Lao PDR	Assessment	YES	NO	5	WREA (2008)
Mongolia	Assessment	YES	NO	6	CDM National Bureau (2010)	
International	UNFCCC	Assessment	NO	NO	10	UNFCCC (2011)
	Gold Standard	Assessment	YES	YES	187	The Gold Standard (2009)
	Community Development Carbon Fund	Assessment	NO	YES	29	World Bank Group (2011)
	SouthSouthNorth	Assessment	NO	NO		SouthSouthNorth (n.d.)

Source: Authors.

4.2.1 Domestic measures

(i) Assessment schemes: Cambodia, China, India, Indonesia, Lao PDR, Mongolia, Philippines, Thailand

An assessment scheme to determine if a CDM project contributes to sustainable development is used in all the countries surveyed, i.e., Cambodia, China, India, Indonesia, Lao PDR, Mongolia, the Philippines, and Thailand, if only because the DNA approval criteria contain sustainable development indicators or criteria. In China, the DNA approval criteria include a requirement for "Contribution of Sustainable Development" (NCCCC 2005). For example, India has a requirement for "Contribution of Sustainable Development" (CDM India 2005) and Indonesia has set "Sustainable Development Criteria and Indicators" (NCCCI 2010) as an essential requirement for the evaluation of proposed projects. In the Philippines, project participants must submit a "Sustainable Development Benefits Description (SDBD)" as an application document to request host country approval of DNA (Goco 2006). In Thailand, the Thailand Greenhouse Gas Management Organization (TGO) Board evaluates proposed projects

based on sustainable development criteria and indicators by using a scoring system (Seresathiansub 2008). In Cambodia, Lao PDR and Mongolia, DNA approval criteria include checklists to assess the sustainable development criteria (CCD 2011; WREA 2008; CDM National Bureau 2010).

These processes are designed to ensure CDM projects contribute to sustainable development. Notably, in the Philippines, Thailand, Cambodia, Lao PDR, and Mongolia, project participants have to submit a specific document which certifies that their projects ensure sustainable development (Goco 2006; Seresathiansu 2008; CCD 2011; WREA 2008; CDM National Bureau 2010). This means that the DNAs of these countries can check on the extent of a CDM project's contribution to sustainable development. This does not guarantee, of course, that the projects will actually contribute to sustainable development, but is better than having no procedure in place.

(ii) Regulatory approach (Fund schemes): China and India

If there is no guarantee that the CDM project itself will contribute to sustainable development, earmarking part of the funding received by selling the CERs for specific sustainable development activities is an additional safeguard. Fund schemes are partially used in China and India. In China, a varying percentage of CER revenues by project type is allocated to the China CDM Fund. In India, at least 2% of CERs from large-scale projects must be earmarked for sustainable development.

China's CDM Fund is governed by the Board of China CDM Fund and managed by China CDM Fund Management Centre and offers grants and investments for development activities (China CDM Fund 2007). It uses grants to support activities such as policy research and academic activities, international climate cooperation activities, training programmes for climate change capacity building and promotion of public awareness. The Fund invests mainly in industrial activities addressing climate change. One of the main sources of the Fund is national revenue from CDM—65% of CERs from HFC and PFC projects, 30% of CERs from N₂O projects, and 2% of CERs from other priority areas and afforestation projects are allocated to the Fund. Project participants have to report their issued CERs to the National Development and Reform Commission (NDRC) within 10 days after issuance. If participants do not submit a report, they are forced by NDRC to pay an administrative penalty (NCCCC 2005). In this way, the types of CDM projects which are usually criticized for their minimal contribution to, or violation of, sustainable development objectives could contribute indirectly to sustainable development. For example, 65% of CER revenues from HFC projects in China are given to the Government to support its "Sustainable Development Facility." Of the project design documents (PDDs), 8 out of 11 Chinese projects explicitly mention this contribution to sustainable development.

HFC projects in India contribute to sustainable development in a different way—two out of six projects are operated by companies which have set up funds for investing in sustainable development activities using their own rules. For example, Gujarat Fluorochemicals Limited (GFL) has expressed its strong commitment to sustainable development activities by committing a total fund of approximately Rs. 70 million (Euro 1.375 million) from the revenues received during the entire project period if the project is approved and once there is a stream of revenue from sale of CERs (UNFCCC 2004a). These funds will be used for development activities such as education; vocational training; employment; agriculture; sanitation, hygiene and environment; water management; and medical and animal health. Another example is that SRF Ltd. committed a total fund of INR 100 million from the revenues received during the entire CDM project period if the project is approved and once there is a revenue stream from

sale of CERs (UNFCCC 2004b). These funds will be used for projects such as HIV/AIDS awareness, rainwater harvesting, education and livelihoods promotion.

While contributing to the amelioration of climate change should be viewed as a contribution to sustainable development in its own right, these earmarked funds provide a double dividend for sustainable development.

(iii) Certification schemes: Thailand's "Crown Standard"

A certification scheme to ensure sustainable development is relatively unusual and at a national level, only Thailand has adopted this scheme. The Crown Standard in Thailand is valid for three years from the issuance date (TGO, n.d.). To keep the certification, a DOE has to update and report their sustainable development activities to the TGO (Thailand Greenhouse Gas Management Organization). In addition, each project is closely monitored by TGO's network to ensure that it contributes to sustainable development in society and the environment and that maximum benefits are delivered to local communities according to the requirements of the Crown Standard.

4.2.2 International measures

(i) Assessment scheme: UNFCCC CDM Executive Board (e.g., capacity building, loan scheme, and simplification of rules)

The UNFCCC Secretariat selects CDM projects which contribute to improvement of people's lives and achieve sustainable development more broadly. This is referred to as CDM Development Benefits. Such co-benefits include contributions to local employment, freeing up financial resources for households and making other essential services available (UNFCCC 2011). The methodology of the UNFCCC Secretariat is to set criteria as case-based assessments with sustainable development related factors such as economic, social, empowerment and environmental factors.

UNFCCC also automatically excludes grid-connected power projects and macro-economic benefits projects. In order to ensure that there are no controversial activities or claims, they conduct web-based reviews and collect other available information on the project activity, site, project participants and communities where the project is taking place (Kirkman 2011). Through these activities, they verify the community benefit claims in Project Design Documents and whether these projects could be considered as attributable and additional to what would have happened without the project, thereby contributing to sustainable development.

(ii) Assessment scheme: World Bank Community Development Carbon Fund

Different from domestic schemes, the Community Development Carbon Fund (CDCF) established by the World Bank has its own assessment process. Their assessment process includes a check of CDCF criteria by a committee of Bank staff and fulfillment of 10 questions to review the extent to which a project contributes to sustainable development (Ramin, n.d.). Their criteria review whether a project maintains quality of water, improves health conditions, and creates jobs for women, as much as it is an investment in clean technologies that help reduce GHG emissions and mitigate climate change. CDCF mandates submission of an annual progress report as a self evaluation function so as not to lose the sustainable development perspective in their projects (World Bank Group 2011a).

(iii) Certification scheme: Third-party certification system (e.g., Gold Standard)

The Gold Standard Foundation registers projects that reduce GHG emissions in such a way that contributes to sustainable development and certifies their carbon credits for

sale on both compliance (e.g., Europe's Emission Trading Scheme) and voluntary offset markets. When the Foundation evaluates CDM projects, they use three methodologies: a sustainability matrix, an Environmental Impact Assessment and a stakeholder consultation (The Gold Standard 2009). The Gold Standard mandates a site visit in the first two years after the start of project operation, and by default once every three years after that, unless a DOE provides a convincing case for less frequent visits as part of their verification plan.

4.2.3 Comparison between three approaches: Assessment, fund and certification

For comparison between the three approaches, Table 4.4 shows the advantages and disadvantages of each measure to ensure that sustainable development benefits are derived from CDM projects. Since the assessment approach is employed by the DNA of each CDM host country, it is able to assess the situation and sustainable development needs which are specific to each country. In addition, the sustainable development criteria for assessment of a project are usually made for the three pillars of sustainable development (social, environmental, and economic), and therefore it ensures a holistic assessment. However, this measure could be subjective since the criteria are developed mainly by the DNA, which may be under pressure to approve a large volume of CDM projects, so other independent assessments such as environmental impact assessment (EIA) and public input may also be needed.

The main advantage of a fund scheme is that it is a simple and automatic process in terms of guaranteeing a source of grants and investments for activities contributing to sustainable development. However, the influence of such activities and their long-term contribution to sustainable development cannot be known unless an effective monitoring and evaluation system is established. The certification approach seems to have an advantage over the other two schemes in that it promotes a high standard of contribution to sustainable development, because certification is given to projects with extra consideration of the sustainable development objective. It also provides additional value to a certified project, which can be an incentive to project developers.

Moreover, the certification approach can internalise the benefit of sustainable development as added-value in CER prices in the carbon market by the certification of CERs. This is an original function of this approach which is different from the other two approaches. In order to increase the contribution of CDM to sustainable development, this certification approach surpasses other approaches since it directly utilizes the function of a market mechanism which is originally built into the CDM. However, it does not necessarily ensure the involvement of a sufficient number of projects since it has been normally implemented as a voluntary scheme. This implies that a compulsory use of CERs associated with the certification or at least giving preference to such CERs in emission trading and carbon offsetting schemes can create a powerful incentive to internalise the benefits of sustainable development in the carbon market. The actual attempt has already been observed in the EU-ETS directive for its 3rd phase after 2012 (EC 2009).

Table 4.4 Advantages and disadvantages of each scheme

Measure	Advantages	Disadvantages
Assessment	<ul style="list-style-type: none"> • Holistic • Country-specific situation is taken into consideration 	<ul style="list-style-type: none"> • Subjective and possible conflict of interests if the DNA has achievement targets set • Other assessments such as EIA and public participation input are also needed.
Fund	<ul style="list-style-type: none"> • Automatic • Simple 	<ul style="list-style-type: none"> • Lack of a system to check the sustainable development outcomes
Certification	<ul style="list-style-type: none"> • Promotion of high standard of contribution to sustainable development and mandatory site visits to check on outcomes • Added value is given to certified projects 	<ul style="list-style-type: none"> • If voluntary, not powerful enough and lower volume of projects

Source: Authors.

4.2.4 Growing market readiness in developing countries

In addition to the efforts to enhance contributions to sustainable development through existing market mechanisms, preparation for development of a new market mechanism has started in some Asian countries, particularly ones with rapidly increasing GHG emissions.

In China, such movement will begin from the provincial or regional level through low carbon pilot projects in five provinces and eight cities. One of the main strategic goals of this project is to study the feasibility of utilizing market mechanisms in helping achieve emission reduction objectives (World Bank Group 2011b). Under this project, the first regional emissions trading system is expected to be established in Guangdong province and research to determine the design of the system is being conducted (IGES 2011b).

In India, the Perform, Achieve, and Trade (PAT) scheme is going to be introduced as a component which deals with the market based mechanism of the National Mission on Enhanced Energy Efficiency (NMEEE) under the National Action Plan on Climate Change (NAPCC). It aims at improving the energy efficiency in energy-intensive large industries and facilities in eight sectors through certification of energy savings which can be traded (Energy Efficiency Services Limited 2010).

In the Republic of Korea, the Greenhouse Gas and Energy Target Management System (TMS) will start from 2012 and run through 2014. It is meant to build emissions monitoring, verifying and reporting capacities in preparation for a future national emissions trading scheme (Environmental Finance 2011). ROK also initiated a pilot emission trading system, a GHG cap-and-trade programme, in 2010 for the purpose of capacity building and learning-by-doing for entities who are required to reduce GHG emissions (Korea Environment Corporation 2011a). Table 4.5 provides more information about these three schemes.

Table 4.5 Examples of relevant measures as new market mechanisms in Asian countries

Countries	Relevant scheme/project as a new market mechanism	Objective	Target sector and potential participants	Excerpt of scheme/project	Target year of implementation	Expected outcome	Reference
China	Pilot low carbon projects in five provinces and eight cities	To study the feasibility of utilizing market mechanisms in helping achieve emission reduction objectives.	Sector(s) to be decided. Participating provinces include: Guangdong, Liaoning, Hubei, Shanxi, and Yunnan. Cities include: Tianjin, Chongqing, Shenzhen, Xiamen, Hangzhou, Nanchang, Guiyang, and Baoding.	To be decided	2013 in Guangdong province	To be decided	IGES (2011b), World Bank Group (2011b)
India	Perform, Achieve, and Trade (PAT) Scheme	To improve the energy efficiency in energy-intensive large industries and facilities through certification of energy savings which can be traded.	Large energy-intensive industries and facilities notified as Designated Consumers (DCs) in the following 8 sectors: thermal power, fertilizer, cement, pulp and paper, textiles, chlor-alkali, iron and steel, aluminum.	<ul style="list-style-type: none"> Specific targets will be set for each DC to reduce energy consumption to a certain level (Specific Energy Consumption - SEC) according to their baseline levels within three years DCs shall comply with targeted SEC DCs can buy Energy Saving certificates (ESCerts) if targets are not met 	First cycle of commitment period: 2011 - 2014	Saving of about 10 million metric tonnes of oil equivalent (mMtoe) by 2013-14.	Energy Efficiency Services Limited (2010), IGES (2011c)
Republic of Korea	Greenhouse Gas and Energy Target Management System (TMS)	To promote efficient achievement of the national goal (30%, compared with BAU in 2020) by appointing a GHG energy consuming business of a certain scale or larger.	About 500 energy users notified as "controlled entities" in a certain amount in industry, building, waste, and agriculture sectors. They altogether account for about 60% of the total GHG emissions.	<ul style="list-style-type: none"> Target was set based on base-year (2007-09) emissions, prospective growth rate, and negotiation between each controlled entity and a competent ministry. Controlled entities submit implementation plan Controlled entities report mitigation performance and prepare statements for GHG emissions and energy consumption Fines will be levied if failure to meet targets 	2012-2014	Emission reduction of about an aggregate 1.4% from BAU in 2012	Korea Environment Corporation (2011b), Virtual Center for Korea Environmental Technology Exchange (2012)

Source: Compiled by authors

5. Conclusion and recommendations

This chapter has argued that carbon governance in Asian countries varies and each country has a distinct nature in terms of the adoption of the concepts of low carbon development, green economy and sustainable development. In Japan, discussions on how to achieve the Kyoto targets and the early stages of discussions on mid-term emissions reduction targets did not adequately consider the idea of a green economy. The concept of a green economy came under discussion only when the policy debate on a mid- and long-term roadmap for global warming measures began. This implies the importance of preparation of long- and mid-term strategies for mitigation actions. Drastic changes in the industrial structure are essential for the emergence of a green economy. However, such changes could be controversial because consideration needs to be paid to politically powerful energy-intensive industries, such as electric power companies and steel companies.

In the Republic of Korea, the leadership of President Lee Myung-bak was important. Arguably due to his background as a business man he assessed draft proposals for climate change mitigation in terms of the degree to which such plans could contribute to Korean economic growth and job creation.¹⁹ In addition, the Korean case highlights the importance of legal frameworks to support the green growth initiative.

In India, the concept of a green economy has been cautiously adopted, since there are concerns that such a concept may put constraints on economic development. However, there is a strong belief that domestic mitigation actions should be designed and implemented in the context of sustainable development. Due to priority given to rural development and poverty reduction in farming areas, the agricultural sector was not included in the scope of India's NAMAs.

In comparison to India, the idea of a green economy is more widely accepted in China. Like ROK, Chinese leadership also shared clear intentions to ensure future energy security, to make an effort to reduce domestic pollution, and to establish China as a key global player in the green energy business sector. The country's flagship initiative was energy intensity targets, and institutional reforms were made to create an incentive mechanism for local leaders to pursue their allocated energy intensity targets. This mechanism worked well, but simultaneously posed new challenges when looked at from the social dimension of green economy. Local leaders pursued their energy intensity targets without due consideration to the local community, causing a series of rolling blackouts and forcing industries to alter their production schedule to keep up with the energy intensity targets. This implies the importance of proper incentive mechanisms. Here, the term "proper" means that all the dimensions of sustainable development (economic, environment and social dimensions) are addressed in a balanced manner.

Given these observations, the following measures should be considered to further promote the greenness of domestic mitigation actions.

First, in the short term, policymakers in Asia should become more aware of the linkage between sustainable development, a green economy and low carbon development. For example, though a green economy is a means to attain sustainable development, there is still a concern or misperception that pursuing a green economy would constrain economic growth and social development. This misperception needs to be addressed quickly. Information sharing on good practices and policies, as well as capacity development, could help address this perception problem.

Second, domestic institutional frameworks and long-term planning to attain sustainable development through a green economy are also needed in the short- to medium-term. The idea of a green economy could clarify how long-term structural changes toward a green economy could economically, environmentally and socially benefit industries and citizens. Indeed, under the Cancun Agreements, developed countries agreed to develop low carbon development strategies or plans, and developing countries are encouraged to develop low carbon development strategies or plans in the context of sustainable development. The Agreements also decided to establish the Green Climate Fund to scale up the provision of long-term financing to developing countries. The provision of such finance should be done in a stable and predictable manner so that developing countries may make long-term plans.

Third, incentive mechanisms should be introduced to allow main actors to pursue a green economy and domestic legal frameworks to support such incentive mechanisms. While such incentive mechanisms should be designed to reflect national circumstances, it is important for any incentive mechanisms to strike a proper balance among the three dimensions of sustainable development. Legal frameworks are essential to ensure and promote effective implementation only if they are aligned with proper incentive mechanisms.

It is a fact that CDM has enhanced additional investment of USD 1.3 billion over the past decade (UNFCCC 2011) in developing countries as a pioneer of a market-based mechanism under the UNFCCC. However, at the same time, it has created a substantial level of unequal distribution of CERs generated to particular types of projects. Although it can be considered a natural consequence of a market-based mechanism sacrificing for equity, this unequal distribution of CERs has generated strong criticism that CDM does not really contribute to assisting developing countries to achieve their sustainable development objectives as much as initially intended by the Kyoto Protocol.

Given this situation, there are three types of approaches—assessment, fund and certification—which have been implemented in various countries as measures aimed at ensuring sustainable development benefits. Although each approach has its own advantages and disadvantages, it is concluded that the certification approach surpasses others for several reasons. The most significant advantage of the certification approach is that it has an original function that added-value of benefits for sustainable development can be internalised in the price of CERs. Then, the market mechanism, namely CDM, can allocate CERs, as expected in theory, cost-efficiently, but with consideration of sustainable development in developing countries hosting the CDM projects. On the other hand, both the assessment and fund approaches are a re-allocation of sustainable development benefits through governmental function, rather than market mechanism, which often suffers from “government failure” causing a less-efficient allocation of resources in comparison to a market mechanism. Therefore, recommendations based on the above observations can be summarised as follows:

Firstly, it is recommended that at least one of the above three approaches be applied (assessment, fund and certification) as a measure to address the unequal distribution of CDM projects so that the benefits of sustainable development generated by CDM can be increased. Secondly, it is recommended that the certification measure be employed domestically and/or internationally since, in contrast to other approaches, it has a remarkable advantage of being able to utilise the original function of a market mechanism—an efficient allocation of resources—through an internalisation of sustainable development benefits into CER prices. Thirdly, in order to further reinforce such internalisation of sustainable development benefits in the demand side of the

carbon market, it is also recommended that the use of CERs associated with the certification be made compulsory, or treated favourably, in emissions trading and carbon offsetting schemes. These changes in the governance of CDM could effectively increase the benefits of sustainable development within the current form of CDM and ensure a fair balance between cost-efficiency and contribution to sustainable development.

5.1 Proposal for the establishment of regional institution to assist the low carbon development platform in Asia and the Pacific

Finally, this chapter proposes the establishment of a regional institutional platform as an instrument to promote low carbon development in Asia and the Pacific. This chapter revealed that the proliferation of effective mitigation actions across the region requires better understanding of low carbon development strategies and green economy policies. It was also pointed out that many Asian countries have just started to embark on the establishment of domestic market mechanisms to tackle energy security and climate change. At this early stage of policy initiatives, information sharing and capacity building play a critical role. The main function for this proposed platform is to create an enabling environment for capacity building and knowledge transfer of different policy tools and market mechanisms available between multiple levels of governing systems (e.g., central government, local government, and other stakeholders). Figure 4.3 shows the schematic design of this platform. While further elaboration of its institutional design is necessary, in principle this platform should be designed to facilitate useful information sharing and effective and accessible capacity development with regard to low carbon development strategies and green economy policies among various stakeholders. The main function for this platform is to create an enabling environment for capacity building and knowledge transfer of different policy tools and market mechanisms available between multiple levels of governing systems (e.g., central government, local government, and other stakeholders).

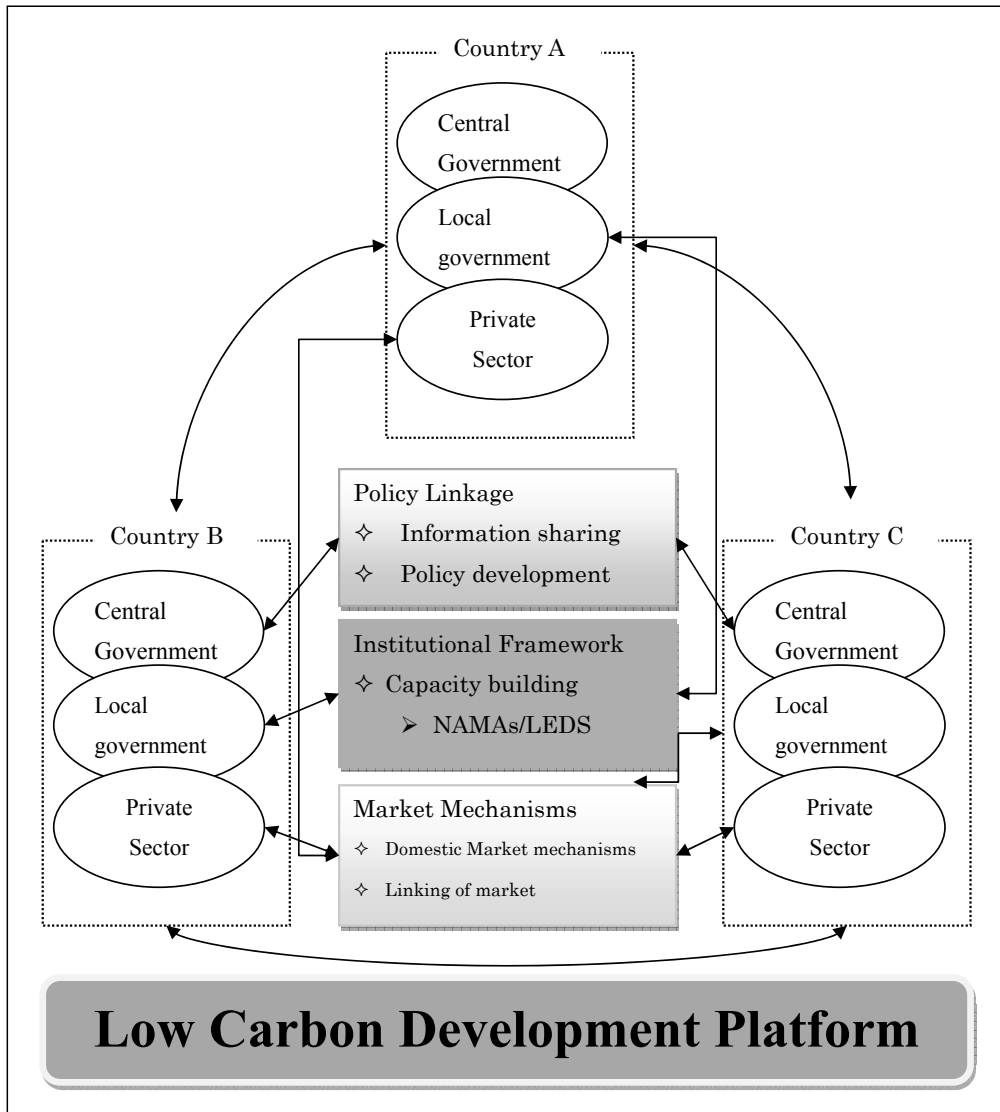
The following elements will need to be addressed by the regional platform.

- (1) Policy coherence (SD, Low Carbon Development, Green Economy)
- (2) Support of national policy making (NAMA, National Climate Policy, Energy Policy)
- (3) Financial mechanisms (Promotion of domestic carbon market, Regional linking of domestic carbon market)

Those elements mentioned above could be achievable through following measures and depicted as follows:

- (1) Information sharing
- (2) Capacity building
- (3) Facilitation of financial mechanism

Figure 4.3 Low carbon development platform for capacity building and knowledge



Source: Authors.

Notes

1. Information on "Regional Green New Deal Fund" is available at the website of the Ministry of Environment. <http://www.env.go.jp/guide/budget/h21/h21-hos/02.pdf> (in Japanese, accessed 20 November 2011).
2. Information on "New Growth Strategy (Basic Policies)" is available at the website of the Cabinet Office. http://www.kantei.go.jp/foreign/topics/2009/1230strategy_image_e.pdf (in English, accessed 20 November 2011).
3. Information on "The Bill of Basic Law on Climate Change" is available at the website of the Ministry of Environment <http://www.env.go.jp/press/press.php?serial=12257> (in Japanese, accessed 20 November 2011).
4. Information on "Roadmap" sub-commission is available at <http://www.env.go.jp/council/06earth/yoshi06-11.html> (in Japanese, accessed 20 November 2011).
5. Information on "Subcommittee to discuss policy measures after 2013" is available at "Subcommittee to discuss policy measures after 2013" (in Japanese, accessed 20 November 2011).

6. Kim (2011) quotes the survey results of some Korean newspapers which revealed that as high as 70% of Korean people opposed the project when the plan was first announced.
7. PCGG consists of co-chairs by the Prime Minister and a leading scholar, Dr. Kim Hyung Kook, as the representative of private sector. The other 47 members are from relevant Ministries and private sector stakeholders. The creation of PCGG is provided for in the "Basic Act on Low Carbon Green Growth," which is a comprehensive legal foundation to implement the green growth vision.
8. The Plan was developed as a revival of the past practices of the five-year plan which had been very promising during the early economic development era from 1962 to the mid-1990s.
9. The amount is twice as large as the one recommended by the Green Economy Initiative led by UNEP (UNEP 2010).
10. The Office was established jointly with the UN, the ROK's Ministry of Environment, Incheon city and Yonsei University and is managed by the UN Department of Economic and Social Affairs (DESA).
11. Statement made by Mr. A.R. Ghanashyam, Joint Secretary (UNES), Ministry of External Affairs, Government of India, during the session on "Green Economy in the context of sustainable development and poverty eradication" at the 2nd PrepCom of Rio+20 on 7 March 2010, New York.
12. "Green economy: policy framework for sustainable development." *Current Science*, Vol. 100, no. 7, 10 April 2011, p-961.
13. "Climate and Environment Mainstreaming and the Green Economy to Achieve the Millennium Development Goals," <http://www.povertyenvironment.net/files/PEP15-ActionPoints.pdf>, accessed 19 September 2011.
14. Tishya Chatterjee, Secretary, Ministry of Environment and Forests, Government of India. "GREEN ECONOMY PERSPECTIVES," delivered at the CII meeting organized for the visiting Executive Director UNEP, and Minister for Environment and Forests, India.
15. National Action Plan on Climate Change, Government of India
16. Op.cit 2.
17. UN Press release on India's green economy for the future will need to meet the challenge of adding 8-10 million jobs each year, 3 June 2011.
18. Each CER is equivalent to 1 tonne of carbon dioxide (CO₂), often referred to as tonnes of CO₂ equivalents (t CO₂ eq).
19. Interview with a Korean professor, Poznan (Poland), December 2009.

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