

CLIMATE CHANGE ASSESSMENT (SUMMARY)

A. Overview

1. The People's Republic of China's (PRC's) environmental challenges are of such scope and seriousness that transformational responses are needed. During the 11th and 12th Five-Year Plan (11th plan and 12th plan), some positive results have been achieved in industrial restructuring, energy conservation and emission intensity reductions. However, climate change remains a major concern, with causes and effects surpassing national boundaries. The PRC has been an active participant in international and bilateral negotiations on climate change, reflecting the PRC's large economy (resulting in the PRC becoming the largest total emitter of greenhouse gases (GHGs) globally, although per capita emissions remain well below OECD averages), but also its exposure to climate change risks.
2. The importance of the mitigation issue in the PRC can be illustrated with some key numbers. The PRC emitted a total of 10.73 billion tons of carbon dioxide equivalent (tCO₂e) of GHG emissions in 2010, accounting for 23.8% of the global total. Of the total emissions, 8.29 billion tCO₂e are in the form of carbon dioxide (CO₂), 1.64 billion tCO₂e are methane (CH₄) emissions, and 0.80 billion tCO₂e are emissions of other GHGs.¹
3. The PRC is also exposed to significant climate change risks. Climate change projections for 2100 indicate that temperatures are expected to increase by up to 4.5 degrees centigrade (°C) in the north and west, and by up to around 3°C in the southeast PRC from 1960 to 1990 averages. Increases in precipitation of up to 20% in the northeast are projected, with the southeast receiving minimal or no increase. The consistency between climate models is extremely high for temperature; however, model projections are highly variable for precipitation.²
4. The main economic consequences of climate change in the PRC are reduced agricultural production and damages to infrastructure. The average total annual cost of all disasters alone (excluding crop failures due to lack of data available) is approximately CNY517.08 billion. Of the 120 million hectares of agricultural land, the average number of hectares affected by crop failure due to climate-related disasters such as severe storms, droughts, floods, subsidence, and landslides is approximately 39.17 million hectares.³ Projections suggest that the cost of climate proofing infrastructure in the PRC will be \$11 billion per year up to 2050, however, with a large degree of uncertainty.⁴ This figure may in any case be indicative for the amounts that may be required for adaptation.
5. Climate change is closely linked to air pollution, because the main cause of GHG emissions, the use of coal for energy purposes, is also the main cause for the emission of key air pollutants such as fine particulates, nitrogen oxide, sulfur oxide, and mercury. Solutions to reduce GHG emissions therefore also tend to reduce air pollution. However correlation is not 100% perfect, because of the existence of some technological options that reduce GHG emissions without lowering emissions of other pollutants. Reducing GHG emissions also contributes to other PRC government objectives, such as diversification of the energy mix with a

¹ World Development Indicators http://data.worldbank.org/topic/climate-change#tp_wdi accessed on 22 October 2015.

² Met Office UK. 2012. *Climate: Observations, Projections, and Impacts, China*. Devon, U.K. Available at: <http://www.metoffice.gov.uk/media/pdf/4/p/China.pdf>

³ Yeager, C. C. Rogers, H. Milner, and C. Losenno (unpublished), Addressing Climate Change Risks, Disasters and Adaptation in the People's Republic of China. Mandaluyong City, Philippines.

⁴ ADB. 2013. *Economics of Climate Change in East Asia*. Manila.

reduced reliance on coal and increased use of liquid and gaseous fossil fuels, nuclear energy and renewable energy.

6. Realizing the seriousness of the climate change issues and the synergies with other government objectives, the PRC government has a long-standing and ambitious policy related to climate change. For example, the 12th Plan called for a reduction by 2015 in energy intensity per unit of GDP of 16% and in CO₂ emissions per unit of GDP by 17%.

7. The PRC's most recent policies on climate change are contained in the U.S.-China Joint Announcement on Climate Change and the PRC's intended nationally determined contribution (INDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) on 30 June 2015.

B. Government's Strategy

8. The PRC's government strategy related to climate change covers both adaptation and mitigation in considerable detail, as elaborated below.

9. The PRC first incorporated specific adaptation tasks into the national agenda with its 2007 National Climate Change Program. The 12th Five-Year Plan for National Economic and Social Development of the People's Republic of China issued in 2010 explicitly requests "taking climate change factors into full consideration when planning and influencing industrial sector composition, basic facilities and large scale projects; improving the adaptation to climate change in certain key sectors (e.g., agriculture, forestry and water resources) and certain areas (e.g., by the coast and fragile ecosystems)." Some major adaptation-related policies and laws have been enacted and applied in such areas as agriculture, forestry, water resources, marine affairs, health, housing, and urban and rural construction.

10. In 2013, the PRC developed the National Adaptation Strategy. This strategy indicates deficiencies in the PRC's ability to cope with climate change and establishes clear areas of action, ranging from infrastructure to agriculture; from water resources to human health; and from coastal zones to forests and ecosystem protection.

11. On mitigation, the PRC has used a comprehensive policy mix, including policies that are also motivated by concerns unrelated to climate change: (i) a combination of targets related to energy and carbon intensity targets, (ii) low carbon pilots at the province and city level, (iii) measures to promote energy efficiency, such as the Top 1,000 Enterprises Energy Conservation Action Program, the 10,000 Enterprises Energy Conservation Low Carbon Action Program, and mandatory closures of small power plants while building larger, more efficient units; (iv) increase in the use of alternative energy resources; (v) the promotion of new and emerging industries; and (vi) Establishment of Emission Trading Scheme (ETS) through pilot cities and provinces.

12. The government strategy on climate change is also reflected in the Memorandum of Understanding (MOU) signed between the National Development and Reform Commission (NDRC) and ADB on 8 January 2014, which among others foresees cooperation on low carbon pilots, carbon capture, utilization and storage (CCUS) pilots, adaptation pilots, establishment of a national emission trading system, regional cooperation in Northeast Asia and South-South cooperation, innovative financing schemes including piloting climate technology investment finance.

13. On 12 November 2014, the U.S.-China Joint Announcement on Climate Change stated the PRC's intention that carbon dioxide emissions will peak by 2030. The PRC will make best efforts to peak CO₂ emissions earlier, which was reaffirmed in the PRC's INDC submitted to the UNFCCC, mainly through energy efficiency and low-carbon energy alternative measures.

14. The PRC's most recent policies and action plans on climate change are contained in "China's Policies and Actions for Addressing Climate Change" (2014), while the action plan until 2020 is laid out in "The National Plan on Climate Change (2014-2020)". Key directions are:

- Mitigation, with main thrusts adjusting industrial structure; energy conservation and improving energy efficiency; optimizing the energy structure; controlling emission from non-energy activity; increasing carbon sink through forestry and land use; and developing low carbon pilots at province, city, and industrial park level.
- Adaptation, with main thrusts on infrastructure; agriculture; water resources; coastal areas; ecosystems; and public health.
- Capability building, with main thrusts on promoting relevant legislation on climate change; strengthening major strategic studies and plan formulation; improving relevant policy systems for climate change; strengthening scientific support for addressing climate change; strengthen the enforcement of policies and measures implementation, and steadily setting up relevant statistics and accounting systems.
- Engaging the whole society to act on climate change.
- Promoting international cooperation.
- Proactively promoting the multilateral climate change negotiation process.

15. The 12th Plan stated that the PRC intends to gradually establish a national carbon trading system. Subsequently, NDRC formally announced pilot emission trading systems in 5 cities and 2 provinces, with the objective to use the market mechanism to implement GHG emission reductions at lower costs. The next step in the use of market mechanisms to reduce GHG emissions is to build up a national emission trading system from 2017, on the basis of the experiences with the emission trading pilots.

C. ADB Strategy on Climate Change

16. The Asian Development Bank (ADB) will step up its support to the Government in its effort to mitigate climate change towards peaking GHG emissions by 2030. ADB will work with the Government to implement the MOU to Address Climate Change with NDRC through technical assistance support.

17. On adaptation, an important consideration is that climate related disasters would have the potential of pushing many people into poverty, and additionally could potentially threaten the benefits from economic development. The remaining poverty in the PRC is concentrated in a few areas where the natural resource base is already quite degraded. Climate change further threatens these areas, while the human reactions to ecological crises may further exacerbate the consequences of climate change. Therefore, supporting the PRC's adaptation agenda, especially in the ecologically fragile areas of western China, is fully in line with the ADB mandate. Moreover, the PRC has been developing a balanced mitigation and adaptation agenda, and has requested support on both parts of the agenda.

18. ADB will support climate change adaptation by (i) providing best practices for the inclusion of climate proofing in planning and investment approval processes; (ii) supporting

climate smart agriculture and forestry through technical assistance; (iii) supporting and financing climate change adaptation pilots; (iv) supporting disaster risk management (related to climate change and non-climate related risks); and (v) promoting climate and other disasters risk resilience. In addition, ADB can draw on its own experiences in climate proofing investments to support the PRC. ADB has concrete and specific experiences and expertise that it can share with the PRC to help improve adaptation practices. It should be noted that the adaptation actions in the PRC supported by ADB can also play a demonstration role for other developing member countries.

19. On the mitigation of GHG emissions, ADB could support the national key climate change strategies, programs and initiatives (such as Climate Change Action Plan (2014-2020)), pilot cities for peaking GHG emissions, and low carbon programs, and focus on those sectors with intensive energy consumption and large potentials of GHG emission reductions, through promoting transformational development and demonstration projects.

20. In the energy sector, ADB will assist the government's efforts to significantly improve energy efficiency and promote the application of the latest renewable energy technologies. As part of these efforts, ADB will promote the development of new financing instruments, including carbon financing and energy savings insurance to boost the country's capacity for GHG mitigation efforts.

21. In the industrial sector, ADB will support green, clean and energy efficient development through sectoral structural transformation, such as promoting high value added and low polluting industries, financing technology upgrades and retrofits and phasing out obsolete technologies and inefficient industrial units.

22. In the transportation sector, ADB will promote low-carbon transport, which will involve development of (i) urban public transport with multimodal hubs and related logistical services; (ii) inland waterways as an integral part of transport; and (iii) greater efficiency of railway system through containerization and energy conservation. More effective multimodal transport systems and better transport and trade logistics will also be supported.

23. In the urban sector, ADB will contribute to making the PRC's urban areas more livable by encouraging cleaner modes of urbanization. Support will be provided to improve urban planning and building energy efficiency, combat air pollution, address solid waste, encourage market-based systems for water pollution control, and help clean up selected cities along major river basins.

24. In the agricultural and natural resource sector, ADB will contribute to the PRC's efforts in the methane recovery and utilization caused by rural and agricultural wastes, and the sustainable forestry development with net CO₂ sink benefits.

25. On the promotion of climate technologies and capacity building, ADB will cooperate with the PRC government, through piloting cases, introducing new policy concepts, institutionalizing modern policy and project evaluation systems, test new policy approaches, introducing new and innovative climate technologies, and developing financing instruments, with cofinancing from climate finance sources, to support the uptake of new and existing advanced climate technologies, especially by those market segments that are constrained in their access to finance (such as small and medium sized enterprises).