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ABSTRACT

This paper provides a summary of the governance of environmental mobility in China. It identifies regional and national norms and processes as they relate to the mostly internal migration in China that is in some way connected with environmental change. Environmental mobility concerning China is found to be overwhelmingly domestic in nature, rather than cross-border. Multiple slow- and rapid-onset environmental changes, including disasters, climate change, desertification, sea-level rise and mountain and water hazards, have influenced human mobility in China. Urbanisation has also been an important factor. There is a broad range of regional norms and processes bearing on environmental mobility in China's region. These include the UN climate regime, the desertification convention and "soft law" concerning disaster risk reduction. However, domestic policies and laws play a much greater role in the actual governance of environmental mobility in China. These include the broad "ecological migration" policy and specific rules governing resettlement for water conservation and power construction, desertification, and disaster risk reduction and response. The future prospects concerning environmental mobility in China will be influenced by the country's urbanization and household registration policy, by the effectiveness of climate adaptation measures in the face of sea-level rise and related hazards and, perhaps most importantly, by the ability of China and other major greenhouse gas emitters to rapidly reduce emissions and avoid the worst climate scenarios.

KEY FINDINGS

- Environmental mobility is a major and complex phenomenon in China and can be expected to remain so, necessitating ongoing policy and legal responses.
- While China has become an increasingly active participant in a variety of international processes relevant to environmental mobility, its internal governance of environmental mobility is only marginally influenced by international norms and processes.
- The "ecological migration" policy is the long-standing centrepiece of China's approach to environmental mobility, although its environmental and social outcomes are contested.
- The example of China indicates the salience of urbanization policies and urban planning and governance (especially regarding climate adaptation) to environmental mobility outcomes.

RECOMMENDATIONS

1. International partners should seek further engagement with China on environmental mobility norms and processes.
2. A comprehensive study of the resettlement processes and outcomes related to "ecological migration" should be undertaken.
3. China should address environmental mobility in its 2021-2025 five-year plan.
4. China should mainstream environmental vulnerability assessment into the planning of migration, displacement and resettlement outcomes.
5. China should implement the UN Guiding Principles on Internal Displacement.

1. INTRODUCTION

The paper is structured as follows. Section 2 provides an overview of human mobility in China due to environmental events. China is subject to a broad range of mobility pressures, from (usually temporary) displacement due to extreme weather events to long-term migration due to desertification. Section 3 discusses existing regional norms and processes bearing on environmental mobility. These include processes under international environmental agreements, as well as non-treaty processes concerning disaster risk reduction. Section 4 discusses domestic conditions and state-based norms of environmental mobility. The key norm is the “ecological migration” resettlement policy, while specific norms exist also for hydropower resettlement, desertification management and disaster risk reduction. Section 5 concludes by examining the prospects for future development of the governance of environmental mobility in China.

Regarding the terms used in this paper, there are widely acknowledged difficulties with defining environmental mobility, climate migration and the variety of other terms used (IOM, 2019; Asian Development Bank, 2012; Carlarne, 2009). Common forms of environmental mobility include temporary or permanent displacement (in response to either rapid- or slow-onset events),¹ labour or household migration, and resettlement (compulsory or voluntary) (Hoermann et al., 2011). The processes referred to as “planned relocation”² by the United Nations High Commissioner for Refugees and collaborating institutions are generally labelled “resettlement” in Chinese laws and policy processes. As this paper is concerned primarily with environmental mobility in China, it will use the term favoured in China. These movements exist on “a continuum from completely voluntary movements to completely forced migrations” (IPCC, 2012, p. 300). The definition of the International Organization for Migration (IOM) is suitably broad and is adopted here:

Environmental migrants are persons or groups of persons who, predominantly for reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad (IOM, n.d.).

The relationship between climate change and human mobility is also complex. While migration can be “a form of adaptation”³ (and a “risk management strategy” (Adger et al., 2014)), displacement is more likely “a manifestation of vulnerability” to climate change (Adger et al., 2018). Finally, it should be observed that environmental change may often be an exacerbating factor contributing to migration decisions, but it is usually not the main factor. As the Asian Development Bank observed regarding Asia-Pacific nations, “environmental change is usually not the only, or even most important, concern for migration...It usually interacts with a range of other economic, social, and demographic factors” (Asian Development Bank, 2012).

¹ The relationship between the two categories is not clear-cut (IDMC, 2018).

² The Guidance on Protecting People From Disasters and Environmental Change through Planned Relocation of the UNHCR defines ‘planned relocation’ as ‘a planned process in which persons or groups of persons move or are assisted to move away from their homes or places of temporary residence, are settled in a new location, and provided with the conditions for rebuilding their lives. Planned Relocation is carried out under the authority of the State, takes place within national borders, and is undertaken to protect people from risks and impacts related to disasters and environmental change, including the effects of climate change. Such Planned Relocation may be carried out at the individual, household, and/or community levels’ (2015, p. 5).

³ Although, as Wilmsen and Rogers rightly caution, ‘it is not sufficient to repackage existing resettlement practice as climate change adaptation’ (Wilmsen & Rogers, 2019, p. 121).



2. HUMAN MOBILITY DUE TO ENVIRONMENTAL EVENTS IN CHINA

2.1 CHINA AND MIGRATION

China has long been a country of net emigration. Alongside countries such as Mexico and India, China is one of the top countries of origin for migration into OECD countries (Qin & Zhu, 2018). Overall, in 2019 there were 10.7 million Chinese migrants abroad, a figure exceeded only by immigrants from India and Mexico (IOM, 2019). The scale of China's outbound migration is reflected in its status as the country that receives the joint-highest amount of remittances, equal with India at \$67 billion (*ibid*). Notwithstanding this ongoing preponderance of outbound migration, in recent years the Chinese government has attempted to attract more skilled immigrants (as well as the repatriation of “sea turtles” or skilled Chinese abroad). In 2018, China established a State Immigration Administration and entered into a bilateral agreement with the Philippines to permit 300,000 Filipino workers to come to China (*ibid*). Before the Covid-19 pandemic, China allowed visa-free travel from very few countries in its region (Brunei, Japan and Singapore) (Ministry of Foreign Affairs, n.d.). This has meant that visa-free travel provisions have not been available as a measure of cross-border environmental mobility, in contrast to other regions (see e.g., Francis, 2021).

Despite China's high numbers concerning international migration, China's experience of environmental mobility is overwhelmingly a tale of internal migration, displacement and resettlement. Environmental mobility phenomena overlay and contribute to ongoing (if changing) movements of internal migration in China. Beginning in the 1980s and enabled by the economic “reform and opening” policy of then-paramount leader Deng Xiaoping, hundreds of millions of Chinese migrated from rural areas to cities and towns, and from inland to coastal regions, in search of jobs. Environmental stressors such as land degradation and resource scarcity have been important contributors to this pattern of migration (Asian Development Bank, 2012).⁴ This massive internal migration, “one of the largest human migrations in history” (IOM, 2019, p. 81), was enabled by national and local policy reforms such as the introduction of temporary residence certificates (Chan & Zhang, 1999).

2.2 ENVIRONMENTAL MOBILITY IN CHINA'S REGION

Environmental mobility in China is indicative of broader developments in China's region, the Asia-Pacific. The region as a whole has seen dramatic growth in both the “level and complexity of population mobility,” associated with rapid urbanisation (Asian Development Bank, 2012). Environmental mobility is predicted to follow existing “migration channels” from decades of economic migration, and to be mostly internal rather than international (*ibid*). The Asian Development Bank has predicted that the Asia-Pacific “will be the region where climate-induced migration will be the most significant, and needs to be addressed urgently,” because it is the most populous region, the region that suffers the most disasters and the region that will be most affected by climate change (*ibid*). Climate change is already a major driver of “environmental disruptions” in the region, in particular through sea-level rise, cyclones and typhoons, riparian flooding and water stress (*ibid*). In 2014 the Working Group 2 of the Intergovernmental Panel on Climate Change (IPCC), which is concerned with climate adaptation, observed with high confidence that “[c]oastal and marine systems in Asia are under increasing stress from both climatic and non-climatic drivers,” “[m]ultiple stresses caused by rapid urbanization, industrialization, and economic development will be compounded by climate change,” and “[e]xtreme climate events” will have “an increasing impact on human health, security, livelihoods, and poverty, with the type and magnitude of impact varying across Asia” (Hijioka et al, 2014, pp. 1330-1331).

In Asia, the impacts of climate change have produced multiple migration outcomes. The IPCC's Working Group 2 summarised these as including, *inter alia*: floods and droughts as “predominant” causes of internal displacement; rights issues when migrants return to vulnerable areas; an increase in remittances, though with a “negligible effect on the poverty rate”; “[f]orced migration” resulting from “adaptation options such as construction of dams”; and the “managed retreat” of coastal communities menaced by sea-level rise (*ibid*, p. 1353). The ADB also noted, in 2012, that “policy responses and normative frameworks

⁴ For example, a study of emigration from the Hindu Kush–Himalaya regions of China, India, Nepal and Pakistan found that 80 per cent of migrant households considered environmental hazards to be ‘an influence on the decision to migrate for work’ (The Government Office for Science, London, 2011).

that address climate-induced migration remain scattered and highly inadequate” in the region, a fact it partly attributed to inadequate data and understanding of climate-induced migration (Asian Development Bank, 2012).

2.3 OVERVIEW OF ENVIRONMENTAL MOBILITY IN CHINA

China is exposed to a variety of environmental impacts that act as push factors for human mobility. Some of these environmental impacts are expected to intensify with ongoing climate change. The salient environmental challenges are different in different parts of China’s vast territory. They can be summarised as: sea-level rise, flooding, inundation and cyclones in low-lying coastal zones; flooding in densely populated river areas, notably the Yangtze, Yellow and Pearl river basins; landslides in the Himalayas and similar terrains, resulting from glacier and permafrost melting; and drought and desertification in northern China (*ibid*). Alongside these environmental impacts, China’s ongoing urbanisation is a further factor that affects environmental mobility. It has been estimated that most climate-related migration in China originates in the western regions of the country, due to their combination of climate vulnerability and comparatively low living standards (Zheng, 2013). The ADB has warned that much of China’s population lives in “hot spots” affected by these environmental stressors; it expects to see further migration to China’s megacities, migration from “ecologically fragile” northern and western regions, and greater international migration to OECD countries with existing Chinese communities (Asian Development Bank, 2012). The remainder of this section briefly discusses each of the environmental impacts and its relationship to human mobility.

2.4 DISASTERS

Globally, disasters – such as typhoons, floods and earthquakes – are responsible worldwide for the vast majority of new displacement of people each year (IOM, 2019). Of the 33.4 million people newly displaced in 2019, an estimated 24.9 million were displaced by disasters, while 8.5 million were displaced by conflict and violence (IDMC, 2020). Although many people displaced by disasters are subject to only short-term evacuation and are able to return home relatively soon (Chen, 2009), the International Federation of Red Cross and Red Crescent Societies has warned that such evacuation “may still take a toll on people’s physical and psychological well-being” (IFRC, 2018, pp. 11-12). A minority face longer-term displacement.⁵ The International Displacement Monitoring Centre has estimated that of the 5.1 million people who were internally displaced by disasters at the end of 2019, around ten per cent had been displaced in earlier years (IDMC, 2020). IPCC Working Group 2 has noted that “[s]tructural economic causes of social vulnerability may determine whether temporary displacement turns into permanent migration” (Adger et al., 2014).

The greatest concentration of disaster displacements occurs in South Asia, East Asia and the Pacific, due to occurrence of typhoons, floods, tsunamis and other events in these regions (IDMC, 2020). China suffered 4,034,000 disaster displacements in 2019 – a figure exceeded only by India, Bangladesh and the Philippines (*ibid*). A 2014 study found that in less than six years, China had suffered eight disasters in which over one million people had been displaced and another 34 disasters which each displaced at least 100,000 people (Lavell & Ginnetti, 2015). The leading causes of displacement in China in 2019 were Typhoon Lekima (2,097,000 new displacements) and the flood season (1,298,000). At the end of 2019, 220,000 people remained displaced by disaster in China (IDMC, 2020). Due to its high level of urbanisation, most of China’s displacement due to floods and storms occurs in urban areas along its eastern coast (Lavell & Ginnetti, 2015). Inadequate urban planning has proved a risk factor (IDMC, 2020).

2.5 CLIMATE CHANGE

Climate change is widely recognised as a major and growing push factor in environmental mobility, because it exacerbates the frequency and/or severity of the environmental challenges that contribute to migration, displacement or resettlement. The IPCC has stated that “[o]utmigration in agricultural-dependent communities is positively and statistically significantly associated with global temperature” (Hoegh-Guldberg et al., 2018). In Asia and the Pacific, salient climate change impacts include: increased flooding; sea-level rise; hydrological change in highly populated river basins; changes in precipitation patterns and temperatures, reducing the yield of agricultural land; increased droughts; increased “heat-related morbidity and mortality”; changes in incidence and distribution of “climate-sensitive infectious diseases”; and ocean acidification (ECOSOC, 2017).

⁵ However, with climate change projected to increase the ranks of the long-term displaced, it has been argued that ‘that new governance modes are needed to bridge gaps in protection and assistance for climate change migrants who cannot return after disasters, and people made mobile because of longer-term environmental change’ (Ali, 2016, p. 32).

Each of these effects is being felt in China. Major agricultural yield reduction, for example, has been recorded across vast swathes of north and southwest China. The Loess (“yellow earth”) Plateau in north China has been particularly hard-hit, with the Chinese government reporting yield reduction of one crop across ninety per cent of the arable land, and yield reduction of two crops on 55 per cent of the territory (The People’s Republic of China, 2018). The impact on rural livelihoods and food production is compounded by the proliferation of crop pests, spreading from 43 million hectares in 1961 to 246 million hectares in 2010, and crop diseases, which spread from 15 million hectares to 124 million hectares within the same period (*ibid*). The Chinese government expects future climate change to “have broad impacts in China, with agriculture, water resources, ecosystems, coastal and offshore ecosystems, and human health being particularly vulnerable” (*ibid*, p. 74). Climatic changes can have different impacts in different geographies. For example, the weakening of the summer monsoon has worsened drought in north China but resulted in flooding of the Yangtze River (Christensen et al., 2013).

The environmental problems exacerbated by climate change each have complex relationships with human mobility, as discussed above. In recent years, there has been considerable research and policy work on the potential for migration itself to contribute to climate adaptation. For example, the World Bank recently stated “[t]here is an urgent need for countries to integrate climate migration into national development plans,” and encouraged states to engage with the private sector, civil society and international organisations for this purpose (Regaud et al., 2018). Research concerning communities in rural China indicates that having the option of migration strengthens the resilience of households to climate change, even if that option is not exercised (Tebboth et al., 2019).⁶ Migration enables not just relocation but also the sending of remittances to those who are unwilling or unable to relocate (McLeman, 2019). For these reasons, McLeman has cautioned: “Take migration options away from people and their adaptive capacity may decline” (*ibid*).

2.6 DESERTIFICATION

The UN Convention to Combat Desertification defines desertification as “land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities” (United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994). Desertification can result from “alterations in temperature and precipitation patterns; soil erosion caused by wind and/or water; the deterioration of soil properties; and the long-term loss of natural vegetation” (UNFCCC, 2012). The UNFCCC Secretariat has warned that desertification can result in loss of livelihoods and population displacement, potentially with “political ramifications and conflict implications” (*ibid*).

Northern China is increasingly affected by a form of desertification known as aeolian desertification, i.e., “land degradation characterized by wind erosion” (Wang, 2014, p. 34). Wang has estimated that aeolian desertification, which by 2010 had claimed 0.376 million km² of land, up from 0.137 million km² in 1955, “threatens...nearly 300 million residents of Northern China” (*ibid*, p. 35). While there are natural causes of aeolian desertification, including a dry climate and strong and frequent wind, the main causes are anthropogenic. Aeolian desertification in northern China has been attributed to overcutting of wood for fuel (31.8 per cent), overgrazing (28.3 per cent), land overcultivation (25.4 per cent) and water resources misuse and vegetation destruction for industrial purposes (nine per cent), far exceeding the 5.5 per cent attributed to sand dune encroachment (*ibid*). Energy production from coal is itself a contributor to desertification. It has been reported that 85 per cent of China’s coal reserves are located in northern regions with only 23 per cent of China’s water. Extracting coal and generating electricity has contributing to the draining of these regions’ aquifers (Feng, 2017). Desert encroachment renders large portions of territory uninhabitable, while threatening major northern cities with dust-sand storms (Qi & Wang, 2003). (Kubuqi Desert, in Erdos, has been called “a bowl of sand over Beijing’s head” (Global Times, 2019).) The related phenomenon of drought is also a growing problem in north and southwest China, with a “severe” or worse drought occurring on average once every two years (The People’s Republic of China, 2018). Desertification in China has been projected to worsen into the second half of this century (IPCC, 2012). In response to desertification, Chinese authorities have both encouraged migration and engaged in mandatory resettlement from affected areas (Miao et al. 2015). Policies to enable household adaptation have included housing subsidies, medical insurance, provision of utilities (electricity and water) and

⁶ The study employed the methods of rural appraisal, life history interviews and a survey

agricultural tax exemptions (see e.g., Zhang, 2013). For households that remain in drought-affected areas, there is evidence that the receipt of remittances “improved adaptive capacity” to the changing environment (IOM, 2020, p. 259).

2.7 SEA LEVEL RISE

Sea-level rise is attributed to both ocean thermal expansion and the melting of glaciers and ice sheets. While “global sea level rise” is the average sea level increase, sea level rise can be different in different locations (UNFCCC, 2012). Sea level rise in China in the years since 1980 has averaged 3.3 millimetres per year, exceeding the global average (The People’s Republic of China, 2018). A 2017 literature review of sea-level rise concerning Chinese cities found that ‘anthropogenic geomorphologic changes’ (e.g., land subsidence due to urban construction, riverbed erosion and sand excavation) contributed much more to sea-level rise along the Chinese coast than did eustatic (global) sea-level rise due to climate change (Cheng & Chen, 2017).

China is exceptionally vulnerable to sea level rise, which had multiple negative consequences for coastal communities, including: pollution of freshwater resources due to seawater intrusion; soil salinization, limiting ability to utilise land; coastal erosion, resulting in disasters; and flooding of river estuaries, with the effects on the Yangtze and Pearl river estuaries particularly severe (The People’s Republic of China, 2018). China has both the highest number of people living in low-elevation coastal zones, less than ten metres above sea level (244 million people, compared to 216 million in India and 109 million in Bangladesh) and the highest population located in the “100-year floodplain” (103 million, again followed by India with 63 million (Hauer et al., 2020)). China’s “mega-cities”--such as Guangzhou, located in the Pearl River Delta--are conspicuously vulnerable to sea level rise (Asian Development Bank, 2012). The Chinese government has projected that continued sea level rise will result in a “significantly shorter return period of the average extreme water level in China’s coastal zones,”; for example, by 2050, in Shandong province, extreme water levels previously experienced every century would occur every ten to thirty years (*ibid*).

The relationship between sea level rise and human mobility is complex. Hauer and colleagues have cautioned that “it is only when the costs of increasing exposure to SLR hazards exceed the benefits of coastal environments that migration may occur” (Hauer et al., 2020). In China, the countervailing trend of migration into China’s coastal metropolises, on the front line of sea level rise, shows no sign of abating. A recent study of the economic and social effects of sea-level rise speculated that sea-level rise would “likely drive people to go back to inland regions due to closed business, reduced wages and flooded land in the coastal regions” (Cui et al., 2018, p. 1246). Governments in China as elsewhere face the challenge of weighing the relative costs of coastal defence and planned relocation (The Government Office for Science, London, 2011). For growing coastal cities, adapting to the effects of sea level rise and identifying the needs of vulnerable groups are important policy responses with implications for human mobility (Asian Development Bank, 2012). In China, the homes of an estimated 43 million people could be below the mean higher-water mark by century’s end, under the Representative Concentration Pathway 4.5 (IPCC, n.d.) (millions more are threatened in more pessimistic climate scenarios) (Kulp & Strauss, 2019). However, scholars have identified “limited uptake of adaptation planning” for sea-level rise in China’s delta cities (Cheng & Chen, 2017). The main strategy appears to be the construction of seawalls: “about 60% of the Chinese coastline has been modified and the length of seawalls has increased by over 300% (from 18% to 61% of the total 18,000 km of the China coast) over the past two decades” (Williams et al., 2016, p. 376).

2.8 MOUNTAIN AND WATER HAZARDS

The IPCC’s Working Group 2 concluded that the glaciers are “a diminishing store of water, and the diminution is projected to continue,” creating hazards for local populations through the formation of moraine-dammed glacial lakes (Hijioka et al., 2019, p. 1355).⁷ Glacier melting results in both rapid and slow onset impacts: the former include “erosion, mudslides and flooding, including very dangerous glacial lake outburst floods,” while the latter entail downstream water shortages, potentially resulting in drought (UNFCCC, 2012). The UNFCCC Secretariat has reported “strong evidence” that glaciers are retreating in the eastern Himalayas, which are partly located in southwest China (*ibid*). According to the Chinese government, there has been dramatic and accelerating glacial retreat in China: “about 82% of glaciers in China have been in a state of retreat or disappeared” since the 1960s (The People’s Republic of China, 2018). Drought has recently been identified as a problem in southwest China (*ibid*).

⁷ On the hazard of moraine dam failure, see (Neupane et al., 2019).

There is evidence of migration as a response to water hazards in the Himalayas. A 2011 study of communities in China (Yunnan province), India, Nepal and Pakistan found that households which faced rapid onset hazards were 32 per cent more likely to send “a household member to work elsewhere” than those exposed to slow onset hazards (Hoermann et al., 2011). The same study however found that people whose land had been damaged in flood were less likely to migrate than those with undamaged land. The authors speculated that this could be because the former stayed to repair the damage or received government assistance (*ibid*). Some 92 per cent of migrants moved to urban areas and took various low-paying jobs. The composition of migrants was different in China, where thirty per cent of labour migrants were female, compared to less than five per cent in each of the other countries (*ibid*).

2.9 URBANISATION

China’s still-increasing urbanisation is relevant to environmental mobility in two main ways. First, environmental stressors on rural communities further incentivise net migration to the cities. China’s vast urbanisation (with an estimated 600 cities that did not exist in 1949) has itself been described as an “absorption” strategy for environmental mobility: “In the near future, these new cities may accommodate both climate migrants and people evicted from megaprojects” (Geisler & Currens, 2017, p. 328).

Second, many cities are themselves vulnerable to impacts of climate change and other environmental challenges, leading to mobility within and away from cities. According to a recent analysis of the relationship between city air quality and urban migration, “environmental quality is an important factor affecting urban migration,” in particular because high-skilled and high-income residents have demonstrated willingness and ability to leave cities in response to environmental deterioration (Liu & Xi, 2019). In China, the urban population grew by around 440 million in the three decades to 2013, with half of the growth due to rural-to-urban migration (Chen et al., 2013). Around 60 per cent of China’s people reside in urban areas (IDMC, 2020). Due to sea level rise and other phenomena exacerbated by climate change, many of these cities are exposed to growing environmental hazards. The IPCC has noted that Asia is home to 90 per cent of all people “exposed to tropic cyclones” (Hijioka et al., 2014). Four of the top eight Asian cities ranked by assets exposed to coastal flooding are in China.⁸ Almost half of China’s 32 urban agglomerations are in typhoon-prone areas (Cheng et al., 2019).

Taken together, these two factors mean that climate change is expected to increase rural-to-urban migration into cities themselves vulnerable to climate impacts. The UN predicts that city-bound migration in the region will continue so that by 2050, Asia’s urban population will have increased by 1.4 billion people and that over half of the planet’s population will live in Asia’s cities (*ibid*). The problem, as the ADB has observed, is that:

Cities—and, in particular, mega cities—lack the carrying capacity to accommodate the likely influx of climate-induced migrants. Urban development patterns will need to be rethought so that cities can grow in a more sustainable way and provide adequate services to their populations. Future settlement planning will prove key in reducing vulnerability. Future planning will need to map safe places for communities (Asian Development Bank, 2012).

Policy interventions such as appropriate urban planning, resilient infrastructure development and “portable social benefits” will be important to mitigating the social consequences of environmental hazards in growing coastal cities in China and elsewhere (*ibid*). Rural-to-urban migrants and other disadvantaged urban communities are particularly vulnerable to inadequate management of these challenges (Adger et al., 2018), as “[e]nvironmental health risks are not evenly distributed among the general population” (Chen et al., 2013). For example, research cited by the IPCC indicated that “migrants had less knowledge about typhoon risks in Shanghai” (Adger et al., 2014, p. 768).

Rural-to-urban migration often entails a “complex tradeoff of environmental risks,” as migrants escape some health hazards but are exposed to different ones, notably air pollution (Chen et al., 2013). Exposure to severe air pollution may also affect migration. A recent study found significant increases in Internet searches for international emigration following spikes in air pollution in cities (Qin & Zhu, 2018). Among destinations, the impact was highest for searches for emigration to the United States, and the correlation of pollution and emigration searches is stronger in Beijing than in cities with less severe air pollution, such as Guangzhou and Shenzhen (*ibid*).

⁸ Guangzhou, Shanghai, Tianjin and Hong Kong (*ibid.*).

3. EXISTING REGIONAL NORMS AND PROCESSES

There has been a broad range of processes in the Asia-Pacific region that relate to aspects of environmental mobility. Some of these processes entail normative development, although, in keeping with the preferred method of regional cooperation, there are few binding commitments as between states. There are subregional cooperation processes for South Asia,⁹ South-East Asia¹⁰ and the Pacific¹¹ in which China does not participate and which are therefore beyond the scope of this paper. This section will discuss regional norms and processes that are relevant to environmental mobility in China. It will also discuss global norms and processes that, although not limited in application to the Asia-Pacific, have a high degree of salience to environmental mobility in China. This latter category includes treaty-based processes such as the Cancun Adaptation Framework and the UN Desertification Convention, as well as multiple “soft law” processes related to disaster risk reduction.

3.1 UNFCCC PROCESSES ON CLIMATE ADAPTATION AND HUMAN MOBILITY

The international legal framework for responding to climate change has developed from the 1992 UN Framework Convention on Climate Change (UNFCCC), which entered into force in 1994. Negotiations within the UNFCCC Conference of Parties (COP) also resulted in the adoption of two later treaties, the 1997 Kyoto Protocol (which entered into force in 2005) and the 2015 Paris Agreement (which entered into force in 2016). In its early years, the UNFCCC regime was mostly focused on climate mitigation, with relatively little activity concerning adaptation and no process dedicated to human mobility as an adaptation consideration. This changed following 2007 with the COP’s adoption of the Bali Action Plan, which signalled determination to adopt a post-Kyoto climate agreement that struck a balance between adaptation and mitigation (ultimately resulting in the Paris Agreement).

An important milestone on the road to Paris was the 2010 Cancun conference, which resulted in the creation of new institutions (such as the Green Climate Fund) and the elaboration of new international policies and processes. One such outcome was the COP’s adoption of the Cancun Adaptation Framework, “with the objective of enhancing action on adaptation, including through international cooperation and coherent consideration of matters relating to adaptation under the Convention” (Framework Convention on Climate Change, 2011, Decision 1/CP.16). Under this new framework, the COP invited Parties, *inter alia*, to undertake “[m]easures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at national, regional and international levels” (*ibid*). This framing of human mobility within the context of climate adaptation was novel within multilateral processes and “subtly introduces the thought that *adaptation may require societal transformations in the longer-term*” (Warner et al., 2013).¹² Nevertheless, as ECOSOC has observed, “efforts to address migration through this framework have not received broad support” (2017). The 2010 Cancun conference also resulted in the creation of the Adaptation Committee, which undertakes various functions to promote implementation of adaptation actions (Framework Convention on Climate Change, 2011). The Committee, which has included a Chinese member for around half of its existence, has addressed human mobility in its activities, e.g., organising a technical expert meeting on “[c]limate-induced migration, resilience of small island developing States, and bringing adaptation solutions to people with disabilities” (UNFCCC, 2018).

The COP further developed UNFCCC adaptation work in 2013 by establishing the Warsaw International Mechanism for Loss and Damage. This body is responsible, under the Cancun Adaptation Framework, for addressing “loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change” (Framework Convention on Climate Change, 2014, Decision 2/CP.19). The COP also

⁹ Under both the South Asian Association for Regional Cooperation (SAARC) and UN bodies (see e.g., UNDP, 2012).

¹⁰ Mostly through the Association of Southeast Asian Nations (ASEAN), but see also work under UNESCAP (e.g. UNESCAP, 2017b).

¹¹ These have in the main been capacity-building projects such as the Pacific Climate Change and Migration Project, which was focused on labour mobility, implemented by UNESCAP, ILO and UNDP and funded by the EU (UNESCAP, n.d.). The extreme vulnerability to sea level rise of Pacific islands has also led to attempts to establish environmental mobility norms at international level, including through judicial and UN committee processes (see e.g., *Teitiota v New Zealand*, 2019).

¹² Emphasis original.

established an Executive Committee to guide the functions of the new mechanism (*ibid*). Two years later, at the Paris conference, the COP requested the Executive Committee to establish a task force to “to develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change” (Framework Convention on Climate Change, 2016, Decision 1/CP.21).

The Task Force on Displacement began its work in 2017. Together with Executive Committee members, its membership includes representatives from the UNFCCC Adaptation Committee and Least Development Countries Expert Group, as well as relevant external agencies such as UNDP, UNHCR, IOM and the International Federation of Red Cross and Red Crescent Societies (UNFCCC, 2019a). (There is currently a Chinese member of the Task Force, representing the Adaptation Committee.) The Task Force engaged in a mapping exercise of displacement and climate change in national policies, UNFCCC processes, international legal processes and regional tools and guidance (UNFCCC, 2018b). On the basis of this work, the Executive Committee issued a broad set of recommendations to the COP (Framework Convention on Climate Change, 2019, Decision 10/CP.24). In 2018, the Executive Committee recommended that Parties, *inter alia*:

consider formulating laws, policies and strategies, as appropriate, that reflect the importance of integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change and in the broader context of human mobility, taking into consideration their respective human rights obligations and, as appropriate, other relevant international standards and legal considerations (*ibid*).

It also recommended that Parties:

facilitate orderly, safe, regular and responsible migration and mobility of people, as appropriate and in accordance with national laws and policies, in the context of climate change, by considering the needs of migrants and displaced persons, communities of origin, transit and destination, and by enhancing opportunities for regular migration pathways, including through labour mobility, consistent with international labour standards, as appropriate (*ibid*).

In response, the COP invited Parties and other actors to consider the recommendations and encouraged them to continue its work on human mobility (*ibid*). The Task Force on Displacement has been continued for a second phase, with an ambitious plan of action for 2019-2021 that includes several regional activities (UNFCCC, 2019a). With the participation of institutions such as the UNHCR, IDMC, IFRC and IOM, the Task Force has the potential to become a valuable convenor of international policy work on climate change and human mobility.

3.2 DESERTIFICATION AND MIGRATION

The UN Convention to Combat Desertification (UNCCD) was adopted in 1994 and entered into force in 1996. The UNCCD’s preamble notes that “desertification and drought affect sustainable development through their interrelationships with important social problems such as poverty, poor health and nutrition, lack of food security, and those arising from migration, displacement of persons and demographic dynamics.”¹³ The objective of the UNCCD is to “combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international cooperation and partnership arrangements,...with a view to contributing to the achievement of sustainable development in affected areas” (UNCCD, 1994, art. 2). Countries affected by desertification (such as China) are obliged, *inter alia*, to “address the underlying causes of desertification and pay special attention to the socio-economic factors contributing to desertification processes” and to “promote awareness and facilitate the participation of local populations, particularly women and youth, with the support of non-governmental organizations, in efforts to combat desertification and mitigate the effects of drought” (*ibid*, art. 1.1).

Although the UNCCD is a global treaty with near-universal membership, its implementation is governed by five annexes that specify rules for different regions (*ibid*). Annex II concerns UNCCD implementation in Asia. This annex provides that Asian Parties “shall, as appropriate, take into consideration,” *inter alia*,

¹³ As such, the UNCCD was the first treaty to ‘explicitly address migration and displacement issues explicitly in the context of environmental change’. ‘The positive role that measures taken under the Convention can play to address desertification/land degradation and drought as one of the drivers that causes migration’ (UNCCD, 2019).

“the existence of production systems, directly related to widespread poverty, leading to land degradation and to pressure on scarce water resources,” and “the significant impact of conditions in the world economy and social problems such as poverty, poor health and nutrition, lack of food security, migration, displaced persons and demographic dynamics” (*ibid*, annex II, art. 2). Annex II sets out the requirements of national action programmes (*ibid*, art. 3-4) and forms of regional and subregional cooperation (*ibid*, art. 5-6).¹⁴ China’s implementation of the UNCCD has from the beginning included resettlement from areas affected by desertification. China’s 1996 national action programme included, among “guarantee measures” for implementation, the “[r]esettlement of farmers living in the areas with fragile ecosystems” (CCICCD, 1996).

As with the UNFCCC, the UNCCD process has addressed environmental mobility more directly in recent years. At the 2015 COP12 meeting in Ankara, Turkey, several sessions addressed the desertification-migration nexus. During the high-level segment, “[m]any ministers strongly emphasized the direct linkages between land degradation, migration, insurgency and conflict” (UNCCD, 2016). Two years later, at its thirteenth meeting in Ordos, China, the COP put a new emphasis on migration in UNCCD implementation. In the UNCCD 2018–2030 Strategic Framework, the COP identified a strategic objective “[t]o improve the living conditions of affected populations,” with expected impacts including: “Migration forced by desertification and land degradation is substantially reduced” (Framework Convention on Climate Change, 2017, Annex). At the same conference, the COP adopted a decision on “[t]he positive role that measures taken under the Convention can play to address desertification/land degradation and drought as one of the drivers that causes migration” (UNCCD, 2019). This decision invited Parties to “[p]romote the positive role that measures taken to implement the Convention can play to address desertification/land degradation and drought as one of the drivers that causes migration,” and to enhance international cooperation for the same purpose (*ibid*), with the assistance of the UNCCD Secretariat (*ibid*).¹⁵ At its most recent meeting in 2019, the COP proposed a variety of additional ways for Parties to address the desertification-migration nexus (UNCCD, 2018). China’s actions under the UNCCD are detailed in a 2017 report by the China National Committee to Implement the UNCCD (CCICCD, 2017). The report notes, *inter alia*, the role of ecological migration in areas affected by desertification (*ibid*). Alongside UNCCD processes, China has participated in subregional cooperation on desertification through the North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC), which is supported by UNESCAP’s East and North-East Asia Office (NEASPEC, n.d.). The NEASPEC is a subregional cooperation platform bringing together North-East Asian governments and non-state actors. In the area of desertification, the current strategic plan is focused on interlinkages between climate change and desertification (NEASPEC, 2020). Also, in 2016 China launched a “Belt and Road Joint Action Initiative for Combating Desertification” (China Daily, 2016). The activities of this initiative are reported to include ‘conferences, information sharing, joint project cooperation, finance resource mobilization and compilation of a Desert Nature Heritage List’ (Bao et al., 2017).

3.3 DISASTER RISK REDUCTION AND INTERNATIONAL DISASTER RESPONSE

As discussed above, disasters are the leading cause of displacement both globally and in China. While traditionally, policy approaches to disasters focused on the immediate disaster response, in recent years a more holistic approach to disaster law and policy has gained traction. Scholarship has identified a “cycle of disaster law,” which applies to the discrete stages of disaster management: risk mitigation; disaster event; emergency response; compensation and insurance; and rebuilding (Farber, 2014). This approach conceptualises disaster response not as a standalone activity but as an integrated component of a broader process. The UN process for mainstreaming this integrated approach has focused on disaster risk reduction (DRR), which the UN Office for Disaster Risk Reduction (UNDRR) describes as “the concept and practice of reducing disaster risks through systematic efforts to analyse and reduce the causal factors of disasters. Reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness and early warning for adverse events are all examples of disaster risk reduction” (UNISDR, n.d.).

In contrast to the governance of climate change and desertification discussed above, the international community has addressed disaster preparedness through a series of non-binding frameworks: first, the 1994

¹⁴ For a summary of UNCCD implementation in Asia, see (UNCCD, n.d.).

¹⁵ For the Secretariat’s report on the implementation of this decision, see ‘The positive role that measures taken under the Convention can play to address desertification/land degradation and drought as one of the drivers that causes migration,’ (UNCCD, 2019, note by the secretariat).

Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation (UNDRR, 1994); second, the Hyogo Framework for Action: Building the Resilience of Nations and Communities to Disasters (UNISDR, 2005); and, currently, the Sendai Framework for Disaster Risk Reduction 2015-2030 (United Nations General Assembly, 2015). The Sendai Framework, adopted by UN General Assembly resolution, has the aim of a “substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries” (*ibid*). The framework’s four “priorities for action” are: 1. Understanding disaster risk; 2. Strengthening disaster risk governance to manage disaster risk; 3. Investing in disaster risk reduction for resilience; and 4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction (*ibid*). For each priority, national, local, global and regional actions are identified.

The Sendai Framework acknowledges that “[e]ach State has the primary responsibility to prevent and reduce disaster risk,” with supporting roles for international and regional cooperation (*ibid*, p.7). The framework’s actions related to the protection and inclusion of migrants and displaced persons are therefore mostly directed to national and subnational governments. Concerning the priority of strengthening disaster risk governance, the framework highlights the need to “empower local authorities, as appropriate, through regulatory and financial means to work and coordinate with civil society, communities and indigenous peoples and migrants in disaster risk management at the local level” (*ibid*, p. 13). At the regional level, there is a call for “transboundary cooperation” to reduce displacement risk (*ibid*). Concerning investing in DRR, the framework encourages the “adoption of policies and programmes addressing disaster-induced human mobility to strengthen the resilience of affected people and that of host communities, in accordance with national laws and circumstances” (*ibid*, p. 15). Concerning disaster response and “building back better,” the framework enjoins national and local levels to “promote regular disaster preparedness, response and recovery exercises, including evacuation drills, training and the establishment of area-based support systems, with a view to ensuring rapid and effective response to disasters and related displacement, including access to safe shelter, essential food and non-food relief supplies, as appropriate to local needs” (*ibid*, p. 17). National and local levels are also encouraged to “use opportunities during the recovery phase to develop capacities that reduce disaster risk in the short, medium and long term,” including with respect to “temporary settlements for persons displaced by disasters” (*ibid*, p. 17).

The Sendai Framework also calls on governments to encourage the participation of civil society and other stakeholders in the “development and implementation of normative frameworks, standards and plans for disaster risk reduction” (*ibid*, p. 19). In this connection, the framework notes that “[m]igrants contribute to the resilience of communities and societies, and their knowledge, skills and capacities can be useful in the design and implementation of disaster risk reduction” (*ibid*).

The Sendai Framework is subject to regional implementation. In 2016 Asian governments adopted the Asia Regional Plan for Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (UNISDR, 2016). This document noted that the impact of disasters in Asia is continuing to rise: “Rapid and poorly managed urbanization, natural resource exploitation and increasing social inequalities, amongst others, increased risk levels,” resulting in “development practices that are not fully risk-informed” (*ibid*). The plan details actions for each of the Sendai Framework’s four priorities and sets targets to be achieved by certain deadlines. The 2015-2030 plan is supplemented by two-yearly action plans which set short-term targets. The latest action plan, for 2018-2020, calls for governments to “[e]nsure that the development and revision of national and local disaster risk reduction strategies include provisions on displacement and human mobility” (AMCDRR, 2018). These plans are developed and monitored by an Asia-Pacific Ministerial Conference on DRR meeting every two years.¹⁶

In addition to the Sendai Framework, there are several other processes in the Asia-Pacific region relating to disasters and environmental mobility. The International Federation of Red Cross and Red Crescent Societies (IFRC) and national societies are particularly active, engaging in assistance, capacity-building,¹⁷ and normative development through documents such as the Model Act for the Facilitation and Regulation of International Disaster Relief and Initial Recovery Assistance (produced in collaboration with UN

¹⁶ The 2020 session had been postponed due to the pandemic.

¹⁷ See, generally, (IFRC, 2018).

Office for the Coordination of Humanitarian Affairs, OCHA) (IFRC, 2013) and the Handbook on Law and Disaster Risk Reduction (produced with UNDP) (IFRC, 2015). Another regional process is the Asia-Pacific Economic Cooperation (APEC) Emergency Preparedness Working Group, in which China participates as a steering committee member (APEC, n.d.).

Following the adoption of the Sendai Framework, China has undertaken various domestic actions to implement the DRR approach provided for by the framework. China's 2016-2020 disaster prevention and mitigation plan incorporated goals and priorities (National Comprehensive Disaster Prevention and Mitigation Plan (2016–2020), 2017). China has also incorporated Sendai implementation into its international cooperation under the Belt and Road Initiative. For example, a Disaster Risk Reduction Working Group has been established within China's 'Digital Belt and Road' (DBAR) platform to utilize data for DRR (DBAR, n.d.).

3.4 FURTHER REGIONAL PROCESSES

There are various other regional processes of cooperation on environmental mobility, mostly with the participation of international organisations active in the Asia-Pacific. Both the World Bank and the ADB have produced lengthy studies (Regaud et al., 2018; Asian Development Bank, 2012) and policy planning resources (Jhi & Stanton-Geddes, 2013; Asian Development Bank, 2017; 2018) on environmental mobility, and have also engaged in relevant technical assistance.¹⁸ UNESCAP and the regional office of OCHA have also produced resources (UNESCAP, 2017a; OCHA, 2013).

There are also regional structures which have the capacity to contribute to cooperation on environmental mobility but which have not addressed this issue to date. One example is the Shanghai Cooperation Organisation (SCO), which has members in northeast, central and south Asia and which has steadily expanded its agenda beyond the original security and confidence-building focuses (Lukin, 2018). The SCO has recently been examining "prospects for SCO environmental cooperation in the post-epidemic era" (SCO, 2020). Moreover, China's growing initiative in South-South cooperation raises the prospect that it will cooperate with international organisations and developing countries on questions of environmental mobility. Thus far, China has engaged in South-South cooperation concerning human mobility (ILO, n.d.) and the environment (United Nations Environment Programme, 2014), among other issues, but has not addressed the environment-mobility nexus.

Finally, bilateral cooperation in the region can also play a part in managing environmental mobility. For example, there are bilateral labour migration agreements between countries with significant environmental pressures for migration (such as China and the Philippines) and "destination" countries (such as South Korea), which could create pathways for a small proportion of affected people (ECOSOC, 2017).

4. COUNTRY-SPECIFIC ANALYSIS OF CURRENT CONDITIONS AND STATE-BASED NORMS

4.1 ECOLOGICAL MIGRATION

"Ecological migration" is well-established as one of the policy tools for realising an "ecological civilisation," urbanisation and rural development (Rogers & Wang, 2006). It is invoked in numerous high-level normative documents, laws, regulations and other Party and government documents. The policy is meant to reduce poverty and facilitate both environmental conservation and restoration.¹⁹ China's premier Li Keqiang has stated that "relocating impoverished people from bad natural conditions is an important way to alleviate poverty" (Wong, 2016). As one official explained it, "ecological migration" is used to break out of the "trap" of "environmental worsening-poverty-further environmental worsening-more poverty" (Liu, 2007).

In essence, "ecological migration" consists of resettling communities from areas that are either becoming uninhabitable or are slated for environmental restoration. Permanent emigration enables conservation or

¹⁸ E.g., the World Bank delivered a project on 'Improving Rural Migrants' Employment Prospects through Skills Development' in provinces with significant environmental mobility during 2009-2014. (The World Bank, 2016).

¹⁹ China's approach has been likened to the World Bank's 'resettlement with development' policy. (Rogers & Wang, 2006).

restoration activities in the location of origin. Temporary emigration can also benefit the environment, when migrants return with new knowledge concerning environmental protection, sustainable land use technologies, etc. (Yu & Shi, 2010). The communities are relocated to newly built villages, the infrastructure for which is jointly financed by local and national governments (Li, 2013). An estimated 70 million people have been subject to involuntary resettlement in China during the last six decades, with resettlement for environmental reasons the second-most common kind after resettlement to make way for hydro-electric projects (Lei et al., 2017). Most of the relocations are considered “near resettlement” – i.e., still within the limits of the resettled person’s home county; a minority are relocated via “distant resettlement” – outside their home county but usually still within the same province (Tan, 2017). It is unclear how many Chinese have been resettled as “ecological migrants”, although the numbers are significant. It has been reported that by 2002, for example, 4.4 million people in Gansu province alone had been “voluntarily moved with official encouragement” (The Government Office for Science, London, 2011). In 2016 it was reported that a further 10 million people were officially considered to be “in need of ecological migration” (Li & Shapiro, 2020).

“Ecological migration” is not a new policy; the State Council first conducted a pilot ecological migration programme in 1982 in the “three Xi” regions of Hexi and Dingxi (in Gansu) and Xihaigu (in Ningxia) (Wang et al., 2020). The policy is also not unique to China.²⁰ A 2017 opinion of the General Office of the Chinese Communist Party Central Committee and the General Office of the State Council (equivalent to China’s cabinet) stated that “in regions overloaded in the aspect of the ecology, ... ecological migration and relocation shall be conducted when necessary” (*The General Office of the CPC Central Committee and the General Office of the State Council Issuing the Several Opinions on Establishing a Permanent Resource Environment Carrying Capacity Monitoring and Early Warning Mechanism*, 2017).

In practice, this transition – including reemployment for working-age migrants – can prove difficult (Wong, 2016). It has been reported that the subsidies provided to ecological migrants are insufficient for their livelihoods, creating the risk that “some migrated herdsmen will go back to grazing [in the conservation zones] because no other jobs are available” (Wang et al., 2010; see also Zhou et al., 2020). Where there has not been appropriate retraining and the availability of suitable work, ecological migration has resulted in a “large number of surplus laborers” (Wang et al., 2010). Another study reported that migrants experience “feelings of isolation, discrimination from local residents, being trapped in poverty and unable to adapt to an urban lifestyle” (Li, 2013). There are also concerns that ecological migration may actually result in negative environmental consequences by forcing abrupt change in a local ecosystem (e.g. by removing grazing herds) (Li & Shapiro, 2020).

The 2016-2020 Five-Year Plan contains specific ecological migration measures for “special regions,” which include “old revolutionary areas,” areas with “concentrations of ethnic minorities,” “border areas” and “poor areas” (People’s Republic of China, n.d.). These special regions are defined to include vast swathes of China (e.g., “old revolutionary areas” are present in Jiangxi, Fujian, Guangdong, the Shaanxi-Gansu-Ningxia border region and other places, while “ethnic minority” areas include Tibet, “Tibetan ethnic areas” in four provinces and various locations in southern Xinjiang) (*ibid*). Within special regions, the plan commits to “transform areas devastated by ecological degradation,” with a focus on mining areas. It targets, *inter alia*, the “geological environment restoration for 500,000 hectares of land in mining areas that have been historically problematic,” the “comprehensive improvement of 300,000 hectares of coal mining areas affected by land subsidence,” and the “orderly resettlement of residents in such areas for safety reasons” (*ibid*, Ch. 40, s. 4.).

Interestingly, “ecological migration” is addressed in the policies for developing China’s “green finance” system. In the “Notice on Launching the Pilot Program of Green Corporate Bonds” issued by the Shanghai Stock Exchange in 2016, “environmental pressure release in ecologically fragile areas (such as ecological migration projects)” is listed as a permitted use of proceeds for “natural ecological protection and protective development of tourism resources” projects (*Notice on Launching the Pilot Program of Green Corporate Bonds, 2016; see also Announcement No. 39 [2015] of the People’s Bank of China—Announcement on Matters Concerning the Issue of Green Financial Bonds on the Interbank Bond Market*, 2015).

The norm of “ecological migration” has been reinforced by China’s judicial system. For example, in 2020,

²⁰ For example, Vietnam (a country with a similar political and legal system to China’s) has also practised environmental resettlement (Asian Development Bank, 2012).

the Supreme People's Court (China's highest court) issued an opinion²¹ on "Providing Judicial Services and Guarantees for Ecological Protection and High-quality Development of the Yellow River Basin" (*Opinions of the Supreme People's Court on Providing Judicial Services and Guarantees for Ecological Protection and High-quality Development of the Yellow River Basin [Effective] No. 19.*, 2020). This document directed the courts that the "relevant departments shall be supported in managing water sources and wetlands at the upper reach of the river, protecting the ecological environment of grassland through resettlement of ecological immigrants, restoration of farmland to forests or grassland, and rodent and pest control, and restoring the functions of watercourses and wetlands" (*ibid*; see also *Opinions of the Supreme People's Court on Providing Judicial Services and Guarantees for the Planning and Construction of Hebei Xiongan New Area*, 2019).

Resettlement policy has a cross-border aspect in the Pearl River Delta's "Greater Bay Area," which includes the mainland Guangdong province and the Hong Kong and Macao special administrative regions. The Chinese government has reported that "[i]n order to stabilize the water supply in Macao," Macao's policies and actions have included "allocating 800 million RMB in support of resettlement of local [mainland] residents for construction of the Dateng Gorges Project, soil and water conservation as well as environmental rehabilitation in Guangxi under the project" (People's Republic of China, 2012).

4.2 RESETTLEMENT FOR WATER CONSERVATION AND POWER CONSTRUCTION

Resettlement of whole communities for the purpose of clearing land for dam construction is a long-standing policy, which China has framed as a climate change measure. In 2012, China reported under the UN Climate Convention (UNFCCC) that during its 12th Five Year Plan (2011-2015) it would engage in "actively developing hydropower on condition that ecological conservation and resettlements of displaced people are ensured" (*ibid*, p. 119). China's first Paris Agreement NDC includes among policies measures for building a low-carbon energy system: "To proactively promote the development of hydro power, on the premise of ecological and environmental protection and inhabitant resettlement" (*Enhanced Actions on Climate Change: China's Intended Nationally Determined Contribution*, 2015). It has been estimated that, by 2014, over 24 million people in China had been resettled to make way for hydro reservoirs (Teng et al., 2019).

The Regulations on Land Requisition Compensation and Resettlement of Migrants for Large and Medium Water Conservation and Power Construction Projects, last revised in 2017, aim to both "maintain the legitimate rights and interests of migrants and ensure the smooth construction of the projects" (*Regulations on Land Requisition Compensation and Resettlement of Migrants for Large and Medium Water Conservation and Power Construction Projects*, 2017). The general aim for resettled people is to "make the migrants' living level reach or exceed their former one" (*ibid*). The migrant administrative department of the State Council for water conservation and power projects has overall responsibility for supervising resettlement, while governments at county level and above are responsible for organising particular resettlements (*ibid*). Where resettlement is necessary, the project entity must submit a migrant resettlement plan to government for approval (*ibid*). The plan must "follow the principle of combining the local resettlement with non-local resettlement, centralized resettlement with separate resettlement, government resettlement with resettlement on the migrants' own initiatives" (*ibid*, art. 11). The project entity is required to consult both the migrants and residents of designated resettlement areas (*ibid*). Before project construction can begin, the project entity must sign a migrant resettlement agreement with the province (or equivalent level government) (*ibid*). Provision is made for compensation for requisitioned land (*ibid*). The manner of compensation depends on how migrants are resettled (*ibid*). For rural residents who are resettled "in a centralized manner," "roads, water supply, power supply and other basic facilities... shall be uniformly built by the relevant townships (towns) and villages." However, "the houses of rural migrants shall be built by the migrants independently" (i.e. without government assistance) (*ibid*, art. 35). Following completion of resettlement, the provincial or equivalent-level government shall inspect it, and if the resettlement "has not been checked or fails to pass the check, no stage check or completion check may be conducted for the large or medium water conservation and power project" (*ibid*, art. 37). The regulations specify various kinds of post-resettlement

²¹ In China's legal system, an 'opinion' is not a judgment but, rather a policy document. Supreme People's Court opinions can be considered binding on the lower courts (Wang & Lu, 2017).

support, including a “follow-up support fund” (*ibid*, ch. 5).²² Resettlement of people displaced by the Three Gorges Dam was governed by a separate regulation (*Regulation on the Migrants for the Construction of the Three Gorges Project of Yangtse River*, 2011).

There is an apparent tension between resettlement due to hydropower projects and the requirements of China’s Water and Soil Conservation Law (*Water and Soil Conservation Law of the People’s Republic of China*, 2010), which regulates the planning of water and soil conservation and allocates responsibilities (Wang & Lu, 2017). The law provides that “[i]t shall be prohibited to cultivate or plant crops at sloping fields with a 25-degree slope or above,” and also prohibited to reclaim land by destroying forest or grassland (*Water and Soil Conservation Law of the People’s Republic of China*, 2010). However, it has been reported that in Sichuan, Yunnan and the Qinghai-Tibet plateau, steep fields and forest have been reclaimed for the purpose of resettling people displaced by hydropower projects (Zhang, 2011).

The outcomes for communities resettled to make way for dams and other major projects have been mixed.²³ Warner and colleagues have observed that “resettlement schemes do not always have to result in the impoverishment of resettled populations,” citing the positive example of the 190,000 people resettled in order for the Xiaolangdi dam to be built (Warner et al., 2013). In that case, the authors contended, community participation, a receptive host community, government commitment, World Bank “oversight and supervision” and other factors combined to improve the migrants’ living standards (*ibid*). Other studies have reported that even with financial compensation, resettled people struggle under the burdens of debt,²⁴ separation from social networks and discrimination from host communities. In a survey of urban-to-urban resettlement due to the Three Gorges Dam project, Wang and colleagues concluded that “current policy has overlooked the social impacts of [development-induced displacement and resettlement], especially the influences perceived by vulnerable displaced persons, given their poor health, lower self-awareness, and relatively lower positive attitudes” (Wang et al., 2020).

4.3 DESERTIFICATION AND LAND MANAGEMENT

China has been developing and implementing policies on desertification since the beginning of the post-Mao period in the late 1970s. In 2001 the Law of the People’s Republic of China on Desert Prevention and Transformation was adopted (and amended in 2018) (2018). The law, believed to be the first such law globally dedicated to tackling desertification (Wang, 2014), includes among its principles “combining the improvement of environment with helping peasants and herdsmen get out of poverty and become rich” (*Law of the People’s Republic of China on Desert Prevention and Transformation*, 2018, art. 3). The law requires both the State Council and governments of affected areas at county level and above to incorporate “desert prevention and transformation” in their development plans (*ibid*), including both five-year plans and annual plans for “national economic and social development” (*ibid*). Concerning human mobility, Article 22 provides that “it is prohibited to settle incomers within the range of the sealed conservation areas of the desertified land.” Regarding the people already there, the same article provides:

The local people’s governments at the county level or above shall organize the peasants and herdsmen in the range of sealed conservation areas of desertified land to move out in a planned way and shall settle them down appropriately. The production and living of the peasants and herdsmen that haven’t moved out of the sealed conservation areas of desertified land shall be appropriately arranged by the departments in charge of the sealed conservation areas of desertified land.

The law thereby sets out high-level principles, approaches and planning requirements, while leaving the details on resettlement to policy documents and location-specific regulations.²⁵ In the 2016-2020 Five-Year Plan, the Chinese government committed to “establish a system for closing off desertified land for protection” and “take gradual steps to relocate people from the core areas and buffer zones of nature reserves” (People’s Republic of China, n.d.).

22 For an example of how these regulations are implemented at municipal level, see (Notice of the Shenzhen Municipal People’s Government prohibiting new construction projects and migration into the population within the areas occupied and flooded by water resources allocation projects in the Pearl River Delta, 2017).

23 For a review of involuntary resettlement outcomes related to dam projects, see (Wilmsen, 2011).

24 Resettlement allowances being generally insufficient to cover the expenses of resettlement (Rogers & Xue, 2020).

25 Such regulations exist for Ningxia Hui Autonomous Region, Heilongjiang province, Liaoning province and Wuwei city.

The regulation for Ningxia Hui Autonomous Region, which is heavily affected by desertification, divides desertified land into closed protection zones, preventive protection zones and governance and utilization zones (*Regulation of Ningxia Hui Autonomous Region on Desert Prevention and Transformation*, 2019). Residents may not be resettled in closed protection zones (*ibid*). The regulation further provides: “Within the range of desertified land that is not suitable for human settlements and production and business activities, the people’s government at or above the county level shall organize ecological migration, control or ban protection in accordance with relevant regulations” (*ibid*, art. 21). In 2017, China reported under the UNCCD’s Voluntary Land Degradation Neutrality (LDN) Target Setting Programme (UNCCD, n.d.) that “the production and living conditions in the controlled areas have been improved and people’s livelihood is protected,” thanks in part to “ecological immigration” (CCICCD, 2017).

4.4 DISASTER RISK REDUCTION AND RESPONSE

The Law of the People’s Republic of China on Protecting Against and Mitigating Earthquake Disasters governs earthquake monitoring, protections, emergency rescue, transitional resettlement, rehabilitation and reconstruction (*Law of the People’s Republic of China on Protecting Against and Mitigating Earthquake Disasters*, 2008). The provisions on transitional resettlement address both the needs of the affected population and environmental impacts of the resettlement. Regarding the former, the law provides that “where the disaster-hit people in the earthquake-stricken areas need transitional resettlement, they shall be resettled in accordance with the actual situations of the earthquake-stricken areas, under the premise of ensuring safety, and by flexible and diversified ways” (*ibid*, art. 59). Sites for transitional settlement must “be set up in the areas that have convenient transport conditions and facilitate disaster-hit people to rehabilitate production and life, and shall keep away from the seismic active faults and the areas that may induce serious secondary disasters,” while “corresponding measures for protection against disasters and epidemic diseases shall be taken, and necessary supporting infrastructures and public service facilities shall be constructed” (*ibid*, art. 60). Concerning environmental impact, the law states that “transitional resettlement carried out shall protect the agricultural lands as much as possible, and avoid causing damage to nature reserves, drinking water source protection areas and ecologically fragile regions” (*ibid*, art. 61).

Post-earthquake reconstruction must have regard to “disaster prevention and mitigation, and protection of ecological environment, natural resources and historical and cultural heritage” (*ibid*, art. 67). Where towns and villages need to be rebuilt in a different location, the selected sites must “avoid seismic active fault, ecologically fragile areas, areas that may induce possible floods, landslides, collapse, mud-rock flow, ground subsidence and other disasters, and natural foci of infectious diseases” (*ibid*).

China’s disaster response norms address situations of both temporary and permanent displacement. In practice, authorities have prioritised resettling disaster-stricken people close to their original homes, although this has not always been possible (Chen et al., 2017). The Chinese government has also developed bespoke regulations in order to manage individual major disasters after they occur. The devastating 2008 earthquake in Wenchuan, Sichuan province is an example of a permanent displacement event. In response to the earthquake, the State Council issued regulations on rehabilitation and reconstruction planning (*Order No.526: Regulations on Post-Wenchuan Earthquake Rehabilitation and Reconstruction*, 2008). The regulations dealt in detail with the question of “transitional resettlement,” providing that “transitional resettlement of disaster-stricken people in disaster-stricken areas shall be conducted based on the actualities of disaster-stricken areas and in such ways as in-situ resettlement combined with ex-situ resettlement, centralized resettlement combined with decentralized resettlement, and government resettlement combined with resettlement with relatives or friends or self-resettlement” (*ibid*, art. 7). The same article provided that “[g]overnments shall give proper subsidies to those disaster-stricken people who resettle with relatives or friends or otherwise resettle themselves. The specific measures shall be formulated by the provincial people’s governments.” The regulations also dealt with the suitability of transitional resettlement sites:

The selected transitional resettlement sites shall be located in an area that has convenient transport conditions and facilitates the people’s rehabilitation of production and life, avoid an area of earthquake active fault or area where flood, landslide or collapse, mud and rock flow, ground caving-in, lightning or any other disaster is likely to occur, and avoid factories that produce and warehouses that store flammable and explosive hazardous substances (*ibid*, art. 8).

Chinese authorities have also engaged in large-scale resettlement as a DRR measure, not in the immediate aftermath of a particular disaster but, rather, to mitigate the impact of future disasters by moving populations from disaster-prone areas. In practice, resettlement for disaster prevention has been carried out under the broader policy of ecological migration. The project to relocate several million people in the south of Shaanxi province from locations which are prone to flooding and earthquakes is an example (Shi et al., 2020). Ankang prefecture, located within Shaanxi, “typifies much of western China, with serious short-term conflicts between conservation and livelihood activities of the poor” (Li et al., 2018). In Ankang, vulnerability to disaster was one factor in determining the resettlement eligibility of households and villages, alongside low income, remoteness of location and other criteria (*ibid*). In contrast to post-disaster resettlement, resettlement for DRR can occasion “conflicts” between authorities and communities that are unwilling to move. The latter can resort to sit-ins, petitioning and assistance from NGOs, lawyers and other third parties, with the possible result that “disputes assume political significance and may be resolved in favour of the peasants” (Guo & Kapucu, 2018).

4.5 URBANISATION

Inability to attain urban household registration has been a major impediment to rural-to-urban migrants (whether or not they are “ecological migrants”). The household registration (*hukou*) system regulates a person’s eligibility to access social services in a given location (Chan & Zhang, 1999). In recent years, there have been steps to reform this system at national, provincial and municipal levels, in order to provide a clearer pathway to regularising the status of “floating population” workers in China’s cities (*Opinions of the State Council on Further Promotion of Reform of the Household Registration System*, 2014). For example, the Shenzhen government in 2017 introduced, for a trial period, a points system under which immigrants can qualify for Shenzhen household registration (*Notice on the issuance of the Shenzhen Points Into The Household Measures (Trial)*, 2017). Household registration reform might be expected to facilitate environmental mobility by reducing the obstacles and hardships of rural-to-urban migration²⁶ However, it is unclear whether the reforms to date have achieved this. One recent study found that *hukou* reform, contrary to its purpose, was “empirically confirmed to have a suppressing effect on migration to cities.” The authors speculated that leaving the details of *hukou* reform to each individuality locality may have contributed to this outcome (Cui & Cho, 2020).

In 2020, the Ministry of Housing and Urban-Rural Development and the Poverty Relief Office of the State Council released a notice on “the implementation of the work of ensuring the safety and verification of housing for poor households” (*Notice of the Ministry of Housing and Urban-Rural Development and the Poverty Reduction Office of the State Council on the implementation of the work of ensuring the safety and verification of housing for poor households*, 2020). The notice is addressed to housing and urban-rural development departments and poverty alleviation offices at provincial and equivalent levels, and aims to implement Xi Jinping’s instruction: “do not let the poor live in dilapidated housing.” The notice, *inter alia*, requires departments to use an information platform and mobile app to verify the housing safety of local households, and to categorise households accordingly (*ibid*, art. 2). The dwellings of poor households which are assessed as meeting a certain standard are categorised as “appraised safe.” The safety of other dwellings can be assured through “security through transformation” or “security through guarantee.” “Ecological migration” is listed as one of the solutions that can result in “security through transformation,” together with housing renovation, “relocation for poverty alleviation” and other measures (*ibid*).

5. PROSPECTS FOR THE FUTURE

Regionally and globally, China can be expected to continue to promote its environmental credentials and achievements in policy areas such as climate change, desertification, DRR and urbanisation. Nevertheless, China’s environmental engagement on these topics has generally not extended to questions of environmental mobility. The current Chinese participation in the UNFCCC Task Force on Displacement might encourage

²⁶ Such an outcome would assist environmental mobility, as IPCC Working Group 2 has cautioned that ‘the most vulnerable households are able to use migration to cope with environmental stress, but their migration is an emergency response that creates conditions of debt and increased vulnerability, rather than reducing them’ (Adger, et al., 2014).

further engagement on these issues, and there is no shortage of international and regional fora in which China could exchange experiences and lessons learned concerning environmental migration, displacement and resettlement.

Domestically, as detailed above, “ecological migration” is the core Chinese policy regarding environmental mobility. There are no indications that this policy is likely to change in the short-to- medium-term. To the contrary, as China sets more ambitious environmental conservation and restoration targets under its “ecological civilisation” policy (Geall & Ely, 2018), it is entirely possible that the number of people subject to resettlement on environmental grounds will increase. One trend that might be welcome is an apparent shift from involuntary resettlement to more-or-less voluntary resettlement, through the use of “mobility incentives” (the “Massive Southern Shaanxi Migration Program,” under which the government of Shaanxi province plans to relocate 2.4 million people by 2020, is an example of the latter approach) (Lei et al., 2017). While the “ecological migration” policy is unlikely to be overturned, debate concerning shortcomings of migrant compensation and conditions suggest that there may be scope for these to be improved. In contrast to “ecological migration,” the similar but distinct policy of resettlement due to hydro projects is likely to impact fewer people, as the era of mega hydro projects in China draws to an end (The Japan Times, 2020).

Concerning voluntary migration, the decades-long trend of rural-to-urban migration was dramatically disrupted by the outbreak of COVID-19, which made travel within China all but impossible during the early months of 2020. It remains to be seen whether COVID-19 will have a lasting impact on internal migration patterns within China.²⁷ As China has reopened its economy, it is proceeding with further loosening of household registration requirements, including the announced abolition of the hukou system for cities of populations up to 3 million (Bloomberg News, 2020). This reform might be expected to facilitate voluntary migration by removing impediments. However, the relationship between migration and household registration policy is complicated, as the low level of applications by internal migrants for urban registration suggests (Yu, 2020).

An important future determinant of environmental mobility outcomes is likely to be the degree to which China strengthens the resilience of both urban and rural areas to the effects of climate change. China’s first (2015) Nationally Determined Contribution (NDC) under the Paris Agreement stated that “China will continue to proactively adapt to climate change by enhancing mechanisms and capacities to effectively defend against climate change risks in key areas such as agriculture, forestry and water resources, as well as in cities, coastal and ecologically vulnerable areas and to progressively strengthen early warning and emergency response systems and disaster prevention and reduction mechanisms” (*Enhanced Actions on Climate Change: China’s Intended Nationally Determined Contributions*, 2015). The success of adaptation policy is particularly salient because it affects both the origin and the destination of the typical rural-to-urban migrant. IPCC Working Group 2 has warned that “[m]igrants themselves may be vulnerable to climate change impacts in destination areas, particularly in urban centers in developing countries” (Adger et al., 2014). The Working Group has noted that “urban governments find it difficult to prevent new developments on sites at risk of flooding, especially in locations attractive for housing or commerce, even when there are laws and regulations in place to prevent this” (Revi et al., 2014). Some have speculated that countries like China with “strong centralized planning” might be able to implement “involuntary relocation” of whole communities from threatened coastal zones (Hauer et al., 2020).

While emigration from some settlements that become uneconomic to maintain in the face of sea-level rise and other impacts may be inevitable (IPCC, 2012), adaptations such as green urban infrastructure can help cities to ameliorate climate impacts (UN-Habitat, 2019). A recent literature review on low-carbon cities in China found that many such cities are engaging in adaptation planning, in an attempt to integrate “climate risk management into climate-smart investment to increase the cities’ adaptive capacities and improve agriculture, urban forestry, urban coastlines, water adaptation ability, and hazard mitigation” (Hunter et al., 2019). However, the same study concluded that “most of the strategies and discussions focus on mitigation; and there is a lack of cohesion between mitigation and adaptation strategies, which can lead to maladaptation” (*ibid*).

²⁷ For an early study of effects on internal migrants, see (Che et al., 2020).

The effectiveness of adaptation measures such as China's national "sponge cities" programme remains to be seen. A "sponge city" has been described as "a city that has the capacity to mainstream urban flood risk management into its urban planning policies and designs." In 2015, the State Council issued its "Directive on promoting Sponge City Construction," setting the target that by 2030, 80 per cent of China's urban areas will be able to "absorb, retain, and reuse" 70 per cent of the rainwater they receive (Zevenbergen et al., 2018). The IPCC has also observed that adaptation to sea-level rise in coastal areas will be "enhanced by participatory decision-making and settlement designs that promote equity and sustainability" (Roy et al., 2018). In this regard, the inclusion of migrant workers and other low-income residents in climate-smart urban planning and adaptation measures is essential. This imperative is inseparable from the general challenge of inadequate integration of rural-to-urban migrants, displaced and resettled people into China's cities. It has recently been observed that "[t]he rapid transformation of China's social structure and the lagging behind in the cultural changes of displaced people have hindered the acceptance of this group as well as their healthy functioning in an equal society" (Wang et al., 2020). The same authors suggest, as a partial corrective, the avoidance of "scattering displaced people who own intact kinship ties, as these might maintain the bonds between people during the integration process" (*ibid*).

Ultimately, the scale and composition of environmental mobility in China – and China's capacity to manage it – will depend on the success or failure of global climate change mitigation. The Paris Agreement sets the goal of "[h]olding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change" (The Paris Agreement, 2015, art. 2.1(a)). In 2018, the IPCC reported on the potential different impacts on migration of warming of 1.5°C compared to 2°C. Although acknowledging that understandings of how these limits relate to migration are "limited and represent an important knowledge gap," the IPCC noted that "[t]emperature has had a positive and statistically significant effect on outmigration over recent decades in 163 countries" (Hoegh-Guldberg et al., 2018). The IPCC also warned that "[h]otspots displaying statistically significant changes in heavy precipitation at 1.5°C versus 2°C global warming" include high-latitude northern Asia, the Tibetan plateau and areas of China (*ibid*).

China, as by far the largest contributor to greenhouse gas emissions, will have a major impact on whether the Paris goals are met, both directly through its climate mitigation performance and indirectly, as the degree of ambition China displays can be expected to influence the mitigation targets adopted by other countries. In 2020, Paris Agreement parties were required to communicate new or updated Nationally Determined Contributions. While China did not submit an NDC in 2020, it did announce more ambitious 2030 targets, compared to the targets in its initial NDC (Myllyvirta, 2020). There have been indications that China's post-COVID19 economic recovery is heavily reliant on fossil fuel-intensive industries, setting back climate mitigation efforts (Hale, 2020). Xi Jinping's September 2020 announcement that China would peak its GHG emissions before 2030 and achieve net-zero CO₂ emissions by 2060 is a step in the right direction (Walsh, 2020), although important details remain to be seen. Clearly, as a country with much to lose from unchecked climate change, it is in China's long-term interest to strengthen its NDC and encourage other countries to do likewise.

6. RECOMMENDATIONS

INTERNATIONAL PARTNERS SHOULD SEEK FURTHER ENGAGEMENT WITH CHINA ON ENVIRONMENTAL MOBILITY NORMS AND PROCESSES.

As the above has indicated, there has been limited Chinese participation in international processes concerned with environmental mobility. China's international partners should encourage greater dialogue, sharing of good practices and lessons learned, and transparency concerning environmental mobility practices and data. There is particular potential for productive exchanges on the nexus of urbanisation and environmental mobility, concerning which China has had significant (positive and negative) experience. Such exchanges could build on the existing work under the UNFCCC Adaptation Committee; however, there is likely to be greater scope for dialogue and perhaps collaboration outside of formal treaty-based processes, by

utilising or creating multi-stakeholder processes. Processes focused on subnational governments, such as the C40 Cities Climate Leadership Group and ICLEI – Local Governments for Sustainability, are likely to be particularly salient regarding questions of urbanisation.

A COMPREHENSIVE STUDY OF THE RESETTLEMENT PROCESS AND OUTCOMES RELATED TO “ECOLOGICAL MIGRATION” SHOULD BE UNDERTAKEN.

Perhaps surprisingly, given the length of time during which the “ecological migration” policy has been in place, “little is known about what happens to resettled populations beyond the project cycle” (Wilmsen & Rogers, 2011). The Chinese government should therefore initiate a comprehensive study of both the process and outcomes of “ecological migration.” Such a study would assess both the degree to which procedural safeguards (e.g., concerning voluntary resettlement) are effective in practice, and the nature and extent of “ecological migrant” disadvantage post-resettlement. Such a study would provide a basis for preventing or addressing entrenched disadvantages, consistent with China’s announced aim of eradicating poverty.

CHINA SHOULD ADDRESS ENVIRONMENTAL MOBILITY IN ITS 2021-25 FIVE-YEAR PLAN.

The outline of China’s fourteenth five-year plan, for 2021-25, was released in October 2020 (Ziyi, 2020). The final version of the plan’s outline was approved by the National People’s Congress in March 2021. The new plan and related, issue-specific policy documents represent an opportunity to address challenges of environmental mobility in a more holistic fashion, beyond the “ecological migration” policy. According to its outline, the plan will focus on “high-quality,” environmentally sustainable and technology-driven growth. The plan is thus an opportunity to provide direction on questions such as the future course of rural-to-urban migration as well as the potential for hard and soft infrastructure including high-speed rail, 5G and teleworking to obviate the continued growth of unsustainable urban agglomerations.

CHINA SHOULD MAINSTREAM ENVIRONMENTAL VULNERABILITY ASSESSMENT INTO THE PLANNING OF MIGRATION, DISPLACEMENT AND RESETTLEMENT OUTCOMES.

Rogers and Xue have advised that “vulnerability to climate change ... needs to be integrated into resettlement planning,” particularly when those resettled remain engaged in agriculture (Rogers & Xue, 2015). This mainstreaming of vulnerability assessment is arguably just as necessary for those who move to cities and is just as relevant to voluntary migrants and the temporarily displaced as to the resettled. Moreover, assessments of vulnerability should concern not only climate change but environmental hazards generally. This paper has indicated multiple risks and disadvantages that can accompany environmental mobility. As a step towards addressing this challenge, the Chinese government could commission pilot studies of environmental mobility vulnerabilities in designated cities or provinces. Such a comparative assessment of the vulnerabilities associated with environmental mobility (concerning place of origin, migration process and destination) would provide valuable data and insights for the development of policies to improve outcomes for the people concerned.

Such vulnerability assessments could also be built into projects under China’s Belt and Road Initiative, which might be considered China’s most ambitious project to influence global governance (Zhao & Chen, 2021). Under the BRI, Chinese entities have been financing large infrastructure projects in developing countries, often in environmentally sensitive areas (BU Global Development Policy Center, n.d.). BRI projects have entailed both displacement of resident populations and voluntary migration associated with new economic activity (e.g. expanded ports or industrial parks). Systematic assessment of the environmental vulnerability of the human mobility associated with BRI projects could help to improve the sustainability of such projects (and to flag problematic projects prior to major commitments of capital). Although there are ongoing attempts to make the BRI more sustainable (BRIGC, n.d.), there is no set of environmental and social standards that are consistently applied to BRI projects (unlike the projects of international financial institutions) (Minas, 2020).

CHINA SHOULD IMPLEMENT THE UN GUIDING PRINCIPLES ON INTERNAL DISPLACEMENT.

The Guiding Principles are a non-binding expression of norms based upon international human rights, humanitarian and refugee law. They relevantly define internally displaced persons (IDPs) as “persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of ... natural or human-made disasters, and who have not crossed an internationally recognized state border” (OCHA, 2004). Rigorous implementation of the Principles would arguably improve the conditions of people displaced by disasters in China.

Of particular salience, the Principles provide that IDPs: “shall not be discriminated against in the enjoyment of any rights and freedoms on the ground that they are internally displaced” (Principle 1); that people are protected from being arbitrarily displaced, including in “cases of disasters, unless the safety and health of those affected requires their evacuation” (Principle 6); that “[d]isplacement shall last no longer than required by the circumstances” (Principle 6.3); that authorities must “ensure that all feasible alternatives are explored in order to avoid displacement altogether” (Principle 7.1); and that other than in cases of emergency, the “free and informed consent of those to be displaced shall be sought” (Principle 7.3). Moreover, the Guiding Principles also prohibit as “arbitrary” displacement “[i]n cases of large-scale development projects, which are not justified by compelling and overriding public interests” (Principle 6) – a principle of clear relevance to the planning of resettlement for hydro and other “environmental” projects.



SMOKE BILLOWS FROM A LARGE STEEL PLANT AS A CHINESE LABORER WORKS AT AN UNAUTHORIZED STEEL FACTORY IN INNER MONGOLIA, CHINA, ON NOV. 4, 2016. KEVIN FRAYER/GETTY IMAGES

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