Executive Summary

Transition of Development Model and Sustainable Development in Asia

Asia is increasingly becoming a major political and economic regional power with more important global influence after having experienced nearly half a century's rapid economic growth and surviving the impact of the regional and global financial crises. Since the 1960s, the rising and rapid development of Japan, East Asian Tigers, as well as emerging economies such as China and India, has created the so-called "East Asian Miracle" and "Asian Development Model". Although no unified cooperation model has been put in place for the Asian countries due to their differences in political, economic, cultural and resource endowment aspects, the process for regional economic integration is accelerating and will continue to play a critical role in leading the global economic recovery.

The success of an Asian development model does not necessarily mean that it is a paragon. This model is generally regarded to have been achieved by constantly expanding the scale of production with the input of various factors and by promoting exports with favorable policies. It was in the late 1980s and early 1990s that rethinking on the "East Asian Miracle" and "Asian Development Model" began. Particularly after the shock of the Asian financial crisis in 1997 and the global financial crisis in 2008, some long-standing conflicts and problems of the Asia's economic development model have become more prominent, posing unprecedented challenges on the sustainability of this model.

At present, the Asian development model is confronted with three major challenges: ①The external environment in Asia has undergone significant changes. Since the outbreak of the global financial crisis in 2008, export-oriented Asian countries have suffered from severe impacts amid the gloomy consumption markets and rising trade protectionism in European and American regions; ②The traditional comparative advantages of some Asian countries in economic development are diminishing with the gradual decrease in the workforce and rising resources and environmental costs, and the unsustainable over-dependency of their economic growth on the input of production factors; ③As Asia features a very limited carrying capacity of resources and environment, the extensive economic growth model has brought about a large number of resource and environmental problems while it has to address new challenges such as global climate change. As a result, Asia must seek new drivers, create new needs and change its development model to achieve sustainable development. Opportuni-

ties and challenges will co-exist in the next decade, which is identified as a key period for Asian countries to transform towards a new development model.

New development targets have to be defined firstly for the transition of the Asian development model. In the long run, in a bid to achieve stable and continuous growth of Asian economies and to take the lead in the post-financial crisis era in the global economy, Asian countries are required not only to address the environmental and resources problems, but to adjust the old economic structure, create new growth areas and enhance their competitiveness against a backdrop of evolving domestic and international situations. The transition of an Asian development model, therefore, has to be comprehensive, and a new model that is green, low-carbon, smart, innovative, cooperative, and inclusive needs to be created through system innovation. This will not only challenge the wisdom, courage, confidence and patience of Asian countries, but test the willingness of the Asian countries to work together and achieve a win-win situation.

Green Transition is Key to Transform the "Asian Development Model"

Green transition, or the transition towards a green development model, is a core component to addressing the above three challenges, as well as a realistic choice to transform the development model towards a sustainable Asia. In general, innovation is recognized as an essential tool to achieve green transition.

Green Transition

Legal, administrative and economic instruments are needed to achieve green transition and green development in Asia. It is also necessary for Asian countries to adjust the energy and economic structures, gradually transform the extensive economic growth model, establish a moderate consumption model and environment-friendly and equal trading pattern through technological change and innovation, so as to address sustainability issues in terms of resources, energy, environment and poverty reduction, to mitigate and adapt to climate change, and to ultimately achieve sustainable industrialization, urbanization and modernization in Asia. Transition towards a green development model will not only break through the bottleneck of limited environmental carrying capacity in Asia, meet the severe challenges of resources and environment in the region, but will keep in line with international development trends and promote a global sustainable development process.

The major tasks for green transition and green development in Asia include:

Giving top priority to tackling the scarcity of strategic resources and conventional environmental problems in Asian countries. Emerging economies and other developing countries in Asia are required to place top priority on constantly improving resources and environmental performance, secure the safety of freshwater, food, energy and major mineral resources supply, invest in environmental infrastructure; reduce pollutants discharge, speed up the process of environmental control under the framework of an international

environmental regime, accelerate the efforts of surmounting the stage of over-intensive use of resources and energy and pollution discharge, halt the trend of deteriorating environmental quality in Asia, and achieve economic growth at a resource and environmental cost well below that of developed countries at the same stage of income level.

Addressing the long-term severe challenge of global climate change. It is of critical importance for Asian countries to implement low-carbon development strategies that fit in with their actual domestic conditions, develop long-term institutional arrangements and roadmaps to reduce carbon emissions, actively carry out international cooperation in a principle of "common but differentiated responsibilities", constantly improve energy use efficiency, gradually expand the use of low-carbon energy, develop low-carbon technologies and industries, attempt to decouple green development from greenhouse gas emissions to achieve the target of controlling global warming.

Creating new economic growth areas and enhancing the international competitiveness of Asia. Great efforts should be made to promote the green transition of Asia, seek new sources for cleaner and sustainable growth, integrate the advantage of developing countries in Asia as latecomers to innovation, develop green and emerging industries, create new jobs, conduct cooperation on green development, promote technological progress and enhance the green and low-carbon competitiveness of the products and industries, fend off trade protectionism and break through the "green trade barriers" set by the developed countries.

Green Innovation

While innovation has become a core component of development strategy for various countries worldwide, green innovation will serve as a key target for innovation, as well as the precondition for transforming towards green development in the future. A new technological and industrial revolution that is green, low-carbon, intelligent and sustainable is most likely to take place in the next one to two decades. As a core element driving the revolution, green innovation will define the future trend of innovation and the fundamental pathway of industry transition.

Innovation calls for the guidance of policy, which, in turn, will drive the birth of a new scientific and technological revolution. In the green development area, green technological development, green consumption market and green legislation and policies constitute the drivers of green innovation. In particular, environmental regulations and policies have a strong impact on green innovation. Environmental standards, environmental, financial and taxation policies, to some extent, can promote green technological innovation. Take the best practice in China during the period of the National Eleventh-Five-Year Plan (2006-2010) for example. It has made great strides in technological, equipment and engineering development in such areas as clean coal power generation, renewable energy, high-speed railway, and environmental protection. There is no doubt that China can make significant contributions to addressing climate

change and sustainable development globally in the next decade and beyond if it follows the policy of energy efficiency and pollution reduction.

In the course of green innovation, different priorities need to be identified for different countries. This is because these countries have different conditions, and their issues to be addressed and their advantages in innovation also vary. Overall, as Asia has not completely broken away from the material-intensive stage, technological change will play a crucial role in reducing resource consumption and a negative environmental impact. The major task for green transition and green innovation in Asia, therefore, is to achieve stable and continuous reduction of environmental impact intensity, or to give top priority to improving resources and environmental performance.

Innovation does not only involve technological, but also institutional, policy, administrative, and even cultural dimensions. While institutional innovation and administrative innovation were often used to support technical innovation in the past, they should become major components of green innovation in the future. In addition, as green innovation involves a system engineering process, different innovation activities should enhance their interaction and coordination, strengthen cooperation in the context of open competition, and reduce the risk of technology change to generate system innovation and offer systematic solutions.

Challenges and Favorable Conditions for Green Transition in Asia

Despite the fact that the transition from the old to the new Asian development model is of great urgency and will bring with it opportunities for each country, it will only be achieved over a long period and at high cost.

Apart from the differences of various countries, the challenges for green transition in Asia are mainly reflected in the following two aspects: ①The dilemma between the development stage, the inertia of existing development model and international labor division pattern, and economic transition. As mentioned above, many Asian countries are still at the stage of energy and material intensification and industrialization, during which it is difficult to shift the trend of resources and energy intensification in the short term. Meanwhile, to meet the overwhelming needs of improving per capita income and raise living standards, these Asian countries are faced with severe challenges in achieving green transition in the course of fast growth and boosting domestic demand. ②Achieving green development calls for comprehensive transition in terms of policy, technical, administrative and cooperation aspects, as well as the tradeoff between different development and policy targets. As a result, an incremental process is needed to achieve overall improvement.

It should be noted that many favorable conditions have already been put in place for the green transition of Asia, including development foundations, opportunities and best practices. Asian countries should grasp the chances, fully leverage their own advantages, more proactively address the existing or

potential challenges in sustainable development, innovate for the development concepts and explore appropriate development pathways and priorities to achieve sustainable growth, which is of great significance to promote the green transition of Asia. These favorable conditions include:

• Strong government commitment and political will. Highly efficient and powerful government is one of the major root causes for Asia's economic success, and also provides a strong basis for Asia's green development. More and more Asian countries have recognized the concept of green development and begun to put it into practice.

• The cultural tradition of hard-work and thrift. Asia's traditional culture that advocates diligence and frugality, and its emphasis on man and nature in harmonious coexistence has been playing a significant role in promoting East Asia's rapid economic development. It can also provide an important ideological and financial support for the green transition (including green development and green innovation) of Asia, shaping a moderate consumption model that is different from western countries and that meets the actual resources and environmental conditions and needs for energy conservation and pollution reduction reduction in Asia.

• The largest potential green consumer market in the world. Whether tackling the resources and environmental problems and climate change, or addressing the financial crisis creates a huge demand and market for Asia to develop green economy while providing new opportunities for green innovation.

• Development of renewable and new energies. Relative abundance in renewable energies, such as hydropower, solar energy, wind power, biomass and geothermal energy, has provided favorable conditions for the development of green energy in Asia. So far, significant progress has been made in terms of renewable and new energy development in Japan, Rep. of Korea, China and India, among others.

• Increasing innovation capacity. With its strong technical human capital, increased investment in R&D and its innovation capacity, Asia has already acquired a leading position in R&D, application and industry development in terms of energy conservation and pollution control, electric vehicles and other low-carbon technologies.

• Best practices in sustainable development. Asian countries have developed different models and best practices that balance environmental protection and economic development according to their own conditions in the course of promoting sustainable development. These success stories can be shared within Asia.

• Increasingly open environment and enhanced regional cooperation. While an increasingly open environment has provided possibilities and opportunities for Asia to introduce state-of-the-art green technologies and expertise, learn from the best practices and reduce the costs of green transition, the expanding regional cooperation makes it possible for Asian countries to establish a sound bilateral and multi-lateral environmental cooperation mechanism, strengthen infrastructural development in energy and other areas,

and facilitate technical cooperation in resources and environmental areas.

Policy Recommendations to Promote Green Transition and Green Development in Asia

To achieve green transition in Asia, some basic principles need to be followed: ①reaching a consensus to integrate the concept of green development with the practice of sustainable industrialization, urbanization, and informationization; ②adopting systematic concepts and comprehensive supporting measures to fully promote inclusive growth while taking into account regional differences; ③reforming the government's administration model to engage more stakeholders; and ④enhancing the regional governance capacity through practical cooperation.

In addition, priorities should be given to "four transitions": ①transition from a growth model that focuses on input of factors to one that combines innovation (in particular green innovation) and comparative advantages; ②transition from a development target system that only highlights economic indicators to one that is green-oriented and covers comprehensive indicators; ③transition from an energy structure that focuses on fossil fuels to one that is diversified and decarbonized; and ④transition from a cooperation model that depends solely on economic, technical and trade collaboration to a new one that shares the green responsibility and is based on mutual benefit and a win-win result. Hence, the framework of a green economy and green development at national, regional or global scales can be gradually established.

Specific policy recommendations are proposed as follows:

(1) Develop national strategies and action plans on green growth to guide and promote green transition.

Asian countries should consider mainstreaming green development into their national socio-economic development strategies and incorporate the concept of green development into various plans and policies; develop long-term goals and phased objectives on green development, define the development roadmap and priority action plans on green transition, build a resource-efficient, environment-friendly and low carbon-oriented economic development model and social system, advance economic development, create more jobs and enhance competitiveness mainly through green growth.

(2) Formulate a package of policies to promote green transition and achieve co-benefit of development and environment.

Efforts should be made to take into full consideration the targets in terms of resources, energy, environment, climate and development, develop cross-sector package policies, establish coordination mechanisms, consolidate relevant resources and build a favorable governance structure; promote the integration

of administration and economic approaches, establish a long-term, stable incentive mechanism and institutional arrangement, and gradually decouple the economic development from resource and environmental pressure.

Priority should be given to developing a system of strategic impact assessment, as well as a rational price-forming mechanism on resources, energy and environmental factors. In addition, it is necessary to formulate incentive policies to advance the development of renewable and new energies, and establish a long-term price signal to encourage low-carbon development and environmental protection; gradually promote and ultimately establish a green taxation system through pilot projects on environmental, resource, energy and carbon taxes; strengthen environmental regulation through establishing a resources and environmental performance benchmark system for industries, a market access system for highly energy- and polluting-intensive industries and products, an extended producer responsibility system and green purchasing system for development of recycling-based economy, promote the green transition of industries and create a green consumption market.

(3) Invest in green technologies and develop a green technology innovation system.

Asian countries are required to strengthen financial and policy support for the R&D of green technologies, and implement key S&T programs on green development; coordinate the existing R&D projects on energy conservation, environmental protection and low-carbon growth, establish an S&T roadmap on green development, develop key green technologies and technology clusters, focus on commercialization pilot projects and engage more enterprises in this process; engage the private sector in the R&D of green technologies through Public-Private Partnership (PPP) to establish a diversified, multi-source, green technologies investment system that engages the government, enterprises and the general public. In terms of the specific R&D of green technologies, different Asian countries should develop and deploy low-cost, alternative technologies (especially low-carbon, resource and energy-saving, renewable energy technologies) that are suitable to be disseminated to developing countries in Asia, and highlight the integration of information and communication technology (ICT) and energy conservation and environmental protection technologies.

(4) Accelerate the development of green and emerging industries that contribute to energy conservation and environmental protection through industrial, investment and financing policies.

It is important for Asian countries to develop green and emerging industries that are consistent with their actual conditions; foster new economic growth areas, enhance industry competitiveness in environmental protection and low-carbon development, and create new jobs by developing relevant

industry plans, standards and policies (including investment and financing policies); wisely deploy and strengthen regulation on the emerging industries, avoid malicious competition and overcapacity, and ensure the healthy development of emerging industries, focusing on the development of such industries as new energy, electric car, energy efficiency and environmental protection; actively promote the development of green service industries, including green finance, emission rights trading, management and maintenance of environmental protection facilities, corporate carbon management advice; and achieve the greening of the overall industrial system through the joint efforts of government, market and business from a long-term perspective.

(5) Implement proactive policies on population control, and reduce the number of poor people.

Asian countries should develop forward-looking population policies that fit in with each Asian country's actual socio-economic conditions and that take into account the population growth and future aging trend, control population numbers, provide necessary social security and healthcare services, and reduce the adverse effect of population growth on resources and the environment; and take various measures to reduce poverty and achieve the Millennium Development Goals (MDGs).

(6) Further develop human resources, and innovate education and training models that adapt to green transition.

Efforts should be made to further develop human resources and improve the skills of the population and labor force to provide human capital for green development; reform the existing education and training system, develop labor force re-training and re-employment plans and policies, and establish an open training models, train professionals in skills that are urgently needed by green and emerging industries, expedite the transfer of the labor force from outdated industries and enterprises to emerging ones, and wisely deploy the labor force; and help to establish partnerships between education & training institutions and the labor force sector.

(7) Explore a green consumption model that fits in with the resource and environmental conditions, and establish green consumption.

Asian countries are encouraged to promote the long-standing cultural tradition of being thrifty, and disseminate concepts of respect for and living in harmony with nature; explore a green consumption model that is feasible in future technical and economic conditions, raise awareness of the government, business and the general public on greenness and environmental protection through education, training and public participation, and encourage

consumption behaviors that contribute to energy conservation, low-carbon and environmental protection; guide and promote green consumption by strengthening demand side management (DSM) and developing relevant policies and regulations; and take the lead in implementing actions on energy conservation and pollution reduction to promote a green consumption model.

(8) Establish regional partnership on green development, and implement multi-level actions on green cooperation.

Asian countries are required to establish a regional dialogue mechanism, partnership or alliance on green development, leverage their own advantages through joint action plans, share the best practices, jointly conduct R&D to achieve a win-win situation; give top priority to strengthening dialogue, communication and cooperation in renewable energy development, regional resource security, intelligent transport network and regional environmental quality, define the obligations and responsibilities of each party, and develop and implement joint programs according to each country's advantage in terms of funding, technology and human resource in order to jointly advance the green transition of Asia; innovate the cooperative model, establish the Asia Green Transition Fund, explore an appropriate regional technical R&D and transfer mechanism, accelerate the technology transfer process within Asia, and learn from the best practices of developed countries to improve the resource and environmental performance in the region.

It is also necessary for Asia to enhance capacity building in terms of resource and environmental monitoring, early-warning and emergency systems, develop an information sharing platform, carry out integrated surveys on resources and the environment, jointly crack down on illegal deforestation, trading of wild endangered species and trans-boundary transfer of electronic wastes, and establish an emergency cooperation mechanism on addressing cross-border pollution incidents; expand and reinforce the communication network between and among different government agencies and non-governmental organizations (NGOs) within Asia, establish a regular communication mechanism, constantly improve the governance capabilities and jointly create a pathway towards a sustainable Asia.