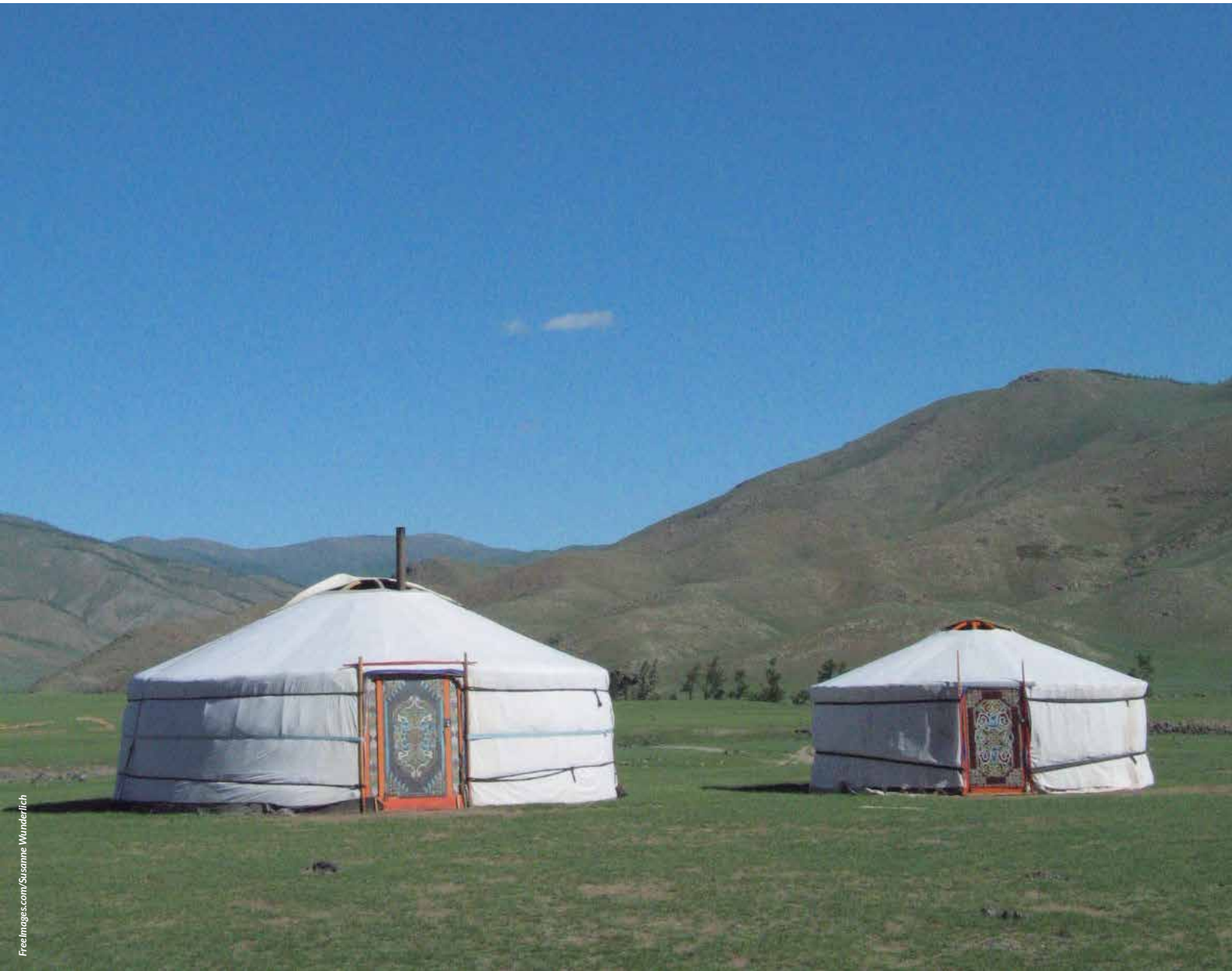
Global Green Growth Institute

GGGI
Mongolia Country Planning Framework 2016-2020



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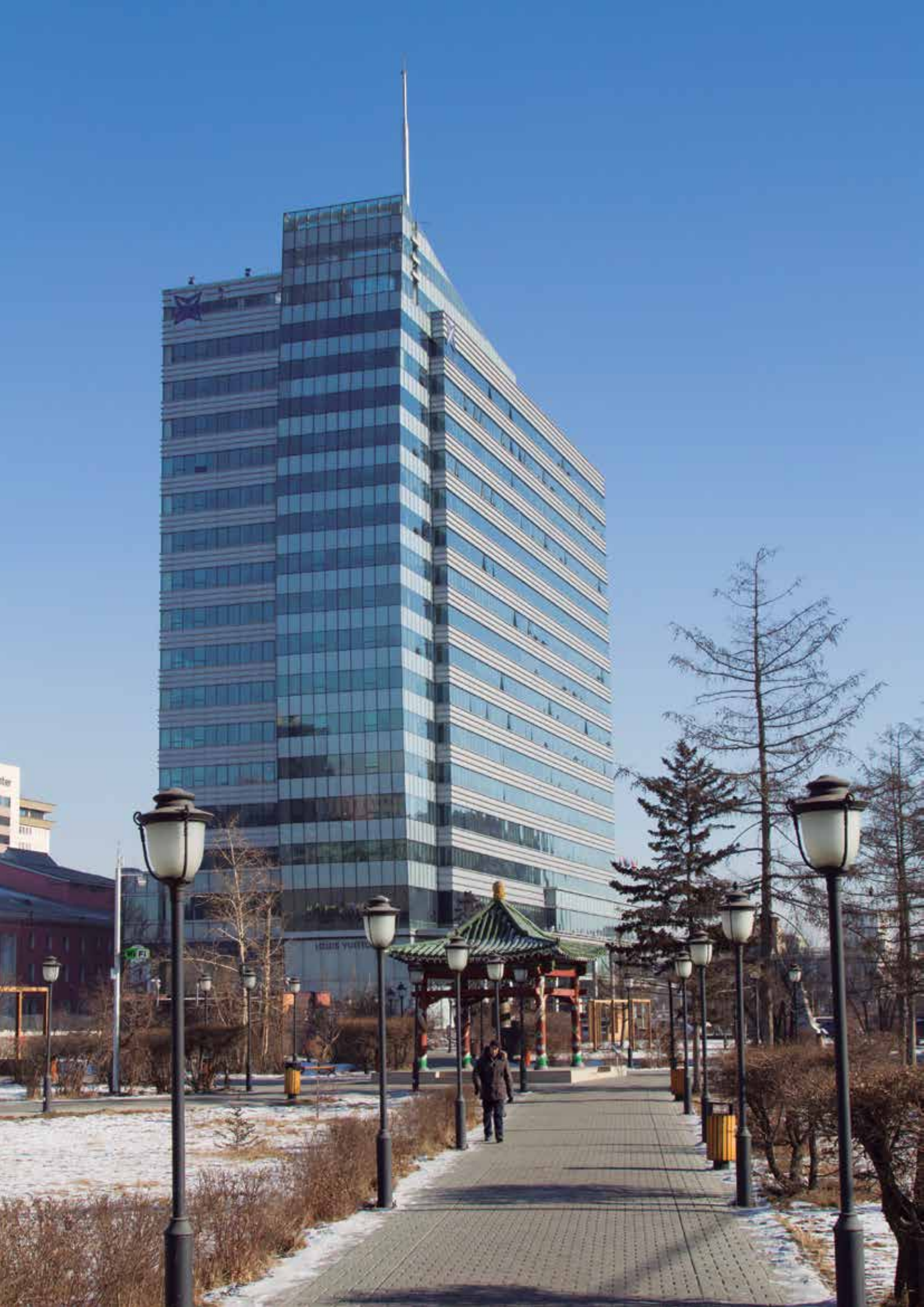
Abbreviations and Acronyms

ADB	Asian Development Bank
CPF	Country Planning Framework
°C	Degree Celsius
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GGGI	Global Green Growth Institute
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GNI	Gross National Income
GoM	Government of Mongolia
GTCK	Green Technology Center Korea
INDC	Intended Nationally Determined Contribution
JICA	Japanese International Cooperation Agency
MDG	Millennium Development Goal
MEGDT	Ministry of Environment, Green Development and Tourism
NAMA	Nationally Appropriate Mitigation Action
NDS	Millennium Development Goals-Based Comprehensive National Development Strategy of Mongolia 2008-2021
NGDP	National Green Development Policy
NSC	National Security Concept
PM	Particulate Matter
PPP	Public-Private Partnership
SDC	Swiss Agency for Development and Cooperation
SDG	Sustainable Development Goal
UN-PAGE	United Nations Partnership for Action on Green Economy
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change



1. Introduction to the Country Planning Framework

"We own a bright future if, among a few other factors, we manage these resources wisely to benefit present and future generations."

H.E Mr. Tsakhiagiin Elbegdorj, President of Mongolia, in World Economic Forum's Scenarios for Mongolia Report, 2012

The Country Planning Framework (CPF) of the Global Green Growth Institute (GGGI) lays out the green growth objectives that GGGI's interventions aim to support Mongolia in achieving. The CPF is formulated with the development challenges of Mongolia in mind, and supports the national goals of economic growth, poverty reduction, social inclusion and environmental sustainability. The CPF is aligned with the organizational priorities of GGGI as articulated in the *GGGI Strategic Plan 2015-2020*.[1] The CPF is also aligned with the Sustainable Development Goals (SDGs) and Mongolia's Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC). The CPF is thus a contextualized planning document for in-country programming.

The achievement of the CPF outcomes will require the support of the national government, private sector and other partners, and is contingent on the CPF's adherence to the following key principles:

- Ownership – It is co-owned by the government and endorsed by the lead ministry that GGGI has an agreement with, in Mongolia this is the Ministry of Environment, Green Development and Tourism (MEGDT);
- Mutual accountability – It demonstrates commitment by GGGI and the government to collaborate and provide support in implementing the CPF;
- Alignment – It is aligned to national objectives and informed by the *GGGI Strategic Plan 2015-2020*;
- Leadership – Its formulation is jointly led by the GGGI country team and the Government of Mongolia (GoM).

Box 1. About GGGI

The Global Green Growth Institute (GGGI) was founded to support and promote a model of economic growth known as "green growth", which targets key aspects of economic performance such as poverty reduction, job creation, social inclusion and environmental sustainability.

GGGI envisions a resilient world achieved through strong, inclusive and sustainable green growth, and is dedicated to supporting the transition of GGGI member countries toward a green growth model. In pursuit of these goals, GGGI works with developing and emerging countries to design and deliver programs and services that demonstrate new pathways to pro-poor economic growth.

GGGI supports stakeholders through two complementary and integrated work streams—Green Growth Planning & Implementation and Knowledge Solutions—that deliver comprehensive products and services designed to assist in developing, financing and mainstreaming green growth in national economic development plans.

GGGI's interventions emphasize change in four priority areas considered to be essential to transforming countries' economies including energy, water, land use and green cities.

Headquartered in Seoul, Republic of Korea, GGGI also has representation in a number of partner countries.

1 GGGI, *GGGI Strategic Plan 2015–2020: Accelerating the Transition to a New Model of Growth* (Seoul, 2015).

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2. Country Overview

Mongolia presents significant opportunities for realizing green growth. GGGI's services to the GoM and cooperation with development partners seek to address the most urgent challenges and identify catalytic opportunities for green growth transitions.

Table 1. Mongolia at a glance

Total population, 2015	3 million
Total area (sq. km)	1,564,120
GDP (current USD), 2014	12.0 billion
GNI per capita, purchasing power parity (current international dollars), 2013	8,810
OECD DAC classification, 2011	Lower middle-income
Human Development Index, 2014	0.698 (ranked 103rd)
Percentage of population under the national poverty line, 2012	27.4
CO_2 emissions (metric tons per capita), 2010	4.24
Environmental Performance Index, 2014	44.67 (ranked 111th)
GHG emissions (million metric tons CO_2 equivalent), 2010	21.9
GHG emissions by sector (% of total)	
Energy	63.9
Agriculture	29.2
Industry	6.2
Waste	0.7
Share of renewable electricity generation (% of total installed capacity), 2013	4.5
Total installed electricity generation capacity (megawatts), 2014	922
Projected electricity demand in 2030 (megawatts), 2014	3,800
Water productivity (2005 USD GDP per cubic meter of total fresh water withdrawal), 2013	9
Percentage of population with access to water supply systems, 2010	21.2
National water demand by sector (% of total), 2010	
Irrigation	30.2
Livestock	23.5
Drinking (urban)	15.9
Mining	12.7
Energy	10.4
Land desertification (% of land area), 2012	72
Forest area (% of land area), 2012	6.96

Sources: Government of Mongolia, 2010; Ministry of Energy, 2014; Ministry of Environment, Green Development and Tourism, 2010, 2012; Mongolian Statistical Information Center, 2010; National Statistics Office of Mongolia, 2012, 2013, 2015; UNDP, *Human Development Report 2014 – Sustaining Human Progress: Reducing Vulnerabilities and Building Resilience* (New York, 2014), http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf; World Bank, "Mongolia," http://data.worldbank.org/country/mongolia; Yale University, "Environmental Performance Index: Country Rankings," http://epi.yale.edu/country-rankings

2.1 Rapid Economic Growth, but Uneven Distribution of the Benefits

Mongolia's shift to democracy in 1990 has paved the way for the country's current development path. Through the reduction of government subsidies combined with trade liberalization, Mongolia's market economy has grown steadily, but unevenly and with intensive per capita use of fossil fuels.

Mineral exploration and mine development have helped drive Mongolia's economy, peaking at a gross domestic product (GDP) growth rate of 17.3% in 2011. However, the country's vulnerability to natural disasters and commodity price cycles has persisted. Despite its graduation to low middle-income country status in 2011, economic challenges have remained—such as loose monetary policy, waning foreign investment and high inflation.[2] Overall, Mongolia's growth potential has yet to be fully realized.

The pace of poverty reduction for the country has lagged behind its steep growth in GDP. The official poverty rate has trended downward, decreasing from 38.7% in 2010 to 27.4% in 2012.[3] However, the inequality in household per capita consumption (as measured by the Gini coefficient) increased 9% from 2003 to 2008. Mining-led growth may further exacerbate inequality, given its capital intensity and automation. Although the mining sector accounted for 25% of GDP in 2010, the sector has provided little in the way of employment creation, directly accounting for as few as 2% of jobs.[4] The agriculture sector employs over 40% of the workforce, yet accounts for less than 15% of GDP. Against this background, the richest 30% of the population has come to control at least a 65% share of the national income.[5]

The disparities between rural and urban areas, and between women and men clearly show the uneven development in Mongolia. Poverty remains higher among the rural population (33.3% in 2011) than in urban centers (26.6%). Furthermore, although women are more likely to have completed higher education and maintain full-time employment, they earn less than men and are underrepresented in high-level positions in business and politics. Nevertheless, women's participation in elected office and civil service is increasing, as promoted in part by the passage of gender quotas for civil service management positions at both national and local levels in 2011. Since the 2012 parliamentary election, the proportion of women in parliament has increased from 3.9% to 14.7%. But barriers to women's political and economic participation has remained—such as high campaign costs and gender stereotyping.[6]

Mongolia's main economic risks are linked to commodity prices, demand for Mongolia's exports and energy security. In recent years, Mongolia has not been able to implement counter-cyclical fiscal measures to combat commodity price fluctuations, especially for coal and copper. Simultaneously, China has come to absorb the majority of Mongolia's exports, creating high dependency on a single market. Moreover, Mongolia is a net energy importing country, with roughly 90% of its petroleum products acquired from Russia. In order for Mongolia to diversify its economy, beyond minerals and mining, the availability of capital and skilled labor is critical.

2.2 Climate Change, Water Scarcity, Desertification and Air Pollution are Rising Concerns

The Mongolian climate is expected to continue to change dramatically, with higher average annual temperatures, more snow in winter and less rain in summer, as well as more variable weather conditions with longer and more

2 International Monetary Fund, "Mongolia," IMF Country Report No. 14/64, March 2014, http://www.imf.org/external/pubs/ft/scr/2014/cr1464.pdf.
3 Ministry of Economic Development, GoM, *Millennium Development Goals Fifth National Progress Report 2013* (Ulaanbaatar, 2013), 31.
4 Business Council of Mongolia, "Labor Analysis," 2012.
5 Ministry of Nature, Environment and Tourism, GoM, *Mongolia Second National Communication Under the United Nations Framework Convention on Climate Change* (Ulaanbaatar, 2010), 47.
6 Ministry of Economic Development, GoM, *Millennium Development Goals Fifth National Progress Report 2013* (Ulaanbaatar, 2013).

frequent droughts.[7] The annual mean air temperature increased by 2.07°C between 1940 and 2014, which was significantly higher than the global average.[8]

Ensuring the security of its long-term water supplies is perhaps Mongolia's most critical environmental and commercial challenge. Fresh water is arguably the most crucial ingredient for realizing green growth, providing ecosystem services and fundamental security to people and livestock. Surface water resources are at risk of irreversible decline, with growing competition from industry, pastoralism, conservation flows and human consumption. A study by the MEGDT reveals that over 70% of Mongolia's territory is already at some stage of desertification due to a combination of factors—especially overgrazing, industrial development and climate change.[9] Future mine development and agricultural projects will demand significant water resources, particularly in the parched Gobi region.

Contrary to the rising GDP, the quality of life in urban settlements has deteriorated due to air pollution. Mongolia is the least densely populated country in the world, yet its capital city, Ulaanbaatar, is home to at least 45% of the population, nearly two-thirds of which live in the peri-urban (or *ger*)[10] districts surrounding the city center. Increasing rural-urban migration is evident in Mongolia's provincial (or *aimag*) centers as well as in the settlements close to major mining sites. Around 85% of the urban residents rely exclusively on coal- and wood-burning stoves for heating and cooking, which, when taken together with coal-fired heat-only boilers, is the most significant source of air pollution. Studies have estimated that 1,600 people die prematurely every year due to exposure to harmful levels of airborne particulate matter (i.e., $PM_{2.5}$).[11]

Especially since natural capital is the bedrock of Mongolia's growth, with a majority of the country's potential wealth in minerals, forest resources, cropland and pastureland, green development models are needed to address the escalating climate and environmental impacts, and ensure economic security (see Box 2).

Box 2. The Case for Green Growth in Mongolia

The relevance for green growth in Mongolia lies in enhancing livelihoods and sectoral capacity through increasing climate resilience in energy generation and efficiency, water resources management, and infrastructure development.

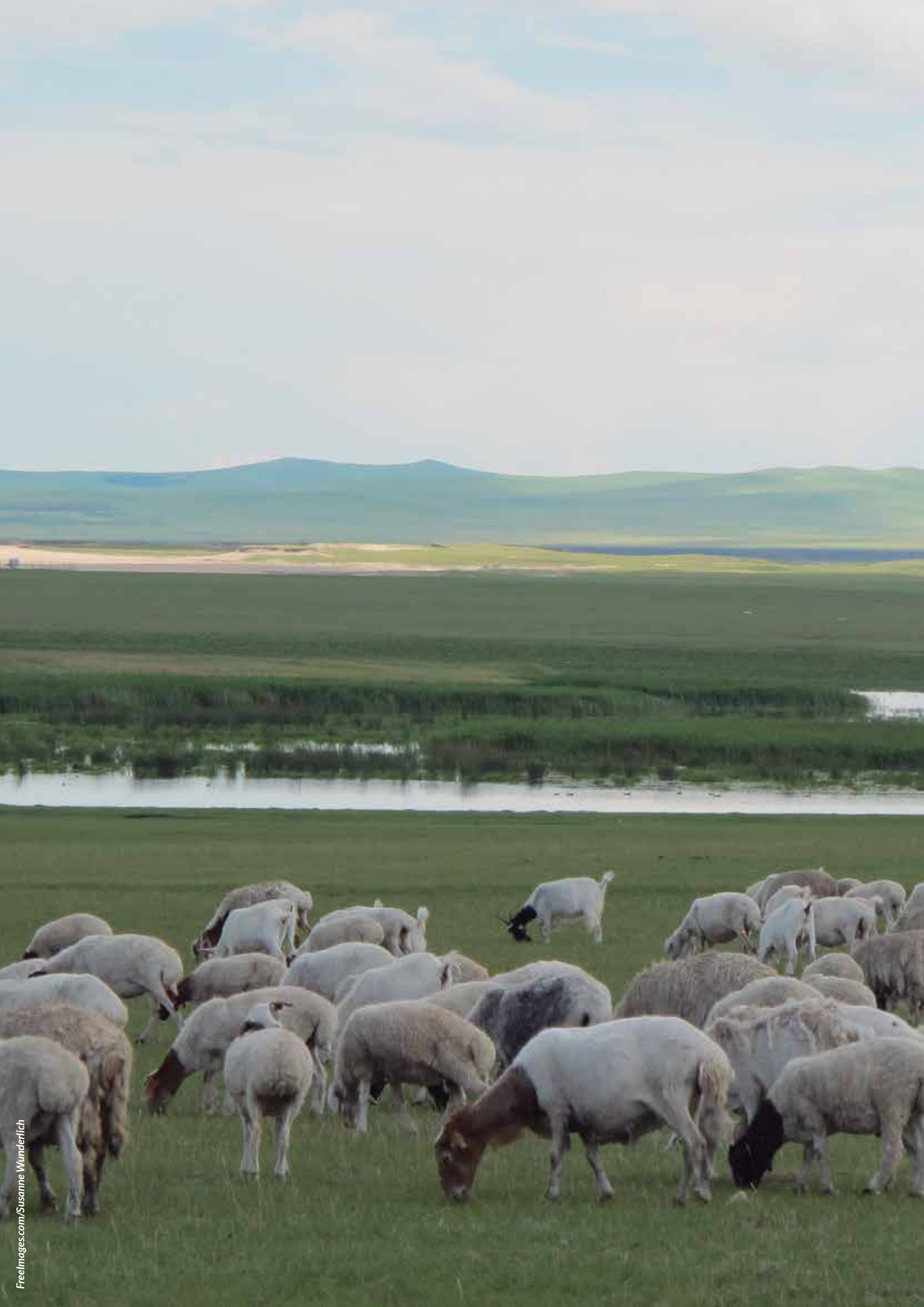
Greener energy generation and increased energy efficiency will improve energy security and reduce the costs of energy, especially for low-income households.

Coordinated, climate-resilient urban infrastructure planning and development will accelerate both national and regional economic growth.

Reduced water intensity and development of water efficient technologies will improve the security of Mongolia's water supplies.

Building technical capacity and expertise in green growth offers the best potential to decouple Mongolia's economy from fossil fuel-intensive infrastructure and industry.

7 ADB, *Demand in the Desert: Mongolia's Water-Energy-Mining Nexus* (Mandaluyong City, 2014), 9, http://www.adb.org/sites/default/files/publication/42820/demand-desert.pdf.
8 GoM, "Intended Nationally Determined Contribution Submission by Mongolia to the Ad-Hoc Working Group on the Durban Platform for Enhanced Action," 2015, http://www4.unfccc.int/submissions/INDC/Published%20Documents/Mongolia/1/150924_INDCs%20of%20Mongolia.pdf.
9 MEGDT, *Desertification Atlas of Mongolia* (2014), 9.
10 *Ger* is a circular-shaped, moveable traditional dwelling composed of a latticework frame, layered felt and canvas exterior. It is also the term for "home" in Mongolian.
11 World Bank, "Together for a Green and Clean Ulaanbaatar," July 11, 2011, http://www.worldbank.org/en/news/feature/2011/07/11/together-green-clean-ulaanbaatar.



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3. National Priorities

Three national policies have positioned Mongolia toward its green growth transition:

1. The Millennium Development Goals-Based Comprehensive National Development Strategy of Mongolia 2008-2021 (NDS);

2. The National Security Concept of 2010 (NSC);

3. The National Green Development Policy of 2014 (NGDP).

Each framework builds upon its predecessor, reflecting the iterative and dynamic nature of Mongolia's policymaking.

The parliament-approved NDS is an ambitious national-level policy commitment to the Millennium Development Goals (MDGs), aimed at promoting human development and a sustainable environment. The NDS 14-year development path is defined in two phases: (1) 2008-2015 targeted the MDGs and intensive economic development; and (2) 2016- 2021 targets the transition to a knowledge-based economy.
The NDS highlights six priority areas as follows:

1. Achieve the MDGs and provide for an all-round development of Mongolian people;

2. Intensively develop export-oriented, private sector-led, high technology-driven manufacturing and services, with particular focus on information, communication development, promoting bio and nanotechnology, transit transportation, logistics, financial mediation services, deeper processing of agricultural products, and create a sustainable, knowledge-based economy;

3. Exploit mineral deposits of strategic importance, generate and accumulate savings, ensure intensive and high economic growth, and develop modern processing industry;

4. Ensure intensive development of the country's regions, their infrastructure, and reduce urban-rural development disparities;

5. Create a sustainable environment for development by promoting capacities and measures on adaptation to climate change, halting imbalances in the country's ecosystems and protecting them;

6. Consolidate further political democracy, foster a transparent, accountable, just system free from corruption and red tape.

Similarly, the NSC explicitly cites environmental security as fundamental to the prosperity and well- being of all Mongolians. The NSC lays out the case for green growth by integrating geopolitics, food security and the economy with climate change risks and mitigation measures. When the GoM adopted the NDS and NSC, it recognized additional opportunities for a transition to a greener economy and responded through its Green Development Strategy. After eighteen months of parliamentary review, this strategy culminated in the approval of the National Green Development Policy of Mongolia (NGDP) in June 2014.

The NGDP defines "green development" as "a pattern of development that reduces poverty through an inclusive economy in which resources are used efficiently and without waste, supports ecosystem services, lowers greenhouse gas (GHG) emissions and waste."

Importantly, the NGDP shaped Mongolia's INDC, as well as its expected commitments under the SDGs. The NGDP also provided the primary guidance for this CPF.

The six strategic objectives of the NGDP address the themes of climate compatible development, alternative financing, green employment, promotion of environmental and cultural heritage, and urban infrastructure, articulated in the NGDP as follows:

1. Promote a sustainable consumption and production pattern with efficient use of natural resources, low GHG emissions and reduced waste generation;

2. Sustain the ecosystem's carrying capacity by enhancing environmental protection and restoration activities, and reducing environmental pollution and degradation;

3. Increase investment in natural capital, human development and clean technology by introducing financing, tax, lending and other incentives to support a green economy;

4. Engrain a green lifestyle by reducing poverty and promoting green jobs;

5. Encourage education, science and technology to serve as the catalyst for green development, and develop cultural values and livelihoods that are in harmony with nature;

6. Develop and implement a population settlement plan in accordance with climate change, while considering the availability of natural resources and the resilience of regions.

The NGDP commits the government to transition to green development through the following national targets by 2020:

- 20% share of renewable electricity in total installed capacity of energy production;
- 20% reduction of building heat loss compared to 2010 level;
- 20% of waste is recycled;
- 2% of total GDP allocated for green development;
- 2% of total GDP allocated for science and technology research;
- 20% share of green procurement in total government procurement;
- 25% share of total territory is designated as protected;
- 20% increase in investment in environmental protection and restoration since 2013;
- 8.5% of territory is designated as forest;
- 80% of population with access to safe drinking water;
- 40% of population connected to improved sanitation facilities;
- 24% poverty rate, down from 27.4% in 2013;
- 15% of area in Ulaanbaatar and other settlements designated as greenery spaces;
- 28% of GDP generated from agriculture and manufacturing sectors.

To enable private investment flows, the State Policy on Public-Private Partnership (2009) and the Law on Concessions (2010) helped establish the foundations for green infrastructure concessions and related services. In 2015, the GoM sought to identify and build commitment to the steps needed to achieve its green growth ambitions through the formulation of national action and investment plans, such as the NGDP Mid-Term Implementation Plan.

4. GGGI's Engagement in Mongolia

GGGI and the GoM formally initiated cooperation in November 2011 through the signing of a Memorandum of Understanding with the Ministry of Nature, Environment and Tourism (now, the MEGDT). In June 2013, Mongolia began the process of becoming a GGGI member country, and its membership was formalized in July 2014. The GoM has actively participated in GGGI's global platforms, such as South-North-South capacity building, and supported GGGI's in-country programming through the provision of office space and operational counterparts. GGGI's programming in Mongolia has been made possible through the generous support of GGGI's core contributing members and the Swiss Agency for Development and Cooperation (SDC).

In Mongolia, GGGI provided technical assistance in the areas of energy, green city development, green growth planning, public-private partnerships (PPPs) and the water-green growth nexus.

Under the green cities theme, GGGI conducted a technical and economic assessment of Ulaanbaatar's transportation systems management, and the potential for replacing diesel buses to reduce GHG emissions. GGGI recommended data-driven approaches to promote alternative public transport systems, and analyzed the potential impacts of such approaches on GHG emissions reduction, involving civil servants and key stakeholders in capacity building.

In 2014, GGGI began its support in design research and preliminary assessment of green technologies for public kindergartens in Mongolia's peri-urban settlements. In partnership with Green Technology Center Korea (GTCK), GGGI facilitated the site selection, stakeholder consultations, initial design and economic analysis for a green public kindergarten facility in a *ger* district of Ulaanbaatar.

In the energy sector, GGGI and local stakeholders developed three green energy scenarios, along with a business-as-usual reference, through the Long-range Energy Alternatives Planning System software tool. The resulting scenarios provided clear evidence of the potential benefits of large-scale conversion to renewable energy generation for export, which helped shape the NGDP and INDC target for the share of electricity generation from renewable sources (20% by 2020 and 30% by 2030).

Following the passage of the NGDP in 2014, GGGI supported a complex multi-stakeholder green growth planning process to identify key challenges and implementation opportunities within the NGDP's six strategic objectives, resulting in the initial draft of the NGDP Roadmap in December 2014. In parallel, GGGI contributed to the development of Mongolia's green growth indicators by providing capacity building assistance and, later, an analysis of Mongolia's environmental data collection practices, cross-referenced with NGDP indicators.

GGGI's 2015-2016 biennial program for Mongolia supports the government's planning and implementation of the NGDP through technical services, knowledge development and private sector solutions. These interventions have helped to embed green growth into sectoral and sub-national policy and action planning.

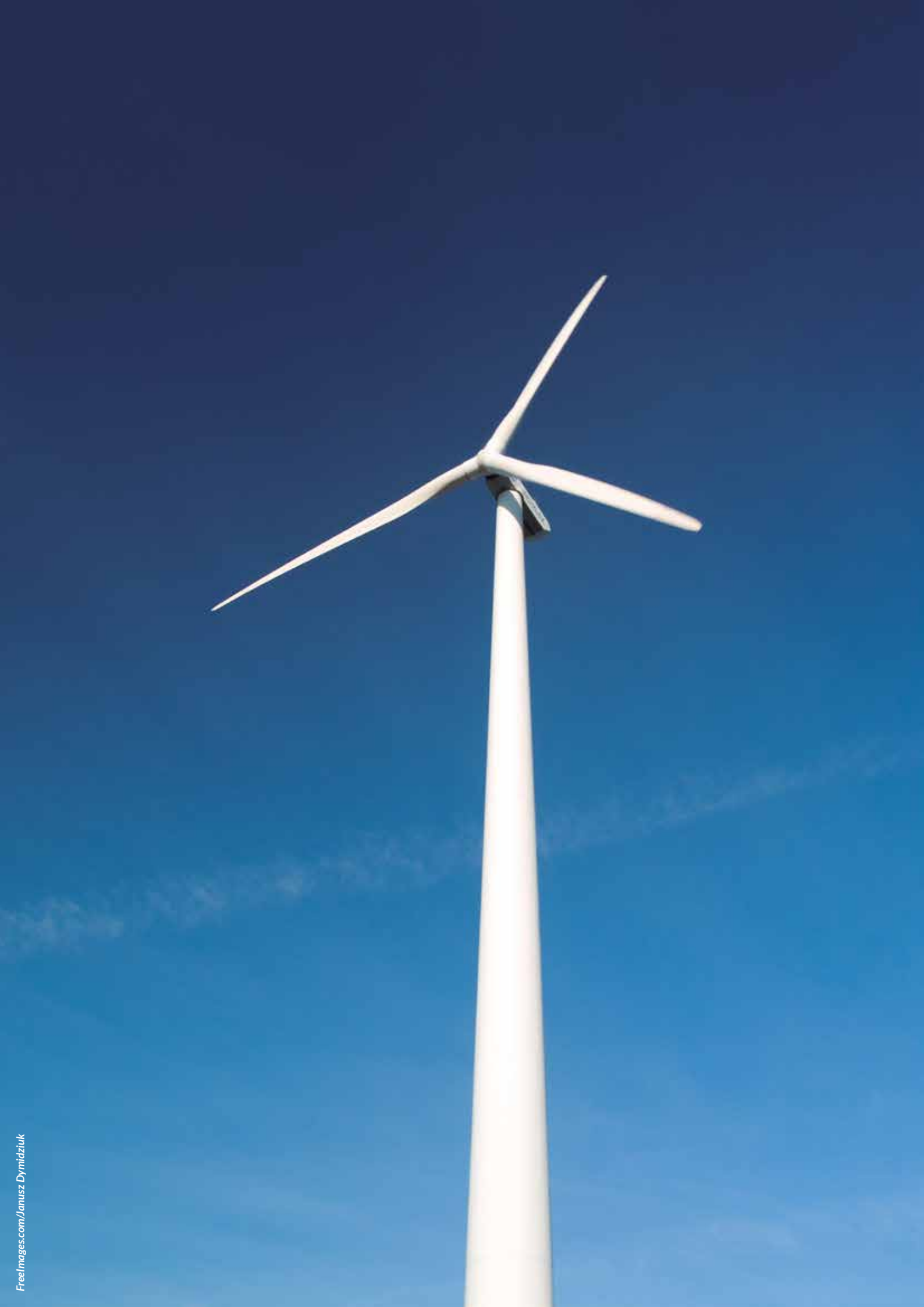
GGGI's water programming, supported by SDC, focused on the development and improvement of the GoM's water information platform and associated institutional capacity building. Energy and cities programming focused on sub-sectoral assessment (i.e., alternative heating systems planning) and energy efficient building planning (i.e., green public kindergarten design and assessment). GGGI's efforts to increase local knowledge exchange and development were reflected in increased Mongolian language publications and multi-stakeholder learning opportunities.

Systematic localization of the NGDP began late 2014. The GoM designated five *aimags* as models for green development, initiating the strategy and action plan development process with GGGI's support. Similarly, in 2015, Ulaanbaatar began crafting its own green development strategy and action plan, in which GGGI actively participated.

As the impact of large-scale infrastructure on environment and climate change is significant, GGGI worked with the GoM to improve its capacity in project preparation and financing for green infrastructure.

GGGI provided policy and project-level advice in areas co-identified with government counterparts for PPPs. GGGI began assisting the GoM in greening its concessions projects through developing PPP models for educational infrastructure and conducting a pre-feasibility assessment of Ulaanbaatar waste-to-energy concessions.

Cumulatively, these collaborations have positioned GGGI as a strategic partner of the GoM in its transition to green growth.



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5. Country Planning Framework Analysis

The CPF for Mongolia combines the GoM's mid-term green growth ambitions with the *GGGI Strategic Plan 2015-2020*. Together with the government, GGGI identified, screened and validated its key strategic areas of intervention through consultative dialogue and internal assessments on priority setting and results programming, including four stakeholder workshops between March 2014 and March 2015. A comprehensive survey of other domestic and international cooperation efforts in green growth also helped define GGGI's intervention focus in Mongolia.

In March 2015, a consultative workshop on the CPF brought together nearly 80 participants representing relevant government agencies, as well as civil society, private sector, academia and international organizations. Through a series of group discussions and tool-based exercises, participants prioritized key problems, objectives and action frameworks for each of GGGI's four global thematic areas—energy, green cities, land use and water.[12] The following key green growth issues were identified per GGGI's global thematic areas:

- Energy – green energy transition;
- Green cities – green city demonstration models and lifestyle change;
- Land use – shift to integrated land management and its enforcement;
- Water – water quality and supply improvement.

Subsequently, GGGI and the GoM analyzed the above priorities and proposed actions, and identified those that best match GGGI's mandate, position and capacity to act. The following three green growth priority issues emerged:

1. Brown energy and energy inefficiency threaten economic security;
2. Poorly coordinated urban infrastructure development constrains growth;
3. Mismatched supply-demand and climate vulnerability of water undermine development.

5.1 Brown Energy and Energy Inefficiency Threaten Economic Security

In 2014, during peak winter demand, Mongolia generated the equivalent of 825 megawatt hours of electricity, of which 96.2% came from coal-fired thermal stations.[13] Mongolia's energy demand is projected to reach 3,800 megawatts by 2030, one-third of which the mining sector alone will consume.[14] The off-grid, rural locations of major mining projects offer opportunities for grid balancing and base load pairing for green energy producers, given satisfactory incentives. Access to heating is a matter of human survival in Mongolia, with the demand for heating over twice that of electricity due to the cold climate.[15] Nationally, corporate entities consume the majority of all electricity (73%), followed by *ger* households (17%) and apartment dwellers (9.9%).[16] *Ger* area residents on average spend 4% to 5% of their monthly income on electricity.[17]

Coal is in great abundance in Mongolia. Energy generation infrastructure consists primarily of coal-fired sources (91.6%).[18] Government subsidies to Mongolia's brown energy system represent a key challenge to the viability of Mongolia's renewable energy resources. Under current tariff schedules, even brown energy producers barely cover operating costs, let alone badly needed capital improvements. To promote investment in energy generation, especially green energy, the GoM announced plans to liberalize tariffs and retail pricing in 2015. In practice, however, removing coal subsidies and increasing energy rates face political resistance.

12 See Annex 1 for further information on the CPF workshop participants and their proposed action frameworks.

13 Energy Regulatory Commission of Mongolia, *Energy Statistics 2014* (2015).
14 UN-PAGE, *Mongolia's Transition to a Green Economy: A Stocktaking Report* (2014), 14, http://www.un-page.org/files/public/final_mongolia_stocktaking_report.pdf.
15 ADB, *Demand in the Desert: Mongolia's Water-Energy-Mining Nexus* (Mandaluyong City, 2014), 13, http://www.adb.org/sites/default/files/publication/42820/demand-desert.pdf.
16 Ibid., 31.
17 World Bank, *Managing Urban Expansion in Mongolia: Best Practices in Scenario-Based Urban Planning* (Washington, D.C., 2010), 70.
18 UN-PAGE, *Mongolia's Transition to a Green Economy: A Stocktaking Report* (2014), 14, http://www.un-page.org/files/public/final_mongolia_stocktaking_report.pdf.

In Mongolia, the average energy required for industrial output is seven times greater than the world's average.[19] **High energy intensity in both industrial and residential applications offers potential for energy efficiency improvements.** In 2014, Mongolia's electricity production increased by 5.1% and heating supply increased by 3.5% year-on-year. Simultaneously, imported electricity rose by 17.3%.[20] Energy demand in the industrial sector, particularly mining, is expected to grow more quickly than any other, overtaking buildings as the largest energy user in the coming decade.

Improving the energy efficiency of the construction sector is one of the core areas of Mongolia's initial Nationally Appropriate Mitigation Action (NAMA) proposals as well as its INDC to reduce GHG emissions. By some estimates, nearly 40% of the heat supplied to houses and buildings is lost.[21] Correspondingly, energy efficiency can play a significant role in energy savings, reducing not only GHG emissions from buildings, but also contributing to poverty alleviation (e.g., heating cost reduction) and public health improvement.

5.2 Poorly Coordinated Urban Infrastructure Development Constrains Growth

The greening of infrastructure is crucial to addressing air pollution and driving sustainable growth. The suite of yet-to-be-developed urban infrastructure for transportation, water services, waste management and social services has significant green growth potential.

With rapid rural-urban migration, the GoM faces the challenges of providing basic services through inclusive and green city development plans in Ulaanbaatar, provincial (or *aimag*) centers and village (or *soum*) settlements.[22] In 2012, 68% (1.9 million) of Mongolia's population lived in urban areas, of which at least 1.3 million lived in the capital city. From 2000 to 2012, Ulaanbaatar's population increased by an annual average of 6%, due primarily to rural- urban migration. Urban settlements in Mongolia are characterized by severe disparity between the central, formally planned (apartment) areas, and the peripheral semi-planned (*ger*) areas, the latter largely lacking improved roads and infrastructure services.[23]

Air pollution is a growing nationwide concern, particularly in Ulaanbaatar. The calculated exposure of the population to harmful fine particulate matter ($PM_{2.5}$) in Ulaanbaatar has been reported at up to seven times greater than the World Health Organization's recommended tolerable threshold on average throughout the year.[24] An estimated 80% of Ulaanbaatar's air pollution is thought to originate from its *ger* areas, where annually about 542,900 tons of mostly raw coal are consumed.[25] While sources of air pollution vary, the problem points to the urgent need for greener energy infrastructure, particularly for heating.

The number of registered motor vehicles in Mongolia has increased 4.4 times since 1998, yet the transportation infrastructure and services have failed to respond correspondingly. Systemic traffic congestion contributes to loss of productivity and hazardous air pollution—the third largest source in Ulaanbaatar, by some estimates.[26] Beyond Ulaanbaatar's main thoroughfares, public transportation access is very limited, disproportionately affecting low- income households. To accelerate economic growth, increased public transport connectivity, less-polluting vehicles and non-motorized vehicle promotion are needed.

The Ulaanbaatar Master Plan 2020 and Development Approaches for 2030[27] targets infrastructure expansion to meet rapid population growth and increased provision of services to peri-urban areas. Priority issues stipulated in the plan include improvements to the *ger* areas by providing basic infrastructure, such as water supply, sewerage, drainage, roads and other basic amenities.

The key challenges to providing infrastructure are the limited availability of public funds, weak technical capacity to prepare and finance projects, and the low-income and vulnerability of households in target areas. Like the national government, the *aimag* and municipal governments

19 Ibid., 17.
20 Energy Regulatory Commission of Mongolia, *Energy Statistics 2014* (2015), 4.
21 GoM, "NAMA submission to UNFCCC Secretariat from Mongolia," 2010.
22 An *aimag* is the territorial unit of province, directly below the national designation. A *soum* is the territorial unit of county, below the province designation.
23 ADB, "Interim Country Partnership Strategy: Mongolia 2014–2016," August 2014, http://www.adb.org/sites/default/files/institutional-document/43000/icps-mon-2014-2016.pdf.
24 World Bank, *Air Quality Analysis of Ulaanbaatar: Improving Air Quality to Reduce Health Impacts* (Washington D.C., 2011).
25 SICA Consulting, "Census for Static Air Pollution Sources," 2014.
26 World Bank, "Air Pollution in Ulaanbaatar: Initial Assessment of Current Situation and Effects of Abatement Measures," Discussion Paper, December 2009, 42.
27 *The Ulaanbaatar Master Plan 2020 and Development Approaches for 2030* is a combined plan and policy approved by the State Great Khural under Resolution 23 in February 2013.

may solicit infrastructure funds through a variety of mechanisms, such as PPP, although capacity and access remain limited.

The development of regional centers and upgrading of peri-urban areas may reduce overcrowding in Ulaanbaatar and boost regional development. This will require better integrated urban planning at the national, provincial and municipal levels for green growth, and the up scaling of efforts to build local municipal capacity to apply and implement green growth policies, in order to achieve lasting regional development.

5.3 Mismatched Supply-Demand and Climate Vulnerability of Water Undermine Development

Mongolia's water resources may appear adequate for its modestly-sized population and economic growth ambitions, but in reality, there is a mismatch between water supply and demand, and water resources are costly to exploit. Managing water as a tool for greener growth means that the government proactively works with key stakeholders to appropriately pair water supply and demand, and improve long-term water security.

Total national water use was 327.1 million m^3 in 2010. The total surface water resources have been estimated at 598.5 billion m^3 per year, which is approximately 1,800 times greater than the 2010 national water consumption.[28] However, estimates of exploitable renewable ground water resources appear considerably smaller, at just 10.8 billion m^3 per year.[29]

Inefficient use and climate change threaten surface and ground water resources alike, causing some springs, lakes and their associated ecosystems to vanish. Through amendments in 2004 and a comprehensive overhaul in 2012, the Law on Water established river basin-based management practices with the goals of optimizing use of water resources and protecting ecosystems. Although, the policy intent appears conducive to green growth, its implementation remains a challenge.

Water policy and regulations must respond to seasonal and regional variation, requiring timely information and enforcement. The variable quality and limited completeness of water data remains a significant constraint to water policymaking, regulation and enforcement. Despite the GoM's initial efforts to streamline water data collection, disclosure and analysis, institutional complexity and weak capacity inhibited the timely, accurate flow of critical water information to key stakeholders, including regulators and policymakers. Since water resources are distributed unevenly in Mongolia, water may not be available at the right place and time, and in the required quantity and quality.[30]

Water saving potential exists in the mining, agriculture, residential and energy sectors, particularly within thermal power plants.[31] In 2010—the most recent year for which complete data on annual water use in Mongolia is available—agriculture and livestock were the largest water users. Mining registered as the fourth largest water user, accounting for 12.7% of national use, but this proportion is forecast to increase significantly by 2030.[32] For example, upon commissioning in 2013, the Oyu Tolgoi mine alone went on to consume raw ground water of 13.5 million m^3 in 2014—equivalent to roughly 4% of total 2010 national water use by comparison.

In 2008, only 65% of the public water infrastructure operating costs were recovered through the prevailing pricing. Recent analysis recommended creating a transparent incentive structure, focused initially on urban households and mining.[33] In 2013, the MEGDT mandated major water users to reuse a minimum of 60% of process water, resulting in an estimated annual water savings of approximately 73 million m^3 in 2013.[34]

Mongolia faces the urgent challenge of increasing economic development while lowering water use intensity. *Ger* area redevelopment into residential areas with full-service infrastructure is expected to significantly increase the demand for water, given that

28 Ministry of Environment and Green Development, GoM, *Integrated Water Management National Assessment Report, Volume I* (Ulaanbaatar, 2012).
29 Ministry of Nature, Environment and Tourism, GoM, *Mongolia Second National Communication Under the United Nations Framework Convention on Climate Change* (Ulaanbaatar, 2010), 44.
30 Ibid., 14.
31 ADB, *Demand in the Desert: Mongolia's Water-Energy-Mining Nexus* (Mandaluyong City, 2014), 44, http://www.adb.org/sites/default/files/publication/42820/demand-desert.pdf.
32 2030 Water Resources Group, "Mongolia: Targeted Analysis on Water Resources Management Issues," March 2014, 12, http://www.2030wrg.org/wp-content/uploads/2014/07/2030WRG_MONGOLIA.pdf.
33 Ibid.
34 Ikon, "New Conditions Established for Reducing Water Use," http://www.ikon.mn/n/ade.

the average water use per apartment resident is more than ten times greater than that of *ger* area dwellers. Current fee and penalty structures for use, treatment, recycling and discharge (and the enforcement thereof) have a long way to go to adequately incentivize water efficiency measures. Reduced water intensity and development of water efficient technologies will improve the security of Mongolia's water supplies.

5.4 GoM Partners' Green Growth Initiatives and the Challenges Ahead

The GoM cooperates with development partners to promote green development through a range of initiatives. The United Nations Development Programme (UNDP) has helped to develop and institutionalize building codes, and promote energy efficiency. Multilateral development banks have supported energy efficient lending initiatives, particularly through commercial on-lending, such as the European Bank of Reconstruction and Development's Mongolian Sustainable Energy Facility.

However, these initiatives have been challenged by the lack of commercially viable projects, particularly outside Ulaanbaatar.

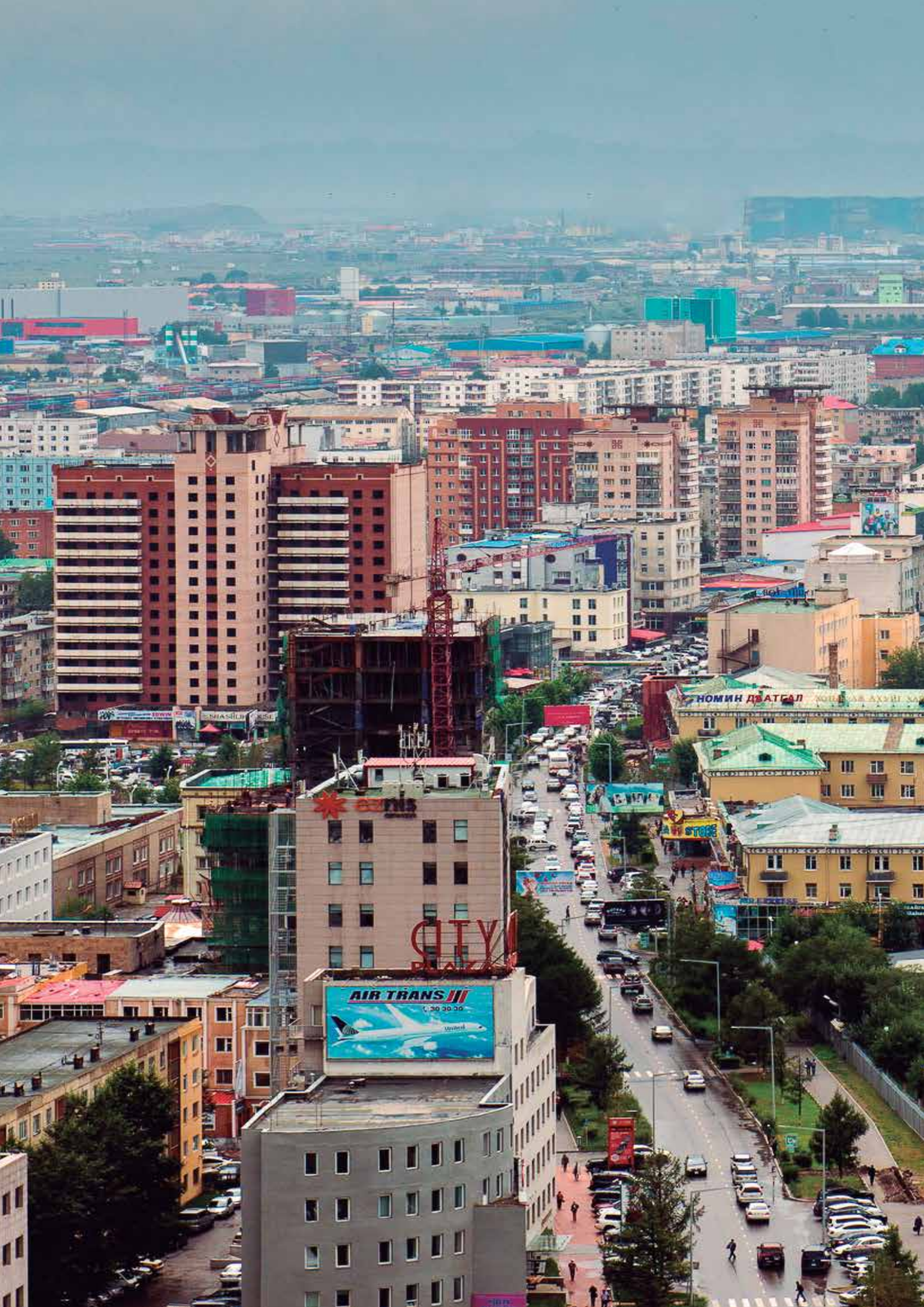
Development assistance from the World Bank (e.g., Ulaanbaatar Clean Air Project), Deutsche Gesellschaft für Internationale Zusammenarbeit or GIZ (e.g., Grid Efficiency and Energy Efficiency Project), and others has helped establish policy foundations in air quality, energy and building infrastructure. Now, the challenges lie in integrating policy and developing regulatory guidelines while extending coordination and implementation to the sub-national level.

The GoM also cooperates with a range of public and private partners on urban planning and development, but the majority of commercial investment in urban infrastructure has focused on Ulaanbaatar. The Asia Foundation, Asian Development Bank (ADB), Japanese International Cooperation Agency (JICA) and World Bank have been particularly active in advising Ulaanbaatar City on its development planning and implementation. There is considerable interest in enabling greater private financial flows into infrastructure services—for example, with ADB's transaction advisory services on the Central Heating Plant No. 5.

Weak government capacity and limited understanding of project bankability has delayed the potential benefits.

Amongst urban infrastructure, the water infrastructure and services sector has received support from bilateral and multilateral development assistance in Mongolia since the mid-1990s. Such assistance has focused on *ger* area upgrading, including various policy and infrastructure interventions in wastewater management and sanitation.[35] A smaller number of recent regional interventions have focused on the Western *aimags* (e.g., SDC Country Program 2012-2016) and those jurisdictions with major mining potential, such as the South Gobi.

35 ADB, "Darkhan Wastewater Management Project," Development Coordination Brief, 2014.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6. Strategic Response

GGGI's goal is to enable Mongolia to transition to a green economy through inclusive green growth based on national priorities and legal frameworks. Mongolia's national policy frameworks and action plans provide the context for applying the *GGGI Strategic Plan 2015-2020*. GGGI will support efforts to strengthen planning, financing and institutional frameworks, especially at the sectoral and sub-national levels, through technical assistance, capacity building and knowledge sharing. Extensive in-country consultations with government and other stakeholders revealed a strong desire for implementation of tangible infrastructure and behavioral change for green growth. Taken together, GGGI's strategic response aims to increase green investment flows into Mongolia. Within this context, GGGI's objective is to support the GoM in its green growth transition with three strategic outcomes in mind:

- Outcome 1 – Mongolia transitions from brown to green energy and improves energy efficiency.
- Outcome 2 – Mongolia accelerates urban green infrastructure development.
- Outcome 3 – Mongolia strengthens water management to improve supply-demand alignment and mitigate climate change risks.

GGGI has created strategic partnerships with national and international partners to support Mongolia's green development transition. In addition to the MEGDT—GGGI's core operating counterpart in Mongolia—GGGI will actively collaborate with the Ministry of Energy, Ministry of Roads and Transportation, Ministry of Education, Science and Culture, Ministry of Construction and Urban Development, Invest Mongolia Agency, administrations of cooperating *aimags*,[36] and other relevant government agencies. International partners will include UNDP, United Nations Environment Programme, 2030 Water Resources Group, Green Growth Knowledge Platform, JICA, GTCK and others, as relevant. The Business Council of Mongolia will remain an important partner in liaising and consulting with the private sector on program design and delivery. Civil society cooperation will involve both international organizations—such as the Nature Conservancy—and domestic actors—such as the Mongolian Association of Urban Centers.

To assist the GoM in achieving these outcomes, GGGI will provide a range of professional services based on demand, including technical assistance, knowledge development and private sector solutions for pro-poor green growth. For each outcome, GGGI seeks to build upon its past interventions, integrated service delivery model and value chain, as required in Mongolia's unique country context.

6.1 Outcome 1: Mongolia Transitions from Brown to Green Energy and Improves Energy Efficiency

GGGI will support Mongolia's transition to green (and "greener") energy systems for electricity and heating through research and capacity building. Satisfying growing energy demand will require both new energy systems and rehabilitation of existing ones, the former of which offer the greatest transformative potential. As the country lacks experience in planning, designing and operating alternative energy systems, particularly for central heating, research and capacity building are urgently needed. The identification and analysis of green energy systems and measures will help the GoM integrate national targets at the sectoral and sub-national levels.

Research will examine alternative energy systems for peri-urban areas of Ulaanbaatar and *aimag* centers. Key opportunities for pairing household and industrial (especially mining) energy demand with renewable power, and transferring electricity generated by renewable sources into district heating will be assessed. Through jointly conducted analysis, stakeholders will learn firsthand the potential of alternative energy systems.

36 The GoM designated the following five *aimags* as model green *aimags*: Arkhangai, Bulgan, Khentii, Khovd and Uvurkhangai.

GGGI will support government capacity building in designing pro-poor green energy measures. GGGI will ensure that technical research and capacity building are aligned with international best practices, with the support of GGGI's Energy Specialist, and are shared across global knowledge platforms, such as the Green Growth Knowledge Platform. Ulaanbaatar City and the GoM-designated model green *aimags* are expected to lead in the formulation of green energy strategies and plans that align with national energy goals. Well-designed energy efficiency measures have the potential to drive growth in the market for green energy technologies, while simultaneously reducing harmful emissions, enhancing property values and decreasing health risks.

Energy efficiency will be an integral component of GGGI's support to the GoM in the design and assessment of green building measures, with an initial focus on public education buildings. GGGI-supported research and capacity building aim to help the GoM measure and verify its progress toward green energy and energy efficiency targets. GGGI will assist in the development of baseline measurement methodology, data collection arrangements and quality assurance mechanisms to ensure that policymakers can assess results in a timely manner. The Ministry of Energy will lead from the government, and initiatives will be coordinated with GIZ's urban nexus and energy efficiency programs. Given the significant ongoing and expected support for household-level air pollution reduction, GGGI's interventions will include policy and programming in energy generation and efficiency and transportation systems to help reduce air pollution.

GGGI will work with the GoM to develop guidelines, methodologies and tools for planning and designing energy systems and efficiency measures, particularly those suitable for private sector participation. Quantifying the potential benefits of green energy projects is a new process in Mongolia, requiring clear guidance tailored to the local context. GGGI's assistance will help integrate environmental and social safeguards into the early stages of the infrastructure project cycle through analysis and policy implementation guidance. GGGI's initial cooperation with the GoM on energy project development will build upon pre-feasibility work on Ulaanbaatar waste-to-energy concessions, led by the Invest Mongolia Agency and supported by GGGI. Waste-to-energy project development has emerged across GGGI member countries, with cooperation expected with India and Rwanda programs.

GGGI will help design renewable energy and energy efficiency incentives, and support schemes to reduce project risk and attract investment. Support for PPPs in the design and implementation of fiscal incentives will increase the attractiveness and bankability of green energy projects. GGGI will support the GoM's engagement in platforms for public-private sector dialogue on greening infrastructure, such as national business associations and global green finance platforms. Ultimately, GGGI aims to enable the government to attract infrastructure financing, especially from climate facilities.

GGGI will assist the GoM in the development of tangible infrastructure through project design, pre-feasibility assessment and facilitation of project financing. More specifically, GGGI's support in project preparation will include multi-stakeholder consultative planning, cost-benefit analysis, and financing assessment for green energy generation and building efficiency improvements. Priority will be given to green energy projects for small and medium-sized entities, especially at the sub-national level (such as co-generation facilities), in line with Mongolia's NDS and poverty reduction goals. Energy projects have relatively strong commercial potential. Consequently, GGGI's support is expected to focus on non-financial risks, sub-national project preparation and aggregation.

6.2 Outcome 2: Mongolia Accelerates Urban Green Infrastructure Development

GGGI aims to support the GoM in putting policy into practice and infrastructure concepts into construction—building upon the lessons learned from previous interventions in green growth planning, public building design and transportation assessment. Initially, GGGI will work with Ulaanbaatar and designated model green *aimags* to develop localized strategies and plans for green growth.

While these efforts are by nature multi-sectoral, GGGI will place special emphasis on green building and public transportation systems. Support for green building stems from GGGI's design and assessment of a public kindergarten facility in a low-income district of Ulaanbaatar. GGGI has developed the case for its demonstration and replication at the sub-national level, and seeks to apply lessons learned to other public buildings and private construction. GGGI will work closely with the United Nations Partnership for Action on Green Economy (UN-PAGE) to develop design guidelines and conduct training. GGGI's cooperation in developing a model eco-city in the Philippines and other green cities-themed interventions will offer examples of strategies and plans that enabled green growth in other member countries.

GGGI's support for greening public transportation systems will examine public transport fleet alternatives and infrastructure modalities suited to peri-urban areas. The so-called "eco-station" concept introduced through GGGI's research during 2013 and 2014 will be elaborated and refined for sub-national action planning in Ulaanbaatar and selected model green *aimags*. Insights from GGGI's work in various member countries, including public bus fleet replacement in Mexico, will be adapted and applied appropriately to the Mongolian context. Taken together, these green city strategies and planning efforts will help Mongolia advance in both infrastructure construction and behavior change.

GGGI aims to help Mongolia's peri-urban settlements avoid locking into fossil-fuel intensive, costly and climate vulnerable infrastructure. GGGI will support the government in developing investment plans for urban green infrastructure projects, particularly those suitable for PPPs. GGGI's support to the GoM on bankable project development will build upon collaboration in social infrastructure project preparation, specifically the work on public kindergarten facilities and transportation systems planning—with potential cooperation with ADB and Ulaanbaatar City. GGGI will analyze and propose urban infrastructure incentives and support schemes to reduce project risk and attract investment, as currently underway with Invest Mongolia and the Ministry of Education, Science and Culture.

To increase green investment flows, GGGI's support for bankable project preparation will include multi-stakeholder consultative planning, cost-benefit analysis, and financing assessment for green urban infrastructure. Priority urban green infrastructure projects will be small and medium-sized, targeting peri-urban areas and rural settlements. These areas have the greatest potential for green growth transformation and the least amount of infrastructure finance historically. The case for demonstration infrastructure will be data-driven and intended for replication, and informed by research and analysis. As a neutral advisor, GGGI will assist the GoM in presenting its jointly designed projects for financing to potential bilateral and multilateral organizations, and private investors.

6.3 Outcome 3: Mongolia Strengthens Water Management to Improve Supply-Demand Alignment and Mitigate Climate Change Risks

The water-green growth nexus lies in the strategic consideration of water resources in economic decision-making. To this end, GGGI will provide technical assistance in the design of information and technology platforms for water resources management. Improvements in government data collection, access and analysis have the potential to improve water-related development planning and reduce the potential for conflict over water. GGGI will help the GoM collect, analyze and disclose key water resources information. Accurate, timely and complete information will strengthen capacity in designing and monitoring water polices and regulations. There is a particularly urgent need to develop regionally specific water use regulations and normative standards to ensure that industrial and residential development are appropriately paired with water availability.

GGGI will strengthen government capacity in applying water information analysis and technology assessment to sectoral and sub-national issues, such as irrigation systems efficiency and regional water scarcity. Industrial and residential development depends on some combination of supply, distribution, treatment,

reuse and/or discharge infrastructure. Policy should reward water users who reuse wastewater after treatment, purify and process water for household consumption, or collect water from natural sources (such as snow, rain and floods), by for example being exempted from a portion of water usage fees. GGGI will provide technical support in the identification and evaluation of greener processes and technologies that reduce the water intensity of industrial and urban development. Technology assessment efforts will engage multiple stakeholders to appropriately craft policies and promote technology adoption.

Key partners in this effort include the MEGDT and the multi-stakeholder platform of the 2030 Water Resources Group. Together with partners, GGGI will showcase Mongolia's efforts in water policy development and technology assessment through South-North-South cooperation and knowledge exchange. GGGI member countries with resource-driven economies can share specific implementation experiences that will benefit from the identification and transfer of best practices, such as those being developed in Peru.

GGGI aims to help the GoM avoid locking into water-intensive pathways for urban and industrial development. GGGI will assist the government in determining the potential value for money of available financing and implementation mechanisms for water services, especially wastewater treatment. GGGI's initial cooperation with the GoM on water services investment planning will build upon and help apply its water information and technology platforms. GGGI will assist in the design of water use incentives and service conditions to improve water security, reduce project risk and attract investment. Support for PPPs in the design and implementation of fiscal incentives will be critical to realizing the intended benefits of water policy and regulatory changes, particularly in those regions where water supply-demand is mismatched. Private sector engagement through such platforms as the Business Council of Mongolia and the Mining Roundtable will help shape the design of pro-poor growth policy and incentives. Ultimately, GGGI aims to enable the GoM to conduct consistent, achievable investment planning for water services for its growing urban and industrial needs.

GGGI will support the GoM to develop tangible water services infrastructure through project design, pre-feasibility assessment and facilitation of project financing. More specifically, GGGI's support for project preparation will include multi-stakeholder consultative planning, cost-benefit analysis, and financing assessment for water infrastructure, such as supply enhancement, distribution, treatment, reuse and disposal. Key government partners in water-related initiatives include the MEGDT, National Water Council and Invest Mongolia, where concessions and private investment are involved. GGGI's support will prioritize small and medium-sized projects that target public budget sources, especially in regions with acute water shortages, such as the Gobi *aimags*. By helping to design and implement more resilient, efficient water services solutions, GGGI will contribute to Mongolia's green growth transition.

6.4 Alignment with the GGGI Strategic Plan and the SDGs

6.4.1 Alignment with the GGGI Strategic Plan and the NGDP

The outcomes of this CPF will contribute to GGGI's corporate goal of "strengthening national, sub-national, local green growth planning, financing and institutional framework." Table 2 illustrates how the strategic outcomes and outputs of this CPF are aligned with the national green growth priorities set in the NGDP and with the GGGI thematic priorities and value chain.

Table 2. Alignment with the GGGI strategic areas and the NGDP

Impact: Mongolia transitions to a green economy through inclusive green growth based on national priorities and legal frameworks			NGDP Strategic Priorities	GGGI Thematic Priority	GGGI Value Chain
Strategic Outcomes		Indicative Outputs			
1	Mongolia transitions from brown to green energy and improves energy efficiency	Analytical research on policy and pricing for national energy goals completed Government capacity to attract and implement public and private investment in energy generation and efficiency improved Inclusive green energy generation and efficiency projects designed in priority sectors	Efficient use of natural resources, low GHG and reduced waste generation	Energy	Sector/Sub-sector strategy and planning (i.e., analysis of costs and sector investments; development of sectoral investment plans and selection) Design, financing and implementation
2	Mongolia accelerates urban green infrastructure development	Green city strategies and plans designed Government capacity to attract and implement public and private investment in urban green infrastructure improved Inclusive urban green infrastructure projects designed in priority sectors	Increase investment in natural capital, human development and clean technology by introducing financing, tax, lending and other incentives for supporting a green economy	Green Cities	Sector/Sub-sector strategy and planning (i.e., analysis of costs and sector investments; development of sectoral investment plans and selection) Design, financing and implementation
3	Mongolia strengthens water management to improve supply-demand alignment and mitigate climate change risks	Information and technology platforms informing Mongolia's water resources management developed Government capacity to attract and implement public and private investment in water services improved Inclusive water services projects designed in priority sectors	Efficient use of natural resources, low GHG and reduced waste generation Encourage education, science and technology to serve as the catalyst for green development, and develop cultural values and livelihoods that are in harmony with nature	Water	Green impact assessment Design, financing and implementation (i.e., policy preparation)

6.4.2 Alignment with the SDGs

This CPF for Mongolia responds directly to four SDGs:

- Goal 6 – Ensure availability and sustainable management of water and sanitation for all;
- Goal 7 – Ensure access to affordable, reliable, sustainable and modern energy for all;
- Goal 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
- Goal 12 – Ensure sustainable consumption and production patterns.

Additionally, the integration of private sector development is a key priority area for landlocked developing countries to integrate into the SGDs. In this context, the Mongolia CPF contributes to the strengthening of institutional capacity in designing and implementing PPP projects, and the greening of public procurement practices.

Outcome 1: Mongolia transitions from brown to green energy and improves energy efficiency addresses SDG7 (Affordable and Clean Energy), and contributes specifically to achieving Target 7.3 to "double the global rate of improvement in energy efficiency."

Energy is a cross-cutting enabler for development with energy efficiency integral to the transformation of energy systems. The Mongolia program will support sustainable energy development particularly through interventions aimed at enhancing the use of green energy and energy efficiency measures for low-income households in peri-urban and rural settlements.

Outcome 2: Mongolia accelerates urban green infrastructure development addresses SDG9 (Industry, Innovation and Infrastructure). It contributes specifically to achieving Target 9.4 to "upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities. This will be achieved through demonstration of community-led green urban development projects at the sub-national level.

Outcome 3: Mongolia strengthens water management to improve supply-demand alignment and mitigate climate change risks addresses SDG6 (Clean Water and Sanitation) and SDG12 (Responsible Consumption and Production).

This outcome contributes to achieving the following SDG targets:

- SDG6 (Clean Water and Sanitation), Target 6.4 – Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of fresh water to address water scarcity and substantially reduce the number of people suffering from water scarcity.
- SDG6 (Clean Water and Sanitation), Target 6.5 – Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.
- SDG12 (Responsible Consumption and Production), Target 12.2 – Achieve the sustainable management and efficient use of natural resources.

Efforts to achieve these targets will include capacity building in water resources management, and promotion of the use of greener technologies to improve industrial water efficiency.

6.5 Private Investment and Green Growth in Mongolia

Private investment—especially foreign direct investment (FDI) in the mining sector—has driven Mongolia's rapid economic growth over the past decade. However, with the dramatic reduction of FDI in 2013-2014, economic conditions deteriorated and growth stalled. In 2011, Mongolia attracted USD 4.7 billion in FDI, fueling its

world-leading GDP growth of 17.3% that same year. In contrast, FDI inflows shrunk to USD 644 million in 2014, with GDP rising just 7.8% and is projected to slow further. Resuscitating FDI to beyond its previous 2011 peak is a cornerstone of Mongolia's Coalition Government that took power in December 2014.

Critically, the GoM recognizes that increased green investment from both the public and private sectors will be indispensable to achieving its green development transition. Mongolia's NGDP defines "green investment" as "the financing of and investing in projects and activities that use technologies to reduce energy, water and raw material consumption, while seeking to maintain the value of ecosystem services." Increased investment in green infrastructure or in the greening of conventional infrastructure is an area where government efforts are essential for the transition to the green development model.

The legal and policy frameworks for PPP investments in infrastructure were established in Mongolia with the introduction of the State Policy on PPP (2009) and the Law on Concession (2010). However, progress in forming PPP projects has been slow as the government and private sector have faced various challenges in the planning, preparation, and implementation of large and small-scale projects alike. While many PPP projects have been proposed, few have progressed beyond the conceptual stage.

Noteworthy challenges to attracting and sustaining private investment include:

- Inconsistency and weak credibility in government plans and policies;
- Lack of institutional capacity in project selection, design and management;
- Lack of coordination among relevant ministries and agencies;
- High levels of project and non-project risks;
- Weak (or non-existent) incentives for private sector participation.

GGGI's services in Mongolia will directly address these challenges by assisting the GoM along the green growth value chain to build capacity, improve coordination, and confront risks and rewards associated with its infrastructure development needs.

6.6 Risks

Table 3. Risk identification and management

	Risk Identification and Potential Impacts	Risk Management Strategy	Risk Level (L, M, H)
Impact: Mongolia transitions to a green economy through inclusive green growth based on national priorities and legal frameworks	• National elections or Cabinet reformulation could change the political desire to pursue green growth • Low middle-income status of Mongolia may reduce development assistance relative to the scale of resources needed to achieve green growth transition	• Ensure broad stakeholder engagement in all aspects of country programming and GGGI networks • Resource mobilization strategy to secure earmarked funding (particularly for potential climate finance project design)	L M

	Risk Identification and Potential Impacts	Risk Management Strategy	Risk Level (L, M, H)
Thematic areas: Energy, Green Cities, Water			
Outcome 1: Mongolia transitions from brown to green energy and improves energy efficiency	• Cabinet changes and related staff turnover may hinder effectiveness of the GGGI intervention • Lack of support toward adopting the recommended policies and/or projects	• Maintain relationships with a broad set of stakeholders and government officials	M
Indicative Output 1.1: Analytical research on policy and pricing for national energy goals completed	• Challenges to collect relevant data on a timely basis; reluctance to release key data by some civil servants • Critical mass of participation not sustained in relevant working groups or technical counterparts • Lack of effective coordination between line ministries/agencies and/or national/local authorities	• Communicate the benefits of data access; lobby to share data through higher level officials • Consistent inclusion of ministries and officials throughout project cycle • Convene stakeholders regularly to define roles, responsibilities and expectations and to chart progress and challenges	M M L
Indicative Output 1.2: Government capacity to attract and implement public and private investment in energy generation and efficiency improved	• Brain-drain or turnover of personnel that received training as part of GGGI programs, hindering the effectiveness of capacity building programs	• Careful selection of candidates for capacity building; Follow-up with on-the-job engagement	M
Indicative Output 1.3: Inclusive green energy generation and efficiency projects designed in priority sectors	• Unstable economic or legal conditions may dampen attractiveness of PPP / concession projects	• Connect project preparation and incentives with economic conditions for optimal risk-reward	M
Outcome 2: Mongolia accelerates urban green infrastructure development	• Cabinet changes and related staff turnover may hinder effectiveness of the GGGI intervention • Lack of support toward adopting the recommended policies and/or projects	• Maintain relationships with a broad set of stakeholders and government officials	M
Indicative Output 2.1: Green city strategies and plans designed	• Challenges to collect relevant data on a timely basis; reluctance to release key data by some civil servants • Critical mass of participation not sustained in relevant working groups or technical counterparts • Weak coordination of efforts of other development partners on green cities	• Communicate the benefits of data access; lobby to share data through higher level officials • Consistent inclusion of ministries and officials throughout project cycle • Actively engage with partners on green cities	M M L
Indicative Output 2.2: Government capacity to attract and implement public and private investment in urban green infrastructure improved	• Brain-drain or turnover of personnel that received training as part of GGGI programs, hindering the effectiveness of capacity building programs	• Careful selection of candidates for capacity building; Follow-up with on-the-job engagement	M

	Risk Identification and Potential Impacts	Risk Management Strategy	Risk Level (L, M, H)
Thematic areas: Energy, Green Cities, Water			
Indicative Output 2.3: Inclusive urban green infrastructure projects designed in priority sectors	• Unstable economic or legal conditions may dampen attractiveness of PPP / concession projects	• Connect project preparation and incentives with economic conditions for optimal risk-reward	M
Outcome 3: Mongolia strengthens water management to improve supply-demand alignment and mitigate climate change risks	• Cabinet changes and related staff turnover may hinder effectiveness of the GGGI intervention • Lack of support toward adopting the recommended policies and/or projects	• Maintain relationships with a broad set of stakeholders and government officials	M
Indicative Output 3.1: Information and technology platforms informing Mongolia's water resources management developed	• Challenges to collect relevant data on a timely basis; reluctance to release key data by some civil servants • Insufficient technical expertise and/or technical availability toward assessing water technologies and processes	• Communicate the benefits of data access; lobby to share data through higher level officials • Conduct capacity building; facilitate technology transfer; advocate for incentives to develop expertise and adopt new technologies	M M
Indicative Output 3.2: Government capacity to attract and implement public and private investment in water services improved	• Brain-drain or turnover of personnel that received training as part of GGGI programs, hindering the effectiveness of capacity building programs	• Careful selection of candidates for capacity building; Follow-up with on-the-job engagement	M
Indicative Output 3.3: Inclusive water services projects designed in priority sectors	• Unstable economic or legal conditions may dampen attractiveness of PPP / concession projects	• Connect project preparation and incentives with economic conditions for optimal risk-reward	M

Annex A: Summarized Action Frameworks and List of Participating Organizations at the CPF Workshop on March 4-5, 2015

Summarized action frameworks by thematic area, developed by participants at the CPF Workshop

Energy

Prioritized objectives:

1. Facilitate rapid transition to green energy
2. Promote localized renewable energy producers and micro-grid development

Actions to take:

1.1 Conduct environment, social and economic impact assessment of alternative energy resources
1.2 Assess and improve the legal environment for energy efficiency and conservation
1.3 Build capacity of energy efficiency and conservation institutions

2.1 Promote testing and adoption of green energy technologies
2.2 Power purchase terms that incentivize renewables

Green Cities

Prioritized objectives:

1. Establish green urban settlement models for demonstration
2. Support green lifestyle through green services and infrastructure and public awareness

Actions to take:

1.1 Assess current urban planning and development practices
1.2 Determine green settlement criteria consultatively
1.3 Prepare and implement demonstration models

2.1 Develop cost-benefit analysis for green public infrastructure and services
2.2 Capacity building for government, civil society and private sector
2.3 Develop funding mechanism for community projects

Water

Prioritized objectives:

1. Improve quality and access to water supply
2. Increase availability and exploitation of surface water

Actions to take:

1.1 Increase water supply facilities, planned with public participation
1.2 Incentivize water conservation and investment in water stewardship
1.3 Strengthen monitoring of water quality in arid and semi-arid regions
1.4 Manage water utilization within potential resources and natural water balance processes

2.1 Introduce and test water saving and harvesting technologies
2.2 Propose relevant policy actions

Land Use

Prioritized objectives:

1. Establish clear and integrated management structure on land
2. Land rehabilitation and improvement through green growth

Actions to take:

1.1 Improve the land-use planning while recognizing public participation in green planning processes

2.1 Establish inventory of degraded land / consolidated database on degraded land
2.2 Develop strong monitoring system

List of participating organizations

Government organizations

- Ministry of Education, Culture and Science
- Ministry of Energy
- Ministry of Environment, Green Development and Tourism
- Ministry of Foreign Affairs
- Ministry of Health and Sports
- Ministry of Roads and Transportation
- Agency on Urban Development, Land Affairs, Geodesy and Cartography
- Architecture and Design Institute of Capital City
- Environmental and Green Development Agency of Capital City
- Environmental Information Center
- Mongolian Agency for Standardization and Metrology
- National Remote Sensing Center
- Chinghis City Administration, Khentii Aimag
- Dalanzadgad City Administration, Umnugobi Aimag
- Zuun Mod City Administration, Tuv Aimag

Civil society, academia and private sector

- Clean Energy LLC/ Newcom Group
- Economic Policy and Competitiveness Research Center
- EEC Co., Ltd. (Energy Environment Research and Consulting Services)
- GeoEcology Institute
- Golomt Bank
- Green Building Council of Mongolia
- Green City Association
- Greentrends LLC
- Khaan Bank
- MIBACE LLC
- Mongolian Association of Environmental Professional
- Mongolian Association of Urban Centers
- Mongolian Chamber of Commerce
- Mongolian Chamber of Urban Development
- Mongolian Water Partnership
- Mongolian Wind Energy Association
- National University of Mongolia
- NERC LLC (National Energy Resource Corporation)
- People In Need NGO
- SOPOCO LLC
- The Asia Foundation
- The Nature Conservancy
- Xac Bank

International organizations

- ADB
- British Embassy
- Canadian Embassy
- GIZ
- UNDP
- UN-Habitat
- World Bank

Annex B: Major Development Partners and GGGI Comparison

Organization	Relevant Activities (Planned and Potential)	Gaps and Complementarity with GGGI Mongolia
ADB	• Transport • Energy • Urban infrastructure • Water infrastructure	• Ulaanbaatar focus (primary) • No specific green growth analysis or focus • Transaction-oriented • Opportunities for investment project greening through the GGGI advisory and GGGI's interventions in rural areas
GIZ	• Energy efficiency • Biodiversity • Mineral resources management	• Refurbishment of existing public facilities; no new construction design or grant support • Climate finance efforts focused on forestry and biodiversity, to date • GGGI's interventions designed to contribute toward the INDC
JICA	• Minerals sector governance • Inclusive private sector growth • Ulaanbaatar infrastructure	• Ulaanbaatar focus • No specific green growth analysis or focus • Coordination on PPP technical assistance
SDC	• Agriculture and food security • Vocational education and training • State reform, local governance and civic participation	• Limited overlap in thematic focus • Cooperation in sustainable development education on green growth knowledge development and sharing • Opportunity to leverage GGGI's green growth planning and implementation services at local level
UNDP	• Partnership for Action on Green Economy • Poverty and Environment Initiative • NAMA project development • Urban poverty reduction	• GGGI collaborates on green educational facilities, indicators development and green economy education • GGGI provides sustained in-country presence and strong technical backstopping in green growth • Construction sector NAMA under development could develop case for financing green public facilities
European Bank of Reconstruction and Development	• Energy efficiency • Financial services • SME development	• Potential collaboration on policy advisory for energy efficiency
World Bank Group	• Enabling environment for mining • Rural livelihoods enhancement • Reduce vulnerability of households	• Complementary efforts in water resources administration support • No specific green growth analysis or focus • Cooperation with the 2030 Water Resources Group advisory on water

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