Mongolia Green Taxonomy
Introduction & Proposed Taxonomy Framework

Note: *We welcome feedback and comments from stakeholders on the categories, sub-categories, proposed criteria and the practicality/usability of the draft green taxonomy framework. It should be noted that this version of the document is not official and will undergo a comprehensive stakeholders' consultation process (i.e focus group meetings, interviews, workshops, public events) before endorsed as final.. To provide feedback or register your interest to participate in the focus group meetings and workshops, please contact Ms. Nomindari Enkhtur, Advisor to the Mongolian Sustainable Finance Association (nomindari.e@gmail.com), Ms Oyungerel Munkbat (oyungerel@toc.mn). All feedback should be submitted in written format in either English or Mongolian.*

PART A: INTRODUCTION

1. BACKGROUND AND RATIONALE

Mongolia has defined its national policies and strategies towards a development path in which economic growth, environmental balance and social stability co-exist. As part of its commitments under the Paris Agreement and the National Green Development Policy (2014), the country strives to achieve a 14% reduction in total national greenhouse gas (GHG) emissions compared to the projected emissions under a business-as-usual scenario. In addition to climate change, pollution is one of Mongolia's most critical environmental concerns. The National Program on Reduction of Air and Environmental Pollution (2017) aims to decrease air pollutants by 80%, prohibit the use of unprocessed coal anywhere except for thermal power plants in Ulaanbaatar, and reduce air and environmental pollution by at least 50% by 2025[1]. Furthermore, Mongolia has set ambitious targets in areas such as climate adaptation, water efficiency, waste management, job creation, income equality, and the development of a stable, professional governance system.

The total investment required to finance the Mongolian National Green Development Policy, alone, is estimated at US$6.96 billion. Taking into consideration, the Nationally Determined Contribution (NDC) and other government targets, the annual green investment needs of Mongolia range from US$690 million to US$1.03 billion according to studies conducted by the UN Environment[2]. These estimates make it clear that public funds will be insufficient, and capital from the private sector and international investors will need to be leveraged.

To support this shift, the banking sector in Mongolia put devoted efforts into promoting sustainable finance. Since 2013, banks have been working in collaboration under the Mongolian Sustainable Finance (MSF) Initiative, a voluntary, market-led project aimed at integrating environmental and social considerations in lending and investment activities. In 2018, Mongolia introduced its National Sustainable Finance Roadmap up to 2030, which marks a vast reform agenda in the financial system to embed sustainable finance beyond banking, in insurance, capital markets and institutional investors.

However, the successful realization of these policies and targets is challenged by the lack of common understanding of which projects can be considered as environmentally sustainable for investment purposes (such as green loans and green bonds). This creates an obstacle for project developers and banks seeking to identify and compare opportunities for green finance[3]. In turn, it increases project assessment and monitoring costs and creates a significant discouragement for financial institutions to shift capital into green projects. Furthermore, the lack of clear definitions around what exactly constitutes "green" leads to a growing risk of "greenwashing" - wherein parties take advantage of the popularity generated by environmental commitments without genuinely contributing to environmental goals[4]. The inexistence of green finance

[1] http://www.wpro.who.int/mongolia/publications/20180228_policy_brief_on_air_pollution.pdf (pg. 4)
[2] National Sustainable Finance Roadmap of Mongolia. UN Environment, IFC, MSFA. 2018 (pg. 18)
[3] "Green Taxonomy Working Group Report". Green Finance Leadership Program. 2019 (pg. 1)
[4] "Assessing the 'Green Finance' Boom: a Green Gold Rush or just Greenwashing?". University College of London. 2018

definitions, taxonomies and technical criteria makes it also challenging to measure overall progress of Mongolia's national climate finance targets.

Addressing this issue, the National Sustainable Finance Roadmap identified the definition of green finance activities as one of the most critical, priority activities to be implemented. The development of a commonly agreed green taxonomy is a building block to create an operational sustainable financial system, and will help re-orient capital to sectors and projects that substantially contribute to environmental sustainability and emission reduction.

Responding to this demand, a Green Taxonomy Committee consisting of key financial regulators, ministries, financial sector industry associations was established in February 2019 with the objective to create a green taxonomy framework that provides a list of economic activities eligible for green investment. To support the Committee, 6 technical working groups were established bringing together representatives from policy making and standard setting government organizations, financial institutions, businesses and project developers, international organizations, industry experts, and civil society institutions. The Committee and working groups were advised and supported by the Tsinghua Center of Finance and Development and Columbia University experts who shared their valuable knowledge based on China's experience of developing and implementing a green bond catalogue and green lending guidelines, as well as globally used taxonomies and best practices of organizations such as CBI, GBP, IDFC, IFC, EIB, FMO, GCF and the European Union.

The activities identified in this version of the taxonomy will be reviewed every 3 years following policy shifts, scientific developments, technological changes, and new industry needs in the green finance space.

2. OBJECTIVES AND SCOPE OF APPLICATION OF THE TAXONOMY

The **overall objective of the green taxonomy** is: "To develop a nationally agreed classification framework of activities that contribute to climate change mitigation, adaptation, pollution prevention, resource conservation, and livelihood improvement in the context of green finance."

The **specific objectives of the taxonomy** are to:

- Provide financial institutions, businesses, policy makers, and other market players with a common understanding and approach to identify, develop and finance green projects.
- Support investors' confidence to finance green projects and mitigate the risk of "greenwashing".
- Boost green finance flows from various sources including the private sector, international financial institutions, and foreign investors.
- Track private sector investments in green projects, and measure the impact contribution to Mongolia's green development and climate change related policies and targets.
- Inform and help shape national policies and regulations on green finance that will boost the market development of green opportunities

The green taxonomy is designed to be **applied to a wide range of financial instruments** including corporate lending, consumer lending, project finance, SME finance, green bonds, equity investment, insurance, credit guarantee, grants, financial advisory and technical assistance, among others.

In addition to its wide scope of application, the taxonomy can also be used by various market players. Below are some of the **primary users of the taxonomy and possible applications**:

Market players/stakeholders	Examples of application
Financial institutions (e.g banks, NBFIs, Development banks, mortgage corporations, institutional investors, credit guarantee funds, insurance companies)	Use as a guide to i) develop green finance strategies, ii) identify and compare green finance opportunities and pipelines, iii) design green financial product criteria, iv) measure and report on existing and new green finance flows in the portfolio, v) educate and raise awareness among clients.
Bond issuers (corporate, municipal, government)	Use as a reference to i) develop eligibility criteria of the projects, ii) assess and select projects/activities to be financed with the green bond, iv) tracking of the proceeds, v) reporting on the allocation of proceeds.
Industry (corporate, SMEs, start-ups, and other types of project developers)	Use as a guide to identify opportunities to i) integrate "green" elements in the company strategy and operations, ii) review and compare green technology options, iii) develop new green projects, iv) understand the technical/impact eligibility for green finance options.
Verification and standard-setting companies	Use as a reference to conduct pre- and post-issuance impact assessments, define baselines, certify and label green projects, and conduct verifications of the use of proceeds.
Policy makers	Use as a basis for further policy action in the area of green finance, including standards, labels, incentive mechanisms, and any potential changes to prudential rules.

3. APPROACH TO DEVELOPING THE TAXONOMY

The green taxonomy framework is developed in adherence to the following **6 principles**[5]:

Principle 1: Contribute to national policies and targets
The taxonomy should contribute to the key environmental targets included in Mongolia's green development and climate change related policies, strategies, programs

Principle 2: Address environmental challenges
Mongolia's key environmental challenges should be addressed – i) climate change mitigation and adaptation; ii) pollution; iii) resource conservation iv) livelihood improvement

Principle 3: Cover high-emitting, key economic sectors

[5] China Green Bond Catalogue. Green Finance Committee of China Society of Finance and Banking. 2015

The taxonomy should cover the highest emitting sectors in the economy as well as contribute to the transition of key economic sectors into sustainable ones.

Principle 4: Align with international standards and good practices
In the absence of commonly agreed local standards, the taxonomy should reference international standards and best practices.

Principle 5: Comply with ESG standards
Minimum environmental and social risk management regulations and standards (i.e the Mongolian Sustainable Finance Principles and Sector Guidelines) should be applied to all types of activities included in the taxonomy.

Principle 6: Continues review and development
The taxonomy will require continues review and update based on policy shifts, scientific developments, technological changes, and new industry needs.

In alignment with the above mentioned principles, the overall categories proposed in the taxonomy framework are:

No	Categories	Key reference policy targets
1	Renewable energy	• Reduce greenhouse gas emissions in the energy sector by 20 percent by 2030 • Increase renewable electricity capacity from 7.62% in 2014 to 20% by 2020 and to 30% by 2030 as a share of total electricity generation capacity • Reduce internal energy use of Combined Heat and Power plants (improved plant efficiency) from 14.4% in 2014 to 11.2% by 2020 and 9.14% by 2030 • Reduce electricity transmission losses from 13.7% in 2014 to 10.8% by 2020 and to 7.8% by 2030. • Improve energy efficiency of designated entities by 15% (first phase)
2	Energy efficiency	
3	Green building	• Reduce building heat loss by 20% by 2020 and by 40% by 2030, compared to 2014 levels • Improved insulation for existing panel apartment buildings of 18,184 households in Ulaanbaatar. • Increase the area of green facilities in urban areas and settlements to 25 percent of the total area,
4	Low pollution energy, Pollution prevention and control	• *Pollution:* decrease air pollutants by 80%, prohibit the use of unprocessed coal anywhere except for thermal power plants in Ulaanbaatar, and reduce air and environmental pollution by at least 50% by 2025
5	Sustainable water and waste use	• *Waste:* Reduce solid waste in landfills by 20% by 2020, and by 40% by 2030, by improving proper reduced waste management, increased waste recycling and processing, and promoting the production of value added products. Increase the amount of recycled waste to 30 percent of the total waste.

No	Categories	Key reference policy targets
		• *Water:* Provide at least 90 percent of the population with access to safe drinking • Maintain availability of water resources through protection of runoff formation zones and their native ecosystems in river basins • Protect at least 50 percent of the water resources, river streams and water sources under special protection and find solutions for sustainable water supply in Ulaanbaatar and for industries and mining in the Gobi region
6	Sustainable agriculture, land use, forestry, biodiversity conservation & eco-tourism	• *Pasture:* Introduce sustainable pasture management practices to maintain livestock population at appropriate levels according to the pasture carrying capacity. • Support the business and economics of herders and herder • groups, and small and medium sized farmers • *Agriculture*: Increase the processing of raw materials such as leather, wool and cashmere to 60 percent by 2020, and to 80 percent by 2030, through the promotion of sustainable agriculture development, and the development of industrial processing cluster that is export-oriented and based on green technology • Improve supply of domestic demand for wheat, potatoes and vegetables through reduced land degradation due to crop production, and improved soil fertility, by introducing agro techniques for soil maintenance and efficient advanced technology for irrigation and establish forest zones. • *Forest:* reduce GHG emissions from deforestation and forest degradation by 2% by 2020 and 5% by 2030. • *Land management*: Promote efforts aimed at reclaiming at least 70 percent of degraded land, and protect 30 % of the territory under the state by 2030. • *Eco-tourism:* Develop eco-tourism regions, products and services, promote Mongolia's nomadic culture and tourism brand globally, increase revenue from tourism, and increase the number of foreign tourists to two million annually.
7	Clean transport	• Increase the share of private hybrid road vehicles from approximately 6.5% in 2014 to approximately 13% by 2030. • Shift from liquid fuel to LPG for vehicles in Ulaanbaatar and aimag (province) centres by improving taxation and environmental fee system. • Introduce sustainable public transportation systems (e.g BRT). • Develop an environmentally sound infrastructure and transportation network with no adverse impacts on nature, human health and biodiversity.

PART B: PROPOSED GREEN TAXONOMY FRAMEWORK

Level 1: Category	Level 2: Sub-category	Level 3: Technologies	Example
1. Renewable energy	1.1 Wind	1.1.1 Energy generation facilities	Onshore wind electricity generation facilities, distributed wind electricity generation facilities, wind pumps, wind turbines
	1.2 Solar	1.2.1 Power generation facilities (PV & CSP)	Onshore Centralised and distributed solar power facilities, including concentrated solar power (CSP) plants, solar photovoltaic (PV) power, distributed solar PV station
		1.2.2 Small-scale distributed solar systems	Small-scale portable solar home systems, mini grid and other types of stand alone systems to power small communities
		1.2.3 Solar thermal application facilities	Facilities for application and generation of solar thermal energy, including solar water heating and other thermal applications of solar power in all sectors
	1.3 Geothermal	1.3.1 Power and heat generation facilities	Facilities for electricity generation and thermal applications of geothermal power in all sectors, geothermal heat pumps for space and district heating
	1.4 Hydro-power	1.4.1 Small- to medium-scale power generation facilities	Hydro power electricity generation facilities, including run of river, small-hydro with or without storage, impoundment, pumped hydro power plant
	1.5 Others	1.5.1 Other heat generation facilities	Heat pumps using soil, water, and air gradients
	1.6 Supply chain and supporting infrastructure for renewable energy	1.6.1 Manufacturing of renewable energy equipment	Manufacturing or assembly plants for wind, hydro & geothermal turbines, PV cells & components, CSP dishes, troughs & components, geothermal pumps. Manufacturing of products, key components, equipment and machinery for the following renewable energy application: • Geothermal Power • Hydropower • Solar Concentrated Power (CSP) • Solar Photovoltaic (PV) • Wind energy
		1.6.2 Transmission lines and supporting infrastructure for renewable energy systems	New, expanded and improved transmission systems (lines, substations), storage systems (battery, mechanical, pumped storage) and new information and communication technology (smart-grid and mini-grid) for scaling up the utility of renewable energy. dedicated transmission lines, large and small scale storage, smart grid, heat and electricity meters and sensors, inverters/controllers, transformers, voltage regulators, switchgear, roads for clean technology transportation
		1.6.3 Storage systems for renewable energy	Batteries, capacitors, compressed air storage and flywheels; Large scale energy storage

			facilities, and manufacture facilities dedicated to any of the above
2. Low pollution energy	2.1 Bio-energy	2.1.1 Bio-energy product facilities	Facilities for producing biofuel, biomass, biogas and other bioenergy products including fuel preparation process facilities, pre-treatment facilities and bio-refinery facilities, gaseous, liquid and solid (forest) biofuel manufacturing facilities (including anaerobic digestion facilities)
		2.1.2 Heat & power generation	Power & heat generation facilities including electricity generation facilities, heating facilities and CHP facilities, biomass power station, biomass CHP station, improved biomass stove, use of agricultural and forest waste, wastage from crops for electrification
	2.2 Sources alternative to coal	2.2.1 Gas power & heat generation	Waste heat recovery from gas fuelled power generation, Facilities for heat and electricity generation using natural gas (natural gas power station, distributed natural gas station, CHP, natural gas stoves), CBM (coal bed methane), CMM (coal mine methane), shale gas, LPG, LNG, CNG, DME as a substitute of coal or a supplement of renewable energy.
	2.3 Waste to energy	2.3.1 Waste to energy facilities	Waste to energy plants and other facilities. incineration, gasification, pyrolysis and plasma, facilities for solid waste treatment with production of electricity or heat as a byproduct
	2.4 Fuel switch	2.4.1 Fuel switch in energy generation	Switch to electricity heating or LPG heating
		2.4.2 Dedicated charging for transportation and alternative fuel infrastructure	(when separate from fossil fuel filling stations and garages)
3. Energy efficiency	3.1 Energy efficiency improvement in existing industrial facilities	3.1.1 Energy efficient equipment and technology improvement	Industrial energy-efficiency improvements through the installation of more efficient equipment, changes in processes and management, reduction of heat losses and/or utilization of residual heat and pressure. energy efficiency measures based on energy audit report, energy-efficient motors, VFD drives for compressors, pumps and fan systems , high energy-efficient boilers,
		3.1.2 Installation of CHP/co- or tri-generation equipment	Installation and operation of co-generation and combined-cycle plants that generate electricity in addition to providing heating. CHP plant, combined-cycle plants
		3.1.3 Energy efficiency in energy generation, transmission and distribution systems	Retrofit of transmission lines or construction of new substations and/or distribution systems to reduce energy use and/or technical losses including improving grid stability/reliability; DC (direct currency) application. smart grid, high-voltage grid

		3.1.4 District heating	Rehabilitation of district heating systems with distributed energy station or other technology. distributed energy station
	3.2 Energy efficiency improvements in the utility sector and public services	3.2.1 Energy-efficient lighting or equipment	Energy-efficiency improvement in utilities and public services through the installation of more efficient lighting or equipment; LED street lighting system, lighting improvements of commercial, retail, wholesale, office buildings and other non-industry facilities.
		3.2.2 Energy efficient products (end user)	Purchase and application of more energy efficient end-user products. energy saving refrigerator, washing machine, heater
		3.2.3 Energy conservation services	Energy conservation services to energy end-users, including industries, buildings, and transport systems, including energy audit, ESCOs. energy audit, contract energy management
	3.3 Energy efficient buildings	3.3.1 Energy efficient building construction	ENERGY: Use of energy efficient architectural designs, appliances and equipment, and building techniques that reduce building energy consumption
		3.3.2 Efficiency improvements in existing commercial, public, residential and industrial buildings	ENERGY: lighting, appliances and equipment, heating/cooling systems, architectural or building changes that enable reduction of energy consumption WATER: water fixtures, recycling/ rainwater harvesting systems, building changes that enable reduction of water consumption
4. Green buildings	4.1 Green buildings	4.1.1 Construction of new green buildings (commercial, public, industrial and residential)	ENERGY: Use of highly efficient architectural designs, energy efficiency appliances and equipment, and building techniques that reduce building energy consumption, exceeding available standards and complying with high energy efficiency certification or rating schemes, such as green building rating standards of Mongolia or equivalent international standards WATER: Use of water efficient fixtures and equipment, and building techniques that reduce building water consumption, exceeding available standards and complying with high water efficiency certification or rating schemes, such as green building rating standards of Mongolia or equivalent international standards MATERIALS: Use of construction material which minimizes conents that require high amount of energy to manufacture, such as steel or cement, and uses materials with low manufacturing energy or reused/recycled materials.

	4.2 Green building products and materials	4.2.1 Manufacturing of green building materials and products	Efficient and low carbon building systems (lighting, heating, air conditioning, lifts, escalators, metering, ground source heat pumps and etc.,) and low energy efficiency materials, organic wool insulation materials
	4.3 Green infrastructure	4.3.1 Green infrastructure	Multi-purpose green areas (water retention, shading, recreation, biodiversity corridors, soft lining for pedestrian and bicycle paths), flood protection (Surge barriers, pumping stations, levees, gates), street lighting, improvement of disposal sites and etc., road
		4.3.2 Ger area improvements	Khashaa improvements including retrofitting of existing homes, ***new energy efficient and green houses construction,*** improved sanitation facilities (septic tank, waste recycling, ...), electricity, clean coal technologies, heat pumps or district heating connection for heating, energy storage, rainwater harvesting, grey and black water recycling and landscaping, site improvements and etc.,
5. Pollution prevention & control	5.1 Air quality	5.1.1 Industrial air pollution treatment, recycling facilities	Industrial air pollution treatment facilities, exhaust gas, and effluent reducing and recycling facilities. de-sulfurization and de-nitration facilities, filter-bag, exhaust gas burner
		5.1.2 Production and deployment of clean heating appliances for households and MSMEs	Production, purchase and deployment of clean heating appliances to reduce air pollution. electric radiator (space heater), electric cartridge heater, night storage heater, electric floor heating, heat wall
		5.1.3 Carbon capture and storage	Facilities and products dedicated to CCS
	5.2 Soil	5.2.1 Soil pollution reduction and remediation facilities and infrastructure	Facilities and infrastructure using soil remediation technologies and products for remediation of polluted or degraded soil.
		5.2.2 Self-contained and eco-sanitation toilet solutions for ger areas, tourist camps and small businesses	Installation of self-contained and eco-sanitation toilets that contributes to soil pollution reduction. composting toilets, container-based toilets, dry toilets, septic systems, UDDT
6. Sustainable water and waste use	6.1 Sustainable water & water efficiency	6.1.1 Production, purchase and deployment of water saving, monitoring, storage and distribution technologies and systems	Production, purchase and deployment of water saving, monitoring, storage and distribution technologies and systems, drinking water wells in pasture land for herders and for wild animals; drinking water purification technology and equipment; ground water reservoirs to collect snow melt or over fload and to regulate river flow rate; use of mine runout water for industrial,

			agricultural, recreational or other use. industrial water saving technology and measurement equipment, agricultural water saving irrigation, smart networks for water monitoring, early warning systems for storms, droughts, floods or dam failure, water quality or quantity monitoring and measuring processes, rainwater harvest systems, groundwater recharge systems, canals and distribution systems, Stormwater management
		6.1.2 Water recycling facilities	Unconventional water reuse facilities or infrastructure. water recycling systems, recycling mine water , grey water reuse and recycling systems, sewage/drainage networks which segregate storm water from the sewage
	6.2 Waste and wastewater	6.2.1 Solid waste management facilities	Construction and operation of solid waste (including medical and hazardous waste) management, treatment & disposal facilities. refuse incinerator, solid waste land fill facilities, sanitary landfill (with or without gas capture)
		6.2.2 Waste collection, sorting and material recovery, re-use, and recycling facilities	Facilities for collection, sorting, material recovery, re-use and recycling of materials. facilities for the recycling of building materials, metals, plastics, glass, paper, scrap electronics
		6.2.3 Composting facilities	Facilities for the production of compost from organic waste
		6.2.4 Wastewater treatment facilities	Waste water collection networks, storage, treatment and disposal facilities. waste water plant, sludge treatment facilities, drinking water treatment, desalination plants, wastewater treatment facilities, manure and slurry treatment facilities
	6.3 Resource conservation and recovery	6.3.1 Technology enabling the switch of Raw Materials	Toxic with non-toxic, virgin with recycled
7. Sustainable agriculture, land use, forestry, biodiversity conservation & eco tourism	7.1. Sustainable agriculture	7.1.1 Organic agriculture and animal husbandry products (except textile)	Production of agricultural, husbandry, and fishery organic products (including facility construction and operation) that meet the following clean production standards: 1) relevant international or national standards on organic products, and acquired organic or green product label 2) Environmental and quality standards for the use of pesticides, fertilizer, veterinary drug, feed and feed additives, food additives, and animal hygiene 3) Sustainable farming practices, such as waste management and water efficiency 4) Sustainable supply chain practices (e.g food loss avoidance); organic food production that obtained international/national USDA, Fair Trade labels, production that contributes to improved animal health, animal husbandry, manure management

			with biodigesters, improved nutrition, increased productivity
		7.1.2 Sustainable textile processing and producing	Hide and skin processing methods, for extensive farming only, with fixed traceability and quality management, Production process that meet relevant sustainable textile/cashmere/wool/yak down production standards and use eco-dying technologies, chemicals and bio-agents; production processes that meet international and national standards and voluntary code of conducts, which also includes standards on its its liquid and solid waste treatment
		7.1.3 Climate smart agriculture (=Sustainable pasture & livestock management)	Reduction in energy use and water use in traction, irrigation, and other agricultural or husbandry processes, and decrease in land use, ie. Application of livestock standards to sustainably manage pasture land and to promote quality (high yield) based livestock production/management. efficient tillage (prevention from drought), aquaculture, herders/herding communities reducing their herd sizes and adopt more sustainable livestock production practices
	7.2 Sustainable forest management & conservation of biodiversity and ecosystems	7.2.1 Afforestation and reforestation	Afforestation (plantations) on non-forested land or reforestation on previously forested land; REDD+ (Reduced emissions from deforestation and forest degradation) activities
		7.2.2 Sustainable forest management	Activities that increase carbon stocks or reduce the impact of forestry activities through associated management, information systems and other technologies; Examples? Private forest fellowships applying sustainable forest management practices
		7.2.3 Sustainable timber & pulp production	Facilities for sustainable timber production and pulp production; production facilities incorporating efficient pulping process, biorefineries, use of recycles
		7.2.4 Conservation of biodiversity and ecosystems	Biosphere conservation projects through protection and/or remediation of degraded ecosystems; construction and maintenance of ecological function area, like specific wildlife habitat, wetland, desert
		7.2.5 Natural land management	Facilities and infrastructure for grassland preservation of natural grassland and restoration of degraded grassland, and Soil restoration and regeneration in agriculture lands; construction of artificial grassland, guardrail to reduce overgraze in natural grassland, water retention activities, Land remediation and clean up
	7.3 Sustainable tourism	7.3.1 Products and services promoting eco-tourism development	Development of tourism resources targeted at ecological restoration and protection; community based tourism, protection and development of national parks and geological parks, protection of natural heritage and specially protected areas

		7.3.2 Sustainable hotel & camp management	Management of hotel and camp operations in compliance with locally or nationally recognized sustainable hospitality industry standards
8. Clean transport	8.1 Low carbon vehicles	8.1.1 Low carbon vehicles purchase	Low carbon vehicles purchase, including electric vehicles, hydrogen vehicles, hybrid vehicles
		8.1.2 Low carbon vehicles manufacturing supply chain facilities	Dedicated manufacturing facilities for vehicles and key components; batteries being used in eligible vehicles
	8.2 Low carbon freight and cargo transportation	8.2.1 Low carbon freight and cargo transportation	Rolling stock for electrified and non-electrified freight rail
	8.3 Clean transport infrastructure	8.3.1 Public transport infrastructure	Public transport and freight infrastructure; high-occupancy vehicle lanes, BRT systems, public walking and cycling infrastructure
		8.3.2 Low carbon transport infrastructure	Dedicated charging and alternative fuel infrastructure (when separate from fossil fuel filling stations and garages); Eco-fuel station, charging station/pile for EV cars, trolleybus, trambus, electric buses and associated infrastructure
		8.3.3 Low carbon transport planning	Integration of transport and urban development planning leading to a reduction in use of passenger cars; dense development, multiple land use, walking communities, transit connectivity, Smart freight logistics
	8.4 Clean transportation ICT	8.4.1 ICT that improves asset utilisation, flow and modal shift, regardless of transport mode	Public transport information, car-sharing schemes, smart cards, road charging systems, etc

Annex 1: Mongolia's key green development and climate change related policies, strategies, programs:

- Mongolian Sustainable Development Vision (2016-2030), 2016
- (I)NDCs or commitments under the Paris Agreement (2030), 2015
- National Green Development Policy (2014-2030), 2014
- State Policy on Energy (2015-2030), 2015
- National Action Programme on Climate Change (NAPCC) (2011-2021), 2011
- National Program on Reduction of Air and Environmental Pollution (2017)
- National Livestock Programme, 2010
- National Renewable Energy Programme (2005-2020), 2005
- National Agriculture Development Policy (2010-2021), 2010
- State Policy on Forest (2016-2030), 2015
- Law on renewable energy, 2015
- Law on energy conservation, 2015
- National REDD+ Readiness Roadmap
- National Sustainable Finance Roadmap of Mongolia, 2018

Annex 2: Environmental challenges

Air pollution: Mongolia suffers the environmental consequences from urbanization and the exploitation of its natural resources. Air pollution in Mongolia's capital city is among the highest in the world. Coal and wood burning by households in the ger (yurt) area and coal emissions from power plants contribute to the air pollution levels. A study of the World Bank estimated in 2011 the health damage at 19% of GDP in Ulaanbaatar and 9% of GDP in Mongolia. In the winter of 2016, levels of particulate matter in the air in Ulaanbaatar rose to almost 80 times the recommended safety level set by the World Health Organization, and five times worse than the air quality in Beijing.12 A 2013 study by Canada's Simon Fraser University concluded that 10% of deaths in Ulaanbaatar were related to complications from air pollution.

Climate change: The mean surface air temperature has increased by 2.07°C between 1940 and 2013, which is almost 2.5 times higher than the world average of 0.85°C.14 The Government of Mongolia has already acknowledged that climate change will become a significant barrier to the socio-economic development of the country. Increased frequency and magnitude of climate related hazards such as the intensification of dzud (heavy snow, cold waves, storms etc.), drought and aridity results in various impacts and vulnerabilities, including

- losses in livestock sector due extreme weather events (livestock sector directly engages half of the population).
- instability and decline (26%) in crop productivity (wheat production might be decreased by 15% by 2030 due to climate change).
- decrease of pasture plants and grass for grazing animals
- reduced water availability due to water temperature, evaporation, and the drying up of

lakes (12%), rivers (21%) and springs (15% dried up respectively).

- Increase of the frequency of forest and steppe fires, the occurrence and the intensity of forest insect and pest outbreaks (forest area is reduced by 0.46% annually, and forest resources have been degraded significantly).
- increase in the number of natural hazard events. Within the period of 2005-2013, these events reached 3200 causing loss of more than 200 human lives and damage of 95.6 billion tugrigs (MNT) to the environment and economy

The country's greatest challenge is to gradually reduce its dependence on coal as a source of energy.

Water vulnerability: Mongolia in general has limited water resources, with high geographic variation in rainfall and a major dependency on groundwater. Available water resources are becoming increasingly vulnerable as a result of overuse and pollution, as well as growing pressure from seasonal variation and climate change. Furthermore, there are concerns over soil and groundwater pollution partly due to extensive use of pit latrines in ger districts.

Annex 3 - 1: GDP Structure by Key Economic Sectors

TABLE 1: GDP STRUCTURE BY KEY ECONOMIC SECTORS

GDP composition as of Q4 2017	Amount (MNT billion)	Percentage
GDP	**27 167.0**	**100%**
Mining	5939.6	22%
Retail and wholesale	3068.0	11%
Agriculture	2 920.2	11%
Manufacturing	2336.5	9%
Real estate	1653.2	6%
Financial services	1344.8	5%
Transportation	1309.9	5%
Education	1054.0	4%
Construction	962.3	4%
Other industries	4038.8	15%
Product tax	2539.7	11%

Source: National Statistics Office (2018)

Annex 3 – 2: GHG emissions by Sectors[6]

[6] https://unfccc.int/files/national_reports/non-annex_i_parties/ica/technical_analysis_of_burs/application/pdf/mongolia-bur1-1-nir.pdf pg. 24

Table 2-1: Mongolia's GHG emissions/removals by sectors in 1990 and 2014

Sector	Emissions, (Gg CO_2e)		Change from 1990 (Gg CO_2e)	Change from 1990 (%)
	1990	2014		
Energy	11,091.14	17,267.79	6,176.64	55.69
IPPU	218.66	328.06	109.39	50.03
Agriculture	10,585.30	16,726.98	6,141.68	58.02
Waste	55.62	159.91	104.29	187.49
Total (excluding LULUCF)	21,950.73	34,482.73	12,532.00	57.09
LULUCF	-23,024.18	-24,451.93	-1,427.75	6.20
Net total (including LULUCF)	-1,073.46	10,030.80	11,104.26	1,034.44

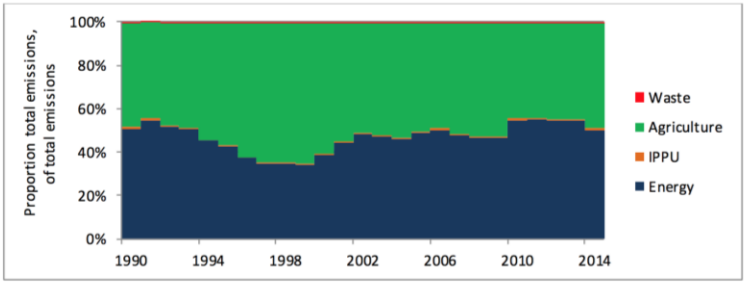

Figure 2-3: The contribution of sectors to Mongolia's total emissions for the period 1990-2014