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Policy Recommendations to the Government of China

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The 5th Annual General Meeting (AGM) of the 4th Phase of the China Council for International Cooperation on Environment and Development (CCICED) was held from November 14-17, 2011 in Beijing. The theme of the 5th AGM was "Green Transformation of Economic Development Pattern."

The Council members noted that the Government of China has formulated the development strategy for the 12th Five Year Plan period (2011-2015), taking "scientific outlook on development" as the main approach, with "transformation of development mode" as the main mechanism for achieving a "higher level of Ecological Civilization". In addition to being the first year of the 12th FYP, 2011 also marks the 20th anniversary of CCICED's establishment. Moreover, global preparations are now underway for the June 2012 Rio+20 United Nations Conference on Sustainable Development. Therefore the green transformation theme is particularly meaningful for the AGM this year. Internationally, there is considerable discussion and rising levels of commitment to implementation regarding new concepts such as green growth, green economy, low carbon economy, circular economy, and green technology. Green transformation has become a favored approach for post-financial crisis economic recovery.

The world over the coming two decades will be characterized by an enormous growth of population, increasing living standards, a growing global middle class and a high level of urbanization. The consequences will be resource and pollution constrained patterns of development, a situation already existing in many places. Competition for resources and green solutions will be inevitable. There is a global Green Race underway—a green competition between countries to become leading suppliers of resource efficient, low polluting solutions, products and services. The 12th FYP is the starting point for positioning China well in this race. Transforming the domestic economy and building demand for green solutions will create the competencies and scale for greener exports.

The evolution to a future resource efficient, low polluting world will be very dynamic. Traditional business models for different industry sectors will be challenged. The future will belong to those who understand this dynamism and can develop new

offerings of products, systems and services that are Green in the broad sense of the word. It is very important, therefore, that Chinese businesses adhere to international models of Corporate Social Responsibility (CSR) and other approaches that emphasize concern for environment and social concerns. These approaches can be good for profitability as well, even though there are costs to implement them. China will have to consider how best to stimulate businesses to prepare for this new world. The effort should include Chinese domestic and FDI enterprises, and Chinese businesses operating abroad, including ODI. All need to be brought eventually to an equal and high standard of action for environment and development, and be backstopped by a green financial sector. Much more attention will have to be given to green market supply chains.

China has a choice at this very important junction. Embrace the inevitable Green Race and position itself as a global leader and supplier of resource efficient, low polluting solutions. Or, try to maintain the old role as the supplier of low cost products to a growing world population. While China's choice may seem obvious, even already made in the case of some technologies such as solar and wind energy, the Green Race is still at an early stage. There are no inherent reasons why China could not chart a Green Transformation course that will support future well-being and wealth creation. The future of China's positioning is mainly in the hands of its leaders and people—not in the hands of external forces.

In fact, China's "going green" fits well with the domestic drive toward an environmentally-friendly society and the new scientific development outlook. Green transformation reflects the dynamism of innovation and reform. It should be regarded as an approach to development that emphasizes vigor, balance and sustainability. The ultimate goal of this form of development is to achieve a new balance in the relationship of environment and resources, social inclusiveness and harmony, while enhancing China's overall status and competitiveness regionally and globally. Green transformation will depend upon a better level of transparency and openness in decisions, and on careful attention to appropriate roles for government and market forces. Government needs to provide a clear regulatory framework to guide the operation of the market, and then to allow the market to operate freely within that framework.

As China intensifies its efforts to change the current development mode, and gains deeper understanding of the process and new needs, green transformation is now understood to be central to the direction and core content of this change. The experience gained during the 11th Five Year Plan, and through the inclusion of environmental objectives within the 2008 post-financial crisis stimulus package, has set in place a good basis for future efforts. China's national will and existing experience now must be further drawn upon to create a comprehensive and coordinated approach that can accelerate the pace of change towards sustainable development; and be more efficient and effective in green transformation of economic development.

Participation by China's citizens in green transformation is essential. Certainly as wealth is created there will be further stimulation of domestic consumption, and it is essential that the patterns of consumption are sustainable in terms of energy, pollution control, environmental impacts and maintenance of ecological services, plus many other aspects related to health, well-being and quality of life. It is essential therefore that a new level of transparency and openness be achieved so that citizens in both cities and the countryside gain a full understanding of the roles they can play as they participate in decision-making and implementation of environment and development matters. Transparency can be thought of as a driver of change, as an incentive, and as an enforcement mechanism. Not only is it important in China's domestic green transformation, but also in the greening of China's international brand with respect to exports and also the long-term success of China's investments abroad.

CCICED members are pleased to see that environment and development considerations have been given considerable attention within the new 12th Five-Year Plan. However it is important to emphasize that environmental transformation and economic transformation need to become much better aligned since they are interconnected in terms of impacts. This alignment becomes a central theme for green transformation. China urgently needs a comprehensive and practical implementation blueprint for green transformation that includes development strategy, concrete approach and supporting policies.

CCICED members believe that China's green transformation could have significant implications globally. Global environment and development progress has fallen short of people's expectations, including in many parts of the world the quite limited achievements so far of the Millennium Development Goals, climate change action and ecological protection. It is therefore important to identify new directions for sustainable development, explore a new path and make new breakthroughs. Rio+20 offers one opportunity for China's contributions and role to be highlighted, and hopefully its role in global environmental improvement strengthened. China should be giving the world a clear and unambiguous picture of its intentions concerning green transformation.

Council members deeply feel that China faces complicated environment and economy problems and unprecedented challenges as it implements green transformation. "Speed first" practices, as shown in a number of serious accidents and scandals, seriously harm human health and the environment, threaten people's lives, impair social stability and development results, and affect public opinion about governance. These incidents have revealed deep-rooted problems of unbalanced, uncoordinated and unsustainable development—as China's leaders have expressed. The shortcomings of social ethics and cultural values are reflected in problems with across-the-board impacts. Indeed, green transformation of development pattern is not only a matter of policy, institutional reform and technological innovation, but also one

of social ethics and values.

CCICED members have noted that China's commitment to all-round transformation of development pattern and a green development road was once again demonstrated during the recently concluded 6th Plenary Session of the 17th Party Congress, as well as in the Opinions on Strengthening Key Environmental Protection Work just issued by the State Council. The Opinions document stressed that "reform and innovation shall be the new driving force for exploring the new path of environmental protection featuring low cost, good returns, low emission and sustainability". The Session and the Opinions are an important demonstration of China's continued national will to strengthen environmental protection. Cultural development should also be part of the green transformation efforts. Promoting an environmental culture and ecological civilization in this process will help to build environmental ethics in China. To be fully successful, this effort must be linked to strategy for sustainable livelihoods, and new, more environmentally friendly strategies for economic growth.

There are less than 10 years left for achieving the goal of an all-round well-off society in China, and less than 40 years for achieving a fully mature stage of modernization. For the navigators of this huge ship with the largest population in the world, the journey ahead is filled with challenges. During this journey, China has to strike a proper balance between economic growth and environmental protection, transform environmental targets into genuine and lasting progress on sustainability, propel enterprises to shoulder more environmental and social responsibilities, and assess and guide its own green transition process within a global context. If China is successful in making substantive environment and development breakthroughs during the 12th FYP, a solid foundation will be laid for China's sustainable future. Otherwise the process of green transformation will encounter even greater difficulties—or worse still, may even see existing gains reversed.

CCICED established three task forces linked to the green transformation theme: research on the development mechanism and policy innovation of China's green economy; low carbon industrialization strategy in China; and trade, investment and environment, focusing on FDI entering China and ODI on the part of China. The Council also carried out special policy studies on greening China's supply chains, and on mercury management in China. The goal for all of these studies is to contribute to the roadmap for transformative green development in China.

Based upon the research results of these studies and discussions during the AGM, CCICED proposes five policy recommendations to the Government of China.

RECOMMENDATION 1. Rebuild social values, adjust government roles, and cultivate human resources to reinforce and serve an unswerving national will on green transformation of development mode.

Green transformation of China's development pattern requires significant shifts in

social values and behavior. Considering the historical experience of developed countries and today's economic realities in China, it will be a long, complex and challenging process for China to fully realize such transformation. There is a need to understand root causes, systematically adjust the approaches of the old development mode, and guide both the economic and environmental transformations. The shift requires consideration of some basic ideas and values, such as social, cultural and environmental ethics, the role of government in economic and social development, institutional changes and mechanisms of administration.

1. **Establish a long-term and unswerving national will on the green transformation of development mode.**

Although under the severe challenges of the current international economic slowdown, financial market instability, debt crisis, and slow growth, the Government of China should not weaken environmental controls, or lower environmental targets and standards to yield to the economic pressures. It is crucial for the national government to step up its guidance and supervision of local governments, especially those which may be inclined to ignore green transformation in favor of strong economic growth. Reversals of this sort may be common. Therefore green transformation will require unswerving national commitment and determination.

2. **Incorporate the concept of Ecological Civilization into overall social and cultural development, and reward sound social values and environmental ethics.**

Greater efforts should be made to promote ecological civilization and environmental culture, abide by rules of ecology and of social development, and, as appropriate, draw upon traditional Chinese values and ethics. Environmental values need to become part of an overall ethical system. Such a system will help provide strong moral and spiritual support to the green transformation of China's economic development pattern.

3. **Reform government functions, strengthen its management of public goods and social service functions for green development.**

China's economic system has been progressing, but the government has been relatively slow in adjusting itself to societal needs in a market-based economy. What's more, the global financial crisis to some extent has provided more room for governmental interventions in the economy. During the post crisis period, it is a pressing concern for the Chinese economy to shift from overdependence on policy incentives towards a more spontaneous growth pattern. The boundaries of government's role should be identified more clearly, and its public service role strengthened.

First, government should not displace the market, and clear distinction needs to be established between the respective roles of governments and enterprises. Market mechanisms should help to optimize the allocation of financial resources and government should help enterprises to play a main role in the green transformation of economic development mode. Government should refrain from taking market resources, setting up unnecessary entrance barriers, forcing new investment activities on behalf of enterprises unless necessary for protection of human health and environment, and using administrative measures to influence market order and prices. Second, government should play a major role in environmental protection, energy conservation, social safety, and fair competition. Third, government should reduce its long-term dependence on administrative measures and reform natural resource pricing and introduce environmental pricing to provide a favorable market condition for those enterprises that invest in green economy and reduce the advantage of those which pollute the environment and squander natural resources.

In addition, government needs to improve its transparency in disclosing matters related to public affairs and in decision-making processes. It is also important for government to build up regionally appropriate emergency response and early warning systems and to strengthen preparedness of the whole society. These measures will help China embark on the road of green development.

4. **Build a better performance evaluation system and mechanisms that strengthen accountability of government officials for green transformation of development mode.**

It is not enough only to strengthen the understanding of the policy makers on green transformation matters. A better performance evaluation and indicator system with a balance of punitive and incentive measures for assessment of government officials is needed. The performance evaluation system from the central down to the local levels therefore should undergo comprehensive reform. The system should focus not only on achieving economic growth targets, but also on the manner, pattern and quality of development. This requires assessment of the relationship between economic growth and social progress, with better indicators for the quality of economic growth, environmental protection, resource efficiency and green employment. In cases where economic growth is so rapid that environment is not being properly protected, there should be a negative assessment of performance. Monitoring, reporting and verification (MRV) for domestic environmental regulation is still not adequate enough, especially at regional and local levels. An evaluation and indicator system for green economy development should be established, backstopped by an improved system of national accounts modified to consider environmental statistics. Green GDP is a fundamental reform of the national economic accounting system for which the central government should continuously support relevant research and expedite its application.

5. **Recognize and strengthen the critical role of enterprises in green transformation, and encourage self-motivated action.**

Recognizing the importance of civil society in green transformation, implement environmental information disclosure practices, environmental auditing and reward mechanisms as part of the effort to implement Corporate Social Responsibility (CSR) and to enhance transparency towards environmental improvement efforts. Government should provide a favorable regulatory framework to facilitate enterprises' green transformation and encourage enterprises' active participation in international cooperation, through which enterprises' CSR, green image and sustainable competiveness can be enhanced.

6. **Establish a human resources development system that supports green development.**

Knowledgeable and motivated people are the most important factor, and a basic prerequisite for green transformation of the development pattern. A wide range of scientific outlook and green-minded talents should be incorporated into the priorities of national middle- to long-term plans for China's human resources development. Such talents are needed to strengthen institutions and to raise the standards of human resources development for meeting green development. The need extends across all economic and social sectors so that a sufficient and high-caliber talent pool for green transformation can be fostered. Strong green leadership is needed in all fields, including: entrepreneurs with good understanding of green economy and a well-developed sense of environmental and social responsibility, innovative technological experts that can serve green development, farmer leaders that help promote green transformation in rural areas, and technicians and social workers directly involved in relevant on-the-ground work concerning green development.

RECOMMENDATION 2. Establish China's green economy system and advance green transformation of the existing economic development mode.

During the financial crisis, in order to address the multiple challenges in economic, social and environmental fields, the international community put forward the concept of green economy. According to definitions by UNEP and other international organizations, green economy should promote human well-being and improve social justice, minimize environmental risks and resource scarcity, and feature "low-carbon, resource conservation and social inclusiveness". Green economy is not a synonym of sustainable development, but rather a pillar that supports it. Green economy should align existing activities in all sectors with environmental needs while addressing human well-being and sustainable livelihoods; should minimize environmental damage of human activities, fully recognizes ecosystem services and their value; and should foster new green economic growth engines through innovation and improved planning and management.

The experience of China shows that the core of green economy is to harmonize the relationship between economic growth and environmental protection; the relationship needs to be balanced, coordinated and mutually supportive.

Green economy is an economic development model that integrates such core concepts as high resource efficiency, low pollution, low carbon, and balanced social development, plus the many opportunities associated with innovation. For this reason, green economy should become the most vibrant, promising and inclusive model of economic development. Green economic development is the core driver and important pathway through which green transformation can be achieved. Both at present and over the long run, the benefits of green transformation of industries can be anticipated to exceed their cost, and to achieve extensive, long-lasting economic, social and environmental benefits.

1. **Set strategic targets and create an overall framework for green economy in China.**

The goals of green economy are to encourage harmonious development between environment and economy; to reduce the environmental and resource constraints imposed upon social and economic development; and, as well, to enhance social welfare and prosperity sharing. A preliminary green economic system that includes green manufacturing, green consumption, green trade and investment could be well-established in China within the next 10-15 years.

The overall framework for this green economic system should give full play to the role of environmental protection in optimizing economic growth. The framework should highlight two main strategies, transformation and innovation, and six main sectors. The strategy of transformation is two-fold: economic development mode and governance structure need to be transformed. Innovation emphasizes institutional, structural, and technological shifts. The six sectors include: emerging new strategic industries, green transformation of industry, agriculture and the service sector, low-carbon and ecological restoration, green consumption pattern, and a more balanced approach to regional development.

2. **Implement “customized” and balanced green development strategies in different regions of the country.**

Since the regions of China vary in phase and model of development, this regional disparity means that there is no general shortcut to a sustainable development path, and therefore a single set of standards should not be applied to all regions. To give full play to the characteristics and potentials of each region in developing its green economy, it is first necessary to have a good understanding of the context of green economy within a region—as well as the particular challenges and opportunities, the

region's capacity to coordinate national and local policies, and a sense of optimal integration of regulations with market mechanisms.

(1) Based on each region's comparative advantages and key characteristics, promote specific regional green development and prevent pollution migration and unsustainable resource and environmental uses. Prevent the transfer of outdated technology, equipment and pollution from developed to backward regions, and ensure full environmental consideration of new projects. Recipient regions should strictly implement "Three Simultaneities" (i.e., the environmental facilities shall be designed, constructed and put to use simultaneously with the main body of a project), and should follow environmental impact assessment processes. A record-keeping system for production capacity transfer of heavily polluting enterprises and on-site dismantling mechanism of obsolete and phased-out equipment is needed. Follow-up inspection of polluting enterprises should be strengthened to prevent pollution transfer.

"Customized" green development strategies for different regions should be formulated to take advantage of their respective potentials. For the eastern region, the development of industrial clustering, research and innovation, environmental and financial services should be encouraged. The mid-western region, considering its advantages in infrastructure and human resources, should become a new manufacturing centre, as industry relocates from the eastern region. For the western region, which boasts a large workforce, vast land and rich natural resources, the development of sustainable mining, equipment manufacturing and new energy is appropriate, but needs to take into account significant but often fragile ecological systems and functions.

(2) Stick to green and balanced development between urban and surrounding rural areas; promote green, efficient and centralized urbanization in line with regional development needs. Clustered urbanization should be promoted and current uneven development of middle and small cities should be changed so as to maximize the benefit/cost ratio of urbanization, including environmental benefits and costs. Investment in green public infrastructure should be encouraged in a fashion that promotes city clustering. This does not mean a move towards more mega-cities as a solution to sustainable urbanization. Land allocation should be given to those projects with the highest added-value and ecological service capacity and with land resource value taken into account.

(3) Promote the green transformation of resource-depleting cities by establishing a new mechanism to subsidize their green transformation, and by providing direct and sufficient compensation for resources exploitation. Much of the emphasis should be on conservation planning and practices—for land, water and other natural resources and ecosystem services. With new and necessary subsidies from the central government, local governments should devote more of their limited resources to the

protection and restoration of the ecological environment, and should strengthen social security mechanisms and regulatory support for enterprises. Government should rely more on the market for resources allocation and mainly provide policy stewardship.

3. Prioritize strategic emerging industry sectors and focus on the greening of all three traditional industries to promote green economy.

There is a need to simultaneously support the development of strategic emerging industries and to undertake the green transformation and upgrading of the three traditional industries. This will help accelerate the shift of China's industrial structure from being very capital-intensive and heavy industry-dependent towards becoming more labor-intensive and knowledge-oriented.

(1) Adopt a coordinated and integrated approach to push forward green transformation of conventional industries. Green transformation of conventional industries requires multiple solutions for multiple challenges. More attention needs to be paid to policy coordination and co-benefits, such as emissions reduction and energy conservation, multi-pollutant management, and waste disposal via utilization in cement production. Coal-based pollution and emissions should be reduced as much as possible, particularly by developing a clean, stable, safe and diversified energy structure. The exit mechanism for heavily polluting enterprises needs to be improved. Compliant enterprises should be encouraged to take the initiative of green transformation and spontaneously phase out outdated and polluting equipment and technology. Relevant special funds should be set in place, such as a central incentive fund for phasing out backward, low productivity enterprises; a special subsidy for smaller enterprises that must be shut down; and possibly, a special fund to assist with major pollutants reduction. Financial support should be provided to dirty enterprises that take action to meet relevant environmental standards. Technological upgrading can be encouraged by preferential tax, land and credit policies. For non-compliant, to-be-phased-out dirty enterprises, punitive measures should be imposed. Such measures might include higher power and water prices, suspension of new loans or withdrawal of already granted loans.

There should be further strengthening of mandatory measures of energy saving and pollution reduction, improvement of laws and regulations concerning energy technology and standards, and new combinations of pollution treatment and resource efficiency measures to realize synergies between energy saving and pollution reduction. In addition, there should be more R&D investment to promote and guide the use of surplus energy in the cement, iron & steel, power and non-ferrous metals sectors. Preferential policies could be introduced for the treatment and disposal of industrial waste, hazardous waste, solid waste and urban sludge. Cement kilns designed to treat industrial and urban waste should be encouraged. These actions should be supported by updated policy for resource recycling. The government should issue as soon as possible the Pollution Prevention Standard for Solid Waste Treatment

and the Pollution Prevention Standard on Construction Materials Production from Recycled Solid Waste. Related policies and standards need to be promulgated to promote the green transformation of the transportation sector.

(2) Promote green restructuring in the agricultural sector and link this action to food and agro-products security and to rural sustainability. Agricultural land and water use planning should be improved overall, with zones for green agriculture and its leading agro-products should be clearly delineated. The nature of such products should be based on robust, well-trusted certification processes. Monitoring work needs to be carried out for soil pollution, and training should be provided for farmers. There is an urgent need to strengthen non-point pollution prevention and treatment and to promote comprehensive environmental improvement programs, including waste treatment in rural areas. It is recommended that more nutrients be captured for farmlands to improve soil conditions and that there be active promotion of specialized and non-government services to support green farming.

The government should cancel its subsidies for chemical fertilizer production and guide their rational production and use. At the same time, large-scale production of organic fertilizers should be supported, and increased subsidies for substitution of chemical fertilizers by organic ones where feasible. The surge in animal husbandry deserves particular attention. Some segments of the market require consolidation into holdings of a size where proper waste treatment can take place. Current subsidy patterns require examination to determine how they may be improved or removed in order to create sustainable animal husbandry, including aquaculture. Biomass waste from agricultural crops is not being well enough utilized and more effort is needed to turn a greater portion of the waste into new products such as second generation biofuels. It is also recommended that forest management and other land and water uses be developed as ecological enterprises for services such as carbon sinks.

(3) Develop green service sectors and improve green employment opportunities. China should accelerate the development of green financing, green logistics and the environmental service sector. These “productive service sectors” can help drive the development of both manufacturing and service sectors. Capacity building on green skills of these “productive service sectors” should be promoted. In addition, China should strengthen regulation and guidance on the greening of traditional service sector activities, promote the reallocation of capital and investment and create more jobs in the service sector. For this purpose, the financial authorities should invest more in developing a vibrant and innovative service sector and help further improve the competitiveness and innovativeness of small and medium sized enterprises. The development of green agriculture, green industry and modern service sector will help to create more jobs, and the special role of women in promoting green economy should be given full play. China should introduce policies that promote equal participation and benefit sharing by women and men, and the role of women’s organizations should be strengthened as part of the green transformation.

(4) Promote sustainable consumption and champion green economic development. Sustainable consumption is a driving force for green economy. As people's income increases in China, the end link of sustainable consumption will be a key factor for the success of green transition. It is also an important and useful approach to advocate that good quality of life does not require the consumption of large amounts of commodities. The establishment of a new sustainable consumption pattern entails lifestyle changes and a social attitude of sustainability. In this process, the government needs to be the first to take action. Green government procurement can be a good reference point for safe, rational and frugal consumption. At the social level, a product life cycle approach that conserves resources and reduces pollution should be established. Such a system will help foster green consumption behavior across the whole society. At the corporate level, green supply chains need to be introduced widely. Market mechanisms such as sustainability certification should be utilized to promote sustainable production and consumption.

4. Establish the legal, regulatory and policy system for green economy development.

Elements of a legal system for green economy are already in place, including the Law on Promotion of Circular Economy, and some of the legislation related to energy conservation. However, much more needs to be done before a satisfactory regulatory system reflecting a proper balance between use of economic incentives and command and control legislation is in place. Furthermore, success of such a system will depend upon factors such as enforcement, and optimization of the use of economic incentives. There is a weak legal framework for environmental taxation, and reforms related to pricing and other aspects of market based environmental management and regulation. The same is true for the use of subsidies and other economic incentives meant to shift behavior in land and water use. This matter will become more important during the further development of pollution reduction, energy and climate change, resource pricing, eco-compensation and new programs for environmental restoration. Greater attention is required on the reform of pricing policies and on the removal of some energy subsidies that currently are bolstering unsustainable practices.

(1) Establish a supportive legal framework for green economic development. Many changes in the legal system are needed to better promote the development of green economy, and to help harmonize environmental laws, regulations and institutional arrangements with other elements of the legal systems, including civil and commercial law, administrative law, economic law, social law, litigation law and criminal law, to strengthen overall legal protection of environmental resources.

The revision of the Environmental Protection Law provides a good opportunity to strengthen the responsibility of the government, with an emphasis on drafting relevant laws that clarify responsibilities concerning the regulation of environment matters at

each level of the government. The civil liability of environmental damage should be strengthened, and research should be carried out on drafting laws regarding compensation for environmental pollution and damage, in order to better protect public environmental rights and interests, especially with regard to health, safety and a clean environment.

The environmental liability of enterprises also requires better legal definition. As long as it is cheaper to damage the environment than to pay for its maintenance, or to receive only minor fines in case of violations of laws and regulations, then enterprises are unlikely to conform. Furthermore, strict environmental liability will require much more in the way of guarantees for environmental restoration and higher payments to cover health or other damages to people and communities.

The government should move faster in developing and revising relevant laws and regulations that help promote carbon reduction, such as in the fields of energy generation and transfer, energy efficiency, resource saving and consumption. Climate change related laws need to be listed on the legislation agenda, the Energy Law should be developed and promulgated as soon as possible and amendments should be made to the Coal Law, Electricity Law, Energy Saving Law and Renewable Energy Law, etc., in order to further encourage the development and consumption of clean and low-carbon energy. China should make revisions to a number of laws regarding natural resource use, including the Agricultural Law, Forest Law, Grassland Law, Land Management Law, integrated water management, and various aspects related to sustainable use of the oceans.

All these laws will require administrative regulations and rules to help maintain and sometimes increase the productivity of land, water and sea, as well as the carbon sink function of agro-forest ecosystems. In addition, there is a need to revise protection and development plans for forest, farmland and grassland, to more strictly control cultivation in ecologically fragile regions and habitat important for biodiversity protection, and to forbid destruction of natural forest, grassland and farmland, and critical aquatic and marine habitats under any excuse.

The newly emerging industries in fields such as biotechnology and information technology present additional challenges since some of their environmental impacts and benefits will require regulatory frameworks and possibly enabling legislation.

Obviously the task of fully developing the legal basis of green economy and green development will require years of effort and will need considerable attention to avoid duplication and excessive overlap of regulations. Therefore priorities for immediate-, medium- and longer-term legal reform should be set. China should strengthen enforcement of those laws and regulations relevant to green economy that are already in place.

(2) Establish a comprehensive evaluation system of government policies. Rather than relying mainly on stand-alone decisions, there should be strengthened coordination among related activities, sometimes requiring cumulative impact assessments, and greater use of assessments in the context of integrated regional development, river basin management, regional transportation strategies, etc. A comprehensive evaluation system should be set up for major policies or projects concerning energy efficiency and pollution reduction. When the government develops and implements major policies, projects, or makes major direct investments, the whole process from decision making to implementation should be checked for anticipated and actual results, bearing in mind the overall goal of promoting green economy.

(3) Implement green fiscal reform, including environmental taxes such as a carbon tax, and financial policies designed to improve market-based approaches and establish emissions trading platforms. The leading role of the government should be strengthened in fiscal, taxation, financial and pricing policies. The key need for fiscal and taxation policy reform is to provide an incentive framework that encourages green investment, green trade and green production. This reform will become a major driving force for accelerating green transformation. In the short and medium term there should be a steady increase in fiscal support for green economic initiatives, with a comprehensive set of policies for designated funds, subsidies, rewards, discount charges and guarantees, The government budget should be leveraged to maximize its benefit and establish a joint investment mechanism between the central and local governments. A tax system to promote green development should include accelerating resource tax reform, adjusting consumption tax in light of energy and environmental policies, and introducing environmental tax (carbon tax included). The consumer tax should be adjusted to include high energy-consuming, high emission products. It is also recommended to increase the tax on petroleum and other high energy-consuming products and to provide tax breaks for those certified energy-saving products.

Financial policies can also be improved by introducing relevant credit policy and financial instruments to encourage investment and innovation in energy and environmental areas. Reform of the resource pricing system should fully reflect resource scarcity and environmental costs. Pricing reforms of key resources and products, such as water, electricity, coal, oil and natural gas should be deepened. The existing cross-subsidization policies should be reformed to protect socially vulnerable groups and to provide direct subsidy to these groups using national funds. Market-based instruments should be fully explored and introduced in emission reduction and energy conservation. Markets and exchanges for emissions trading, including both carbon dioxide and conventional pollutants, should be established to facilitate its implementation, with pilots being carried out as early as possible.

5. Promote green innovation including the establishment of a “green innovation” strategy mainly based on fundamental research, technological R&D, and human resources development. Green innovation strategy should bridge the connection

between fundamental research and commercialization. Green innovation should also be achieved through institutional reform and by use of new environmental policy instruments, such as standards, green procurement and innovation reward systems. Green innovation should be more open to international cooperation and provide support for technology transfer for small and medium-sized enterprises, and for public-private partnerships through the creation of an international green innovation and investment platform.

6. Enhance international cooperation on green economy.

Green economy in the context of sustainable development and poverty eradication is one of the two major themes of the Rio+20 Summit in 2012. It is beneficial for China to carry out international cooperation on green economy. This can be done within China and abroad by engaging in green improvements related to economic globalization; by drawing upon advanced ideas and experience of the international community on green economy; and, in cooperation with partner countries, by promoting exchanges and transfer of know-how, information and technology, and by capacity building. However, it should be taken into account that the varied development stages of different countries should be taken into account; and that green economy should not become the source of new “green trade barriers”. China should introduce trade policies that encourage the development of green economy. A challenge for China is to consolidate its cooperation with international partners and push forward international collaboration on sustainable development, including its cooperation with both developed and developing countries, and global transfer and application of green technologies. To encourage commercial entities and enterprises to participate in green economic cooperation, establish cooperation platforms and promote green technology transfer and applications.

RECOMMENDATION 3. Build a low carbon industrial system that champions and supports green transformation of economic development mode.

Historical experience, lessons from the financial crisis, and new development trends argue that manufacturing will continuously serve as the foundation for a balanced and sustainable economy. Low carbon industrialization is the prerequisite of a sustainable manufacturing business. According to some preliminary estimates, heavy industry will play an instrumental role in China’s ambition to achieve carbon intensity targets in the next 10 years or even longer. Specifically, improvement of energy efficiency of heavy industries, optimization of the energy portfolio and sectoral restructuring can account for more than 90% of expected carbon reduction targets, whereas the seven new strategic industries will play an indispensible role in both the enhancement of economic competiveness and delivery of emission reduction targets.

1. Map out a development plan for low carbon industrialization in China with

carbon intensity targets set for main heavy industrial sectors.

There is a need to establish a low carbon industrialization plan, to coordinate this plan with other plans, and to develop a comprehensive development strategy for low carbon industrialization. China has already set a mandatory target to "reduce CO_2 emission per GDP by 40 to 45% by 2020 on the basis of 2005 level". Sectoral carbon reduction targets should be set up for heavy and chemical industries like power, iron and steel, chemicals, construction materials and non-ferrous metals, to take the full advantage of the autonomy and motivation of respective sectors in setting up sector-based policies and develop R&D capacity.

2. **Increase support for emerging strategic industries, the driving force for low carbon transformation.**

The development of strategic emerging industries is a driving force for green and low carbon industrial transformation. The government should further lower the access hurdles and create a more favorable business environment for strategic emerging industries. The development plans for the seven main strategic emerging industries should be drafted, issued and implemented as soon as possible. A special fund supporting the development of strategic emerging industries should be established. In the emerging industry parks, the central and local governments should provide support to the infrastructure construction, certain key projects, R&D, public service platform and innovation capacity building. Tax and financial tools should be adopted to accelerate commercialization of strategic emerging industries. The government could also consider the joint-stock approach, set up capital and equity investment funds, and encourage more investment in innovative but early-to-middle-stage companies of strategic emerging industries. Moreover, the government should develop relevant policies to encourage private and foreign investment in these industries.

In areas and sectors where pilot initiatives are being carried out, priority needs to be given to ensuring that prices for electricity, energy, and products are allowed to fully reflect the impact of trading or green taxes. It's also important that they are underpinned by carefully regulated data systems, and in relation to the development plan for low-carbon industrialization. Particular attention is needed to coordination of sectoral initiatives with cross-sectoral policies and programs. This will ensure synergies, and avoid duplication or offsetting effects.

3. **Promote technological innovation and application to support low carbon transformation.**

More support should be given to low carbon research and its weight in the total R&D budget should be increased. In line with the development trend towards low carbon industries, there should be greater effort to make technological breakthroughs in the

fields of carbon capture and sequestration, alternative energy and other technologies, 3R (reduce, reuse and recycle), energy and biological technology, new materials, ecological restoration, and multi-pollutant control technologies. China should set up a world-class national energy lab and support basic and generic research, with open access to enterprises, universities and other research institutions. It is important to develop a new innovation system where enterprises play a leading role. The governmental funds for science and technology should increase their support to enterprises so as to attract more investment from all sectors. More efforts should be made to protect related IPRs. A cross-sector technological union should be formed to promote industrial integration and innovation. Meanwhile, international cooperation should be strengthened on low carbon technological innovation, making good use of international resources and positioning China to take advantage of international innovation related to low carbon technology.

4. **Improve the regulatory and voluntary standard system for low carbon production and products.**

First, amend energy efficiency standards of buildings, of transportation equipment, major industrial equipment, and main energy consuming items like household appliances and lighting products. Second, improve energy-efficient label management and accreditation; expand the scope of mandatory energy labeling; explore how to introduce “carbon footprint labels” in a phased manner, carry out low carbon product accreditation, and guide consumption behavior to become “lower carbon”. Third, strictly implement energy efficiency standards and raise access of energy intensive sectors; carry out carbon-reduction assessment for new and expansion/rehabilitation industrial projects and energy efficiency evaluation for new public buildings and commercial housing upon completion. For those projects and buildings that do not meet mandatory standards, project completion approval should be suspended so as to control emissions from the source. Establish energy efficiency monitoring and verification processes and certification policies. Fourth, enhance monitoring, indicator and evaluation systems of energy saving and pollution reduction, strengthen accountability of energy saving targets, and improve incentive-disincentive mechanisms.

RECOMMENDATION 4. Develop a green trade and investment system, establish green supply chains, and champion a goal-oriented green transformative strategy for China’s trade and investment.

Investment and trade have been the driving force behind China’s economic development, as well as many environmental concerns. In an increasingly globalized world, investment and trade have a profound impact on sustainable development and green transformation of China and the world. China needs to be more prudent with the current and potential environmental impacts from investment and trade activities.

Green transformative change of investment and trade requires rules that are applicable across all types of enterprises, whether under FDI, China's domestic investment, or ODI involving Chinese firms operating abroad. Green investment should provide guidance, often with the participation of the banks and other institutions in the financial sector. Green trade will be a driver with both push and pull aspects, and sometimes environmental aspects of trade will be driven strongly by factors outside of China as well as domestic sustainable consumption concerns.. Thus China will have to pay considerably more attention to green supply chains and green government procurement.

1. **Promote an environment-friendly strategy for improving foreign direct investment (FDI) in ways that better serve green transformation in China.**

China's foreign investment policy should be adjusted and improved to encourage more FDI in strategic fields, such as high-tech, environmental protection and other strategic emerging industries. China should implement the "Decision on Accelerating the Development of Strategic Emerging Industries" promulgated by the State Council in October 2010 to attract more FDI in middle and western regions and inland cities in an orderly and sustainable manner. The current Catalogue of Industrial Guidance for Foreign Investment should be updated to encourage green investment in China. By drawing upon the advanced experiences of FDI source countries, especially those with high environmental standards, the FDI legal framework of China could be further amended and improved.

2. **Promote sustainable outbound direct investment (ODI) and share the fruits of green development.**

China should make good use of the China-Africa Summit, China-ASEAN Summit and other mechanisms to carry out policy dialogue and cooperation on sustainable investment, and strengthen sustainability and security of Chinese investment in foreign countries. A complete evaluation and supervision system should be set up so that the government can keep an eye on the operations of enterprises that invest overseas, including both state-owned and Chinese private enterprises of all sizes and types. China should promote capacity building for sustainable investment and strengthen mutual trust between Chinese investors and the public and private institutions, civil organizations and the people in recipient countries.

A new Guideline on Corporate Social Responsibility (CSR) should be introduced to make the Chinese CSR standards consistent with internationally recognized ones. Chinese and foreign companies should report their performance openly and transparently using approaches such as the UN Global Compact Communication on Progress, or the Global Reporting Initiative reporting guidelines.

China should also create, together with the host country, Sustainable Development Funding financial instruments to mitigate the impact of China's natural resource

procurement activities, particularly when they result in the depletion of non-renewable mineral, oil and gas, natural forest, and other biological resources, either domestically or abroad. There are a number of such funds in the world, some of which have served to offer alternative development options to the populations affected by these extractive activities. Others have created a savings account instrument to be used by future generations, when these resources will have been depleted. Such funds must be structured jointly between the host state, its local community, and the investor with strong stakeholder participation. They can be capitalized through payment of royalties levied on the resources that are being explored and should be managed by third-party professionals as independent trust accounts, which must be accountable to the public and other related stakeholders, not just to the host government.

A number of successful examples may be useful models, such as the Norwegian Investment Fund for Developing Countries (Norfund) or the Alaska Permanent Fund Corporation (APFC). In most cases, these funds help improve the image of the investor as they are managed in full transparency and are subject to the interests of the community. Generally, revenues and dividends should be used to: diversify the economy of communities exposed to resource depletion; finance poverty reduction; and provide housing and education, improved medical services, promote environmental protection and green transformation, and other aspects of human and social development.

3. **Address the negative perceptions sometimes associated with China's ODI and trading activities abroad.**

There are many possible reasons for such perceptions abroad, including some rooted in substance and others in a variety of motivations. While some of this negative image and perception can be countered by better information and communication campaigns, true success will require carefully integrated strategies on the part of government working with Chinese enterprises. It will be necessary to involve also governmental agencies as well as China's embassies, educational institutions, business associations, and non-governmental organizations. China can learn from precedents set by other countries that faced negative image problems and prejudices with concerted and long term, well planned, well funded proactive initiatives that addressed the perception issues and corrected the image problems. The good news of China's green transformation needs to be transmitted and disseminated in a global information effort, preferably managed and carried out by an independent, "honest broker" type of institution with high and impeccable credibility.

4. **Promote sustainable development of green trade and investment through greater participation in international rules setting.**

China should expand import of sustainably produced products, cut tariffs to encourage import of energy intensive products while reducing domestic production of such products so as to support industrial upgrading. The government should provide

guidance and incentives to stimulate export of products with low energy consumption and environmental damage so that the country's export mix can be greener. Export tax rebate on dirty products (energy intensive, heavily polluting and resource guzzling) should be abolished, and an additional export tax should be imposed on such products. These policies should be consistent and not affected by economic and trade fluctuations to ensure effective implementation.

China should play a more active role in the setting of green rules for international, regional and bilateral trade and investment and in this way to help realize green transformation of itself and the world at large. China should promote the implementation at home and abroad of international environmental agreements that China has signed, and work to include environmental and social clauses in bilateral and regional investment and trade agreements currently under negotiation. China should also encourage enterprises and research institutes to carry out studies on international best practices and their dissemination, and promote 'south-south-north" cooperation under current international frameworks.

5. Set up and improve green supply chains in China and support green transformation of the whole production system by promoting green consumption and fostering green market.

The government can play an enabling role in the development and management of green supply chains. Green government procurement action should be strengthened and made more prominent especially at local levels via the Government Procurement Law. A government procurement platform should be created, quotas for green procurement should be introduced and general guidelines on green government procurement should be developed based on proper green certification of products. An environmental information network of the products procured by the government should be developed and publicized. Green procurement should take place at all levels of government and in public institutions such as universities and hospitals.

China should develop a Regulation on Green Supply Chain Management and Sector Evaluation Standards of Green Supply Chain, and develop an accreditation system for green supply chains based in part on existing environmental accreditation processes. Meanwhile, "promotion centers" of green supply chain should be established to strengthen collaboration among industries, the government, NGOs and other external groups. These promotion centers could be first created in areas with, a good economic basis such as Tianjin Binhai New Area, Yangtze River Delta Region and Pearl River Delta Region, and then expanded into other areas.

The above measures will help establish a green supply chain management system led by the government, implemented by enterprises, evaluated by the market and judged by the public. This system can further support the development of sustainable production and consumption.

RECOMMENDATION 5. Develop a strategy and national action plan for managing mercury use in China in order to reduce impacts on public health and on the environment.

As industrialization accelerates in China, pollution from mercury and other heavy metals has caused serious social, environmental and public health problems. The Chinese government is placing great importance on this issue and promulgated the 12th Five-Year Plan on Comprehensive Prevention and Treatment of Heavy Metals Pollution. China should take prompt action, remove obstacles and ensure implementation of the plan to achieve its goals and greatly reduce risks to human health. In particular, it is necessary to pay high attention to mercury pollution.

Mercury is not only an issue of on-going concern to the international community, but is also one of importance to China. It is released into the atmosphere during coal burning, non-ferrous metal smelting and cement. It is used in large quantities as a catalyst in the production of polyvinyl chloride (PVC), creating demands for the mining of mercury and risks of environmental releases. It is a component in compact and regular fluorescent light bulbs and in some types of batteries. It is still widely used in dentistry and medical instruments such as thermometers. China remains the world's largest mercury producer, consumer, and emitter, and the country's total mercury use is more than 50% of global demand. China is one of only two nations still mining mercury.

The Government of China should develop a strategy and national action plan for mercury management in China, and make this plan compatible with the national plan on heavy metal pollution. The strategy and action plan is important to strengthen technical guidance, risk control, environmental supervision and reductions of pollution by mercury related industries. It is estimated that stringent but feasible emission targets could result in very significant reductions of emissions from coal burning industrial boilers and power plants, non-ferrous metal smelting and cement production. Priority should be assigned to achieving mercury-free PVC production processes. Recycling of mercury from industrial sources and mercury-added products should be strengthened to create a closed-loop system that would eliminate the need for the mining of mercury.

1. Develop a national strategy and action plan on mercury management.

The national strategy and action plan on mercury management should aim to reduce health and environmental damage by mercury and cut China's contribution to global mercury emissions. The strategy and action plan should be in line with the 12th Five-Year Plan on Comprehensive Prevention and Treatment of Heavy Metals Pollution (2011-2015), and identify short and long term mercury reduction targets for

the period of 2011-2015 and beyond. Effective measures should be taken to reduce and prevent negative impacts of mercury on human health and the environment. A mandatory, facility-based and publicly accessible inventory of mercury releases and transfers should be developed to support decision making by the government, the relevant industries and communities. The strategy and action plan should be integrated into the strategies of other sectors, help improve environmental performance of mercury related industries and communities, promote clean production and realize green transformation.

2. Strengthen technical support, risk control, environmental supervision and pollution reduction of mercury related industries.

China should strengthen its legal and regulatory system for mercury management, strengthen its capacity for the enforcement of relevant laws, and carry out priority-based management of mercury with effective implementation across the country. Market-based instruments should be used as important supplements to mandatory measures and targets to reduce releases and uses of mercury and to improve the management of mercury-containing waste. Scientific and technological needs should be identified to help the government make informed decisions on mercury risk control. China should promote structural adjustment of mercury related industries and communities by developing strategies with the relevant sectors to ensure that the restructuring harmonizes with market demand, urban and rural layout, regional characteristics and other essential factors. More weight should be given to a structural approach to reducing pollution (i.e., through industrial restructuring) while continuing projects to reduce and manage pollution (i.e., reducing pollution through specific treatment projects and improved management).

In order to reduce mercury emissions, mercury use should be forbidden or severely restricted in the relevant industries such as chemicals (including the production of PVC plastic), lighting, battery, medical care and pharmaceuticals. Clean production techniques and technology should be promoted and pilot programs launched to explore the best feasible technologies and environmental management practices. Where appropriate, mercury pollution prevention and treatment technologies from abroad should be introduced and commercialized within China. There is a need to support research and development of low-mercury and mercury-free alternative products and processes, gradually reaching the goal of low-mercury and mercury-free industries and realize mercury control at the source.

Measures that should be taken to protect Chinese citizens from possible exposure to mercury include: strengthening of occupational health and safety procedures for workers; rigorous management of contaminated sites, hazardous wastes and mine tailings; enhanced monitoring for mercury in selected foods; and the provision of appropriate information to the general public and to populations that may be at risk.