NATIONAL STATISTICAL OFFICE OF MONGOLIA

PARTNERSHIP FOR ACTION ON GREEN ECONOMY

MINISTRY OF ENVIRONMENT, GREEN DEVELOPMENT AND TOURISM

GREEN DEVELOPMENT POLICY INDICATORS

(REPORT)

Ulaanbaatar 2015

CONTENT

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

LFPR	Labour force participantion rate
MEGDT	Ministry of environment, green development, and tourism
SEEA	Environmental-Economic accounting
South Korea	The Republic of Korea
GDP	Gross domestic products
UNESCAP	The United nations economic and social commission for asia and the pacific
UNIDO	The United nations industrial development organization
UNEP	The United nations environment programme
UNITAR	The United nations Institute for Training and Research
UNSD	The United nations statistics division
UNDP	The United Nations Development Programme
UNFAO	Food and Agriculture Organization of the United Nations
PAGE	Partnership for Action on Green Economy
ILO	International Labour Organization
NSO	The National statistical office
MF	Ministry of finance
OECD	The Organisation for Economic Co-operation and Development

PREFACE

Human induced impact on the environment has become one of the most critical policy concerns worldwide. Therefore, each country is transforming into eco-friendly way of living through changing their production and consumption patterns.

The term “Green economic model” was first proposed in 1989 Report for the Government of the United Kingdom by a group of environmental economists. In 2008, the term was revived by the United Nations Environmental Programme (UNEP) and it launched the “Green stimulus package” framework which defined that the large-scale public investment support should be provided to greening the economy. The term with its broad perspectives has become inspired and internationally accepted.

The concept of green growth has its origin in the Asia and the Pacific Region and the Fifth Ministerial Conference on Environment and Development held on March 2005 in Seoul, Republic of Korea, in partnership with Governments and institutions from Asia and the Pacific agreed to support green growth approach to achieve the sustainable development. Therefore, the conference adopted a Ministerial Declaration and a Regional implementation plan for Sustainable development.

“The future we want” outcome document declared by United Nations Conference on Sustainable Development (Rio+20) emphasized that Green economy in the context of sustainable development and poverty eradication as one of the important vehicle for achieving sustainable development. Therefore, it encourages the United Nations to provide support to countries that are aiming to make transition to a green economy. The conference also recognized the celebration of 20 years since the United Nations Conference on Environment and Development in 1992 and the United Nations Specialized Agencies initiated the Partnership for Action on Green Economy through forums on “Green economy in the context of sustainable development and poverty eradication” and “International framework for Sustainable development”.

Implementing the Green development policy as an approach to ensure sustainable development will give us opportunity to enhance equality and synergy between economic, social and environmental growth. These economic, social and environmental pillars are considered as three key stone for Sustainable development.

Mongolia recognized the Green development as a method for achieving the sustainable development and as well as International green initiatives and joined to

Partnership for Action on Green Economy (PAGE) in 2013 with aim support Green Economy and Development.

The main purpose of PAGE is to assist 20 countries in their efforts to foster green economy, generate decent jobs and skills, promote clean technologies, reduce environmental degradation and risks and to reduce poverty by 2020 and as well as to foster the Green Development Strategy of Mongolia.

Since the Environment and sustainable development is a global effort, Mongolia had produced the Green Development Policy of Mongolia which was adopted by the Resolution #43 of the Parliament and work on implementation plan is in progress. The Policy document captured the global perspectives, green development concept, policy purposes and objectives, policy implementation phases and results of policy implementation to achieve the Green Development and Green Economy.

Mongolia has been selected as one of four pilot countries from Asia by United Nations Statistical Commission to implement the Project to measure progress towards achieving a Green Economy with aims to assess the current level of green economy, progress towards transition and produce indicators on green growth of developing countries.

There are several researches in progress to promote green development policy given that Mongolia as a member of Green Global Growth Institute.

Mongolia has adopted the Green Development Policy and currently working on identifying the Green growth/development indicators and its measurement methods in conformity with internationally accepted methodologies. As a result, there will be opportunity for us to have a suitable approach to measure Green Economy, in particularly, to assess transition towards a Green development, measure the Green development phases and current level of achievement. Therefore, it is beneficial to define start up point for Green development policy indicators. Hence, NSO’s contribution in these efforts has become increasingly high.

Ministry of Environment, Green Development and Tourism (MEGDT) and Ministry of Finance (MoF) of Mongolia signed the Memorandum of Understanding (MoU) with UNEP and United Nations Institute for Training and Research. Within the framework of the MoU, the partnership aims to analyze the Green Economic Policy of Mongolia and intensify cooperation within efforts on Green economy indicators, green school buildings, sustainable public procurement, green economy learning and waste management.

Moreover, MEGDT and NSO established collaboration agreement on developing the Green Economy Indicators and proposed more than 100 indicators and measurements to monitor progress towards transition to a Green Economy through workshops held with participation from relevant Ministries, Agencies and UNSO.

The draft Green Economy Indicators are being refined through the results of these discussions and workshops.

It is necessary to develop a Document on methodology that captures Green Economy concepts, terminologies, methodology of analysis and information sources and to adopt the indicators within certain stages of development, hereinafter.

CHAPTER 1. ЕРӨНХИЙ GENERAL OVERVIEW, DEFINITION, CONCEPT AND SCOPE

Each country has defined their own vision for development and model driven trends which fits to their national concepts.

Green development policy as a tool to ensure the sustainable development, alleviate and eradicate poverty will serve as an assurance for well being of the current and future generations of Mongolia.

It would be a smooth transition to a green economy for Mongolia through catalyzing the traditional nomadic civilization and promoting innovation with modern technology.

“Green development” means a development model with efficient and effective use of natural resources, ecosystem services support, lower green house gas emission, wasteless, reduced poverty through inclusiveness, as indicated in the “Green Development Policy of Mongolia”.

To achieve a Green Growth by shifting from Brown economy to Green Economy through Economic policy reforms became priority for developed and developing countries and which Mongolia considers crucial for development.

“Green economy” means an economy aimed to improve human well-being, social justice and inclusiveness along with reduced environmental risks and degradation.

Countries started to recognize that the Green growth is a new approach to Economic growth.

“Green growth” means an economic growth that ensures environmental sustainability, supports social inclusiveness/participation and with lower green house gas emission.

From this description, it is imperfect to define green growth/development by a single concept, thus, it is necessary to adopt the set of indicators to enhance synergies between economic, environment and social pillars of development.

1.1. International perspectives

There are numerous international organizations embark on green growth with their different objectives.

š **Organization for Economic Co-operation and Development (OECD)** is working

remarkably on producing the Green Growth/development indicators and published publications on “Towards Green Growth-Monitoring Progress: OECD indictors 2011”, “Towards Green Growth: A summary for policy makers 2011” and “Green growth indicators 2014”.

The OECD is working to identify the framework for “Green growth knowledge platform” in partnership with GGGI, UNEP and the World Bank.

United Nations Environment Programme (UNEP) initiated the conception of Green Economy and it also initiated the measurement towards transition progress in achieving Green Economy and numerous publications were produced on Green Growth framework as mentioned as follows;

1. Driving a Green Economy through Public finance and Fiscal Policy reform, 2010
2. Measuring progress towards an Inclusive Green Economy, 2012
3. Sustainable development through Policy integration in Latin America: A comparative Analysis, 2013
4. A guidance manual for Green Economy Indicators, 2014
5. Using Green Economy Indicators for Policy making, 2014

Three principal categories of Green Economy indicators can be considered and these are;

(i) Indicators towards Green Economic Policy concerns to deal with difficulties
(ii) Indicators towards Green Development Policy concerns to tackle with challenges
(iii) Indicators to identify policy approaches
(iv) Indicators to measure pre- and post- implementation impact of policies

United Nations Statistical Commission (UNSO) implements the Project in 2014 and 2015 to support measuring progress towards achieving a Green Economy, which aims to assess the current level of green economy, progress towards transition and to produce indicators on green growth of developing countries.

Columbia, Chile, Ecuador, Peru from Latin American region and Bhutan, Vietnam, Malaysia and Mongolia from the Asia and the Pacific region was selected as pilot countries that to be assessed their current progress of Green Economy and to produce indicators on green growth.

The World Bank’s “Inclusive Green Growth” 2012 Report highlighted that Green

growth requires the improved indicators to monitor economic performance and efficiency of the Policy. The Bank provides technical and capacity building support to the establishment of the Green Account with Environmental, Economic Ecosystem benefits.

International labor Organization (ILO) published the report "Sustainable development, Decent work and Green jobs" in 2012 and produced two types of model to define Green jobs and it is to be piloted in Countries. Mongolia had chosen as a partnership for piloting methodologies to define green jobs and employment in environmental sector.

United National Economic Commission for Europe (UNECE) introduced analytical tool designed to measure contribution of structural reform into greener economy by the "IGrow Green Initiative" Report 2011. The assessment framework captured the environmental indicators on the basis of proposed OECD Green Growth Indicators.

Global Green Growth Institute (GGGI) was founded to support Green Development on the belief that the integration of economic growth and environmental sustainability is essential for the future of humankind and it works with emerging and developing countries to support programs on green development planning. Mongolia joined to the Institute in 2011.

The Green Growth indicators system to measure the implementation of Green Development Policy Mongolia was developed by studying the guidelines, publications and methodological handbooks produced by above mentioned International Organizations.

1.2. International practices

Since 2011, countries of the world started developing their Green Development Indicators as a top priority.

- **Germany** employs 27 indicators from 4 sets of proposed OECD Green Growth Indicators in order to identify the criteria and indicators for sustainable development and to establish the environmental accounts. Therefore they have made some changes to definition of some indicators. Federal Statistical Office of Germany is in charge of this effort.
- **Netherland** published their first 20 set of Green growth indicators in 2011 which produced on the basis of proposed OECD indicators. The indicators are produced by working group created by inter-ministries under the guidance of Ministry of

Infrastructure and Environment. The country updates regularly the dynamic information on the green growth indicators.

- **Denmark** is focusing on indicators of climate change, energy efficiency, environmental goods and services sector and indicators are estimated in accordance with the EuroStat guidance and results is circulated.
- **Republic of Korea** had approved Five-year plan on Green Growth in 2009 and produced about 30 indicators within the framework of proposed OECD Green Growth Indicators. The aims of the indicators are to evaluate the implementation of Five-year plan on Green growth and to assess the economy in the context of Green Growth. This effort is performed jointly by statistics Korea, Seoul National University and Presidential commission on Green Growth.
- **Mexico** uses the proposed OECD Green Growth Indicators in addition to their indicators on productivity of wastewater treatment service, subsidy for electric power services rate and Green business certification. National Institute of Statistics and Geography of Mexico is in charge of this effort.
- OECD had undertaken the projects to foster green growth in **South Asia**, such as Malaysia, Thailand, Indonesia, Philippines, Vietnam, Laos and Cambodia with the assistance from Republic of Korea. Within the scope of the project, pilot countries develop database of Green growth indicators which gives opportunity for SMEs and puts attention in productivity. Source of data derived from official statistics and administrative statistics data.
- **Mongolia:** Purpose of the Green development Policy of Mongolia is identified as “Evolve as an advance nation having built conditions for environmental sustainability to be inherited by the future generations and opportunity of gaining benefits from it in the long run through participatory and inclusive economic growth based on green development concept”. There are 6 strategic objectives will be achieved to ensure green development:

    1. Promote resource efficient, low greenhouse gas emission and wasteless production and services.
    2. Preserve ecosystem balance through intensification of environmental protection and restoration activities and reducing environmental pollution and degradation.

3. Introduction of financing, tax, lending and other optimal incentives for supporting green economy and increasing investments to promote environmental protection, human development and clean technologies.
4. Promotion of green employment, poverty reduction and engraining/promoting green life style.
5. Promotion of “Live in harmony with nature” living and culture values and make education, science and innovation as catalysts for green development.
6. Develop and implement population settlement plan in accordance with climate change, availability of natural and other resources in regions and restoration capacity.

In order to achieve these strategic objectives, work on development of midterm implementation plan is underway through the cooperation between MEGDT and relevant Ministries, Agencies and other organizations.

Therefore, some of the criteria and indicators are identified for measurement and year of 2013 set as a baseline year. These indicators are,

1. Share of renewable energy in total installed capacity of energy production
2. Reduction of building heating loss, by percentage
3. Waste recycling share, percentage
4. Share of expenditures for Green development in total GDP
5. Share of expenditures for science and technology research in total GDP
6. Share of Green Procurement on total Government procurement
7. Share of protected areas
8. Increased investment in environmental protection and restoration
9. Share of forest area
10. Share of population has an access to safe drinking water
11. Share of population living in connected to improved sewage/waste water treatment system
12. Poverty level
13. Share of Green parks and areas in Ulaanbaatar and other urban areas
14. Share of agriculture and manufacturing sector in total GDP

Green Development Policy of Mongolia will be implemented in 2 phases.

1st phase: Establishment of foundation for Green Development phase, 2014-2020

2nd phase: Transition to a Green Development phase, 2021-2030

Within the **first phase** to establish foundation for green development in 2014-2020, creation of green development models and norms in all economic and social sectors that are consistent with Mongolia's specifics, creation of legal framework to ensure green development and actively mobilizing infrastructure and other reconstruction efforts aimed to enhancing long-term sustainable economic development will be carried out.

Per unit greenhouse emission will be reduced through Mongolia's achievement of its sustainable development goals, development of regionally competitive production and service sectors, formation of knowledge-based economy, development of environmentally sound and highly efficient green infrastructure, production of renewable energy and clean production technologies by introducing green investment and financing mechanisms.

Within the **2nd phase** to transition to a green economy in 2021-2030,

Green economic, socially equitable, inclusive and highly efficient development system established where nature and environment conserved, smart gaining of benefits from ecosystem services achieved and climate change adapted, as indicated on Green Development Policy of Mongolia.

Within the framework of establishing foundation for green development, NSO is working in collaboration with relevant Ministries and Agencies to identify Green Development Indicators and to develop methodologies in compliance with international methodologies and to create the Indicators System.

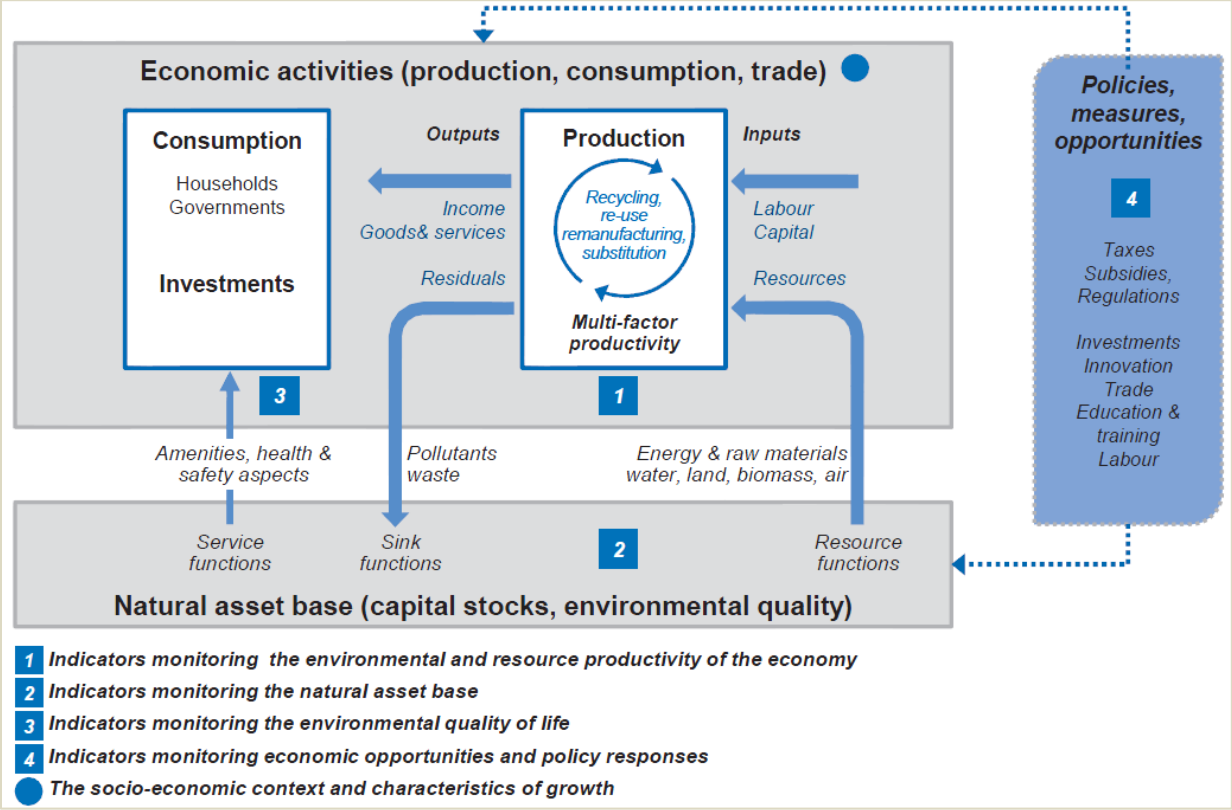
1.3. Green Development indicators and its framework

Identification of current status of Green Economy and adoption of indicators, its frameworks and internationally accepted methodologies would enable us to measure progress towards Green Economy, identify suitable approach towards transition to a Green development model and to evaluate the progress towards transition to a Green growth and its targeted level. At first, it would be beneficial to consider the proposed OECD Green Growth Indicators. Figure 1. OECD Green Growth Indicators framework

It illustrates correlation between production, consumption, natural resources and the relevant policies. The purpose of the indicators framework is to establish sources and

criteria to develop Green development and it proposed on the basis of Environmental-Economic accounting (SEEA)

FIGURE 1.1. GREEN GROWTH INDICATORS FRAMEWORK OF OECD[1]



Green Growth Indicators framework is a **production cycle** which converts economic inputs into economic outputs (goods and services).

Production cycle converts **natural resources** (non-renewable mineral resources, renewable fish resources e.g.) into products and residual wastes generated at production disposed on the site.

There are 4 groups of indicators to measure the green development:

1. Indicators monitoring the environmental and resource productivity of production and consumption
2. Indicators monitoring the natural resource base
3. Indicators monitoring the environmental dimensions of quality of life
4. Indicators describing policy responses and economic opportunities

Indicators monitoring the environmental and resource productivity: These

[1] "Green growth indicators", OECD, 2014

indicators capture aspects of production and efficient use of natural capital which are rarely quantified in economic models and accounting frameworks.

Purpose of these indicators is to define economic activities with low carbon productivity and efficient use of natural capital. These are:

- Carbon and energy productivity: Carbon dioxide produced per unit production or Primary energy supply
- Resource productivity: Natural resources or material input per unit production
- Multi-factor productivity: Natural resources, consumption of environmental services. An efficient use of Natural resources will give opportunity to create new jobs and markets.

Natural resource productivity indicators are relevant with production. These indicators aim to define domestic production and identify ecosystem cycle that “used” or “produced” by final consumption.

Indicators describing the natural resource base: These indicators illustrate the preservation of nature and its sustainability in terms of quantity, price, cost and quality.

These indicators are:

- Indicators to identify the renewable natural resource quality and access to resources including water, forest and fish resource
- Indicators to identify the non-renewable natural resource case and access to these resources including metal, mineral and energy resources
- Indicators to measure productivity of biological diverse conditions, ecosystem, land and soil

Environmental dimension of quality of life indicators: The indicator framework captures the impact of degraded environmental condition to people life and environmental dimension to well-being of population.

The indicators include;

- Indicators to identify the vulnerability to environmental risks (natural disaster, technological and chemical risks) and air pollution which impacts to human health and quality of life and related health costs and labor productivity etc.
- Indicators to measure the access to Environmental services such as water and sanitation infrastructure and green infrastructure per population segments

Economic opportunities and policy responses indicators: These indicators aim to provide economic (growth in environmental goods and services, green jobs) support (environmental taxes and subsidies) towards transition to a Green Growth, deal with difficulties, employ as a tool for policy formulation and to define the policy results to support green development.

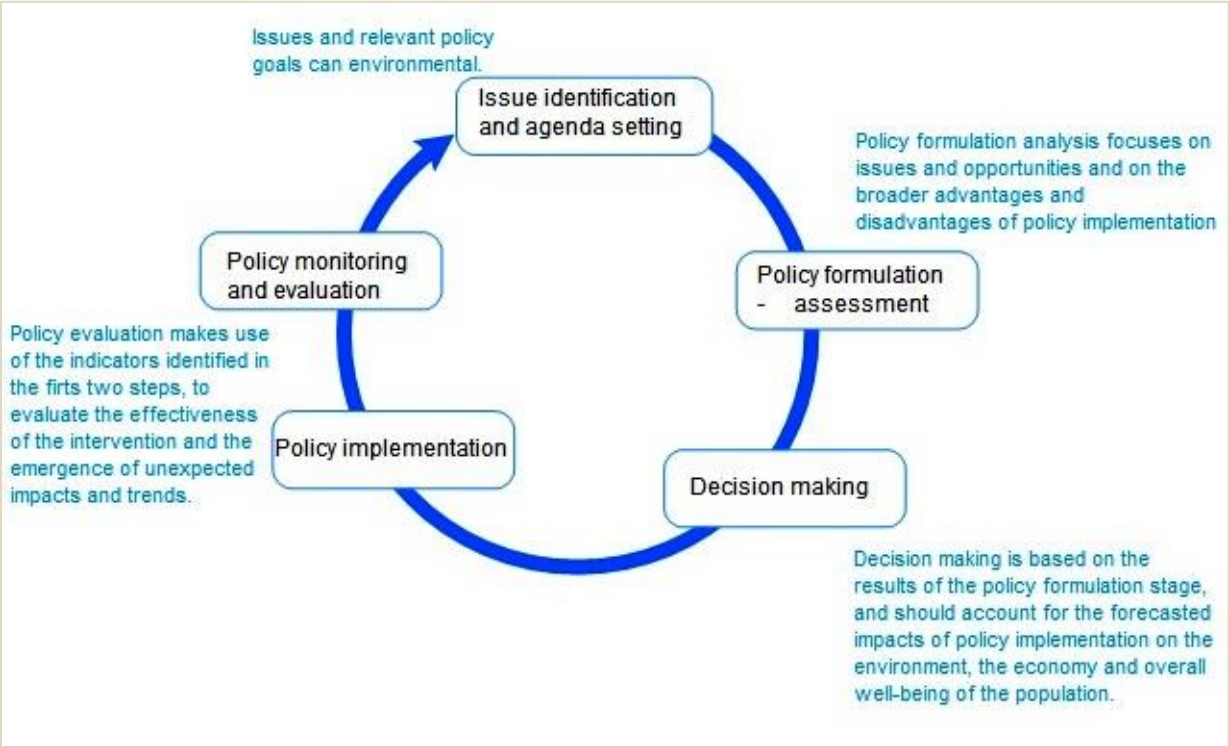
These indicators are:

- Indicators to identify technology and innovation as an important driver to Green growth and productivity.
- Indicators to define production of environmental goods and services to ensure green economy growth
- Indicators to identify investments and financial support to enhance the technology and knowledge transfer
- Indicators to facilitate information on prices, taxes and transfers for producers and consumers
- Indicators to identify education, training and skills development.

Besides the OECDs effort, the UNEP provides its support on identifying the Green Economic Indicators, defining green development policies of the countries in the context of measuring the inclusive green economy, and establishing the Indicators system to monitor the implementation of Green development policies.

UNEP describes that “Green economy is to promote well being and social equality through mitigating environmental risks and ecological disparity”. OECD designed the Green Growth Indicators based on analytical soundness, measurability and policy relevance criteria taking into account that the question on How to identify the Green Growth Indicators? What are the main criteria for the indicators?

FIGURE 1.2. GREEN DEVELOPMENT POLICY FORMULATION AND DECISION MAKING CYCLE[2]



The five stages of decision making cycle reinforced to define the Green Economic Indicators. In addition, the Green Economic Indicators are identified on the basis of Green Development Indicators for Regional level proposed by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

Therefore, guidelines and recommendations on identifying the Green Growth Indicators proposed by UNSO, EuroStat, UNFAO and the Green Growth knowledge platform made a great contribution in developing these indicators to monitor and evaluate the Green Development Policy of Mongolia.

[2] "A Guidance manual for green economy indicators", UNEP, 2014

CHAPTER 2. НОГООН ХӨГЖЛИЙН ҮЗҮҮЛЭЛТ

2.1. Activities implemented

Green development indicators are produced within the framework of Action plan on Green Development Policy of Mongolia and are based on experience of other counties and International organizations as well as recommendations given by international consultants. Implemented activities on developing the Green Development Indicators are stated as below (as shown in Figure 2.1)

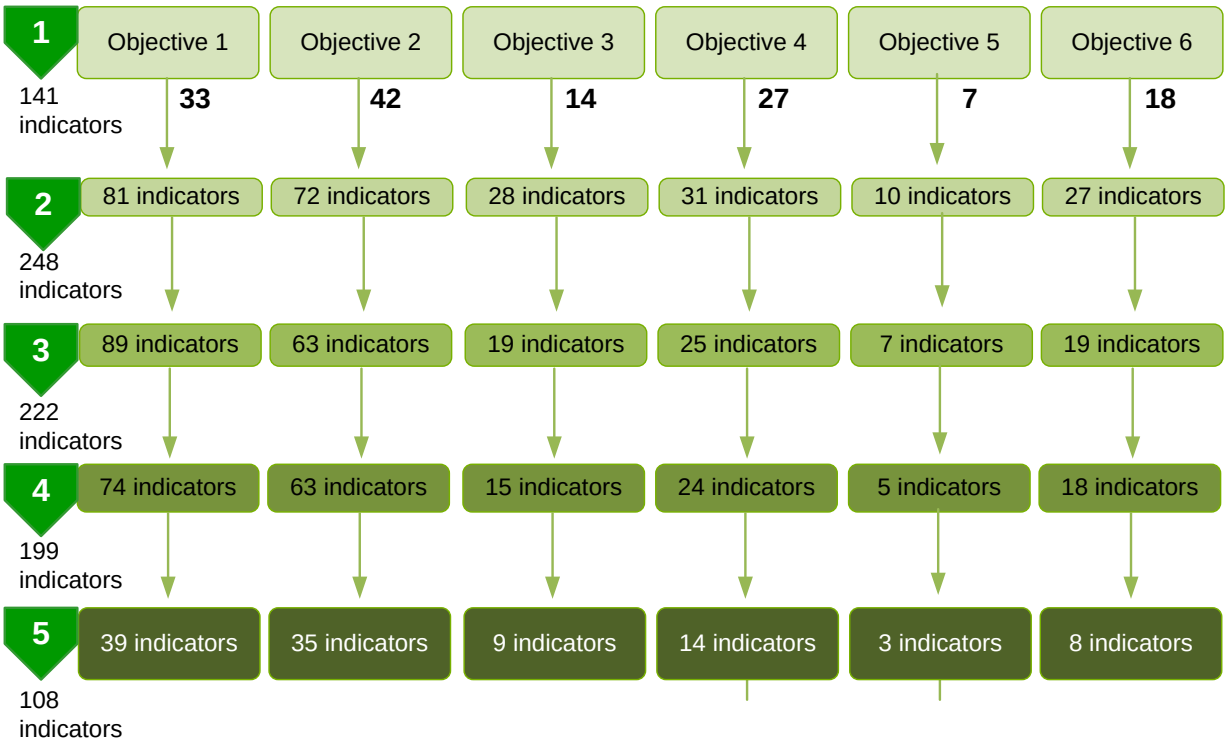
FIGURE 2.1. ACTIVITIES IMPLEMENTED

1. Studied the Green Growth Indicators proposed by International Organizations, official and administrative statistics of Mongolia and the Green development policy of Mongolia.
2. Produced initial draft of 141 Green Development Indicators.
3. Officers in charge are appointed by the relevant ministries, agencies and other organizations.
4. Produced the list of 248 indicators to ensure Green development policy implementation based on several discussions and workshops with stakeholders.
5. NSO and the working group on Green development re-examined the overlaps and consistencies between the indicators and re-defined the list of 222 indicators.
6. Draft indicators being refined through the Consultancy service supported by UNSO and prepared the list of 199 indicators.
7. Delivered the refined set of indicators to relevant 22 Ministries and Agencies for assessment of the current indicators and to explore future opportunities and finalized the list of 108 indicators.

6 Strategic goals and 52 approaches for action in the “Green development policy of Mongolia” are being studied. The primary source of study was official statistics produced within social, environmental and economic sectors such as population, employment, social insurance and benefits, education, health, agriculture, industry, construction, transportation, foreign trade, national account, environment and tourism and as well as administrative data produced by Ministries, Agencies and relevant organizations.

Draft Green Development indicators are designed to comply consistency between the proposed indicators by international organizations and the indicators that are highly coherent with purpose and objectives of “Green development policy” and these indicators are renewable energy, green building, eco-tourism, green jobs, environmental goods and services, education towards sustainable development, genetic resources, food security, soum development index, index based livestock insurance. The draft set of 108 indicators to assess the Green Development Policy was developed on the basis of results made from several discussions held with representatives from relevant Ministries, Agencies and NGOs and as well as collaboration between international consultants.

FIGURE 2.2. NUMBER OF INDICATORS, by each working stage



NSO organized 3rd panel discussion on “Green development indicators and Green jobs” and introduced the Green development indicators during the “National Implementation Workshop to Advance a Green Economy and Green Development in Mongolia” held in Ulaanbaatar on June, 2015 which was supported by the UN Environment Programme (UNEP), UN Institute for Training and Research (UNITAR), International Labor Organization (ILO), UN Industrial Development Organization (UNIDO) and UN Development Programme (UNDP). Suggested set of indicators refined on the basis of outcomes and recommendations from this workshop.

2.2. Indicators to ensure Green development policy implementation of Mongolia

A first draft indicator to measure the Green Development Policy of Mongolia had submitted to relevant 22 Ministries and Agencies and as a result, draft indicators had been assessed and current status and level of importance of indicators as well as future opportunities to create new indicators was identified. There are several group of criteria exist to classify the Green Development Indicators.

Classification by each strategic objectives: Suggested 108 set of indicators to assess the implementation of Green Development Policy disaggregated by each Green Development Policy objectives are presented in Appendix 1. Of the 108 indicators, 39 indicators or 36.1 percent pertained to Strategic objective one, 35 or 32.4 percent to Strategic objective two, 9 or 8.3 percent to Strategic objective three, 14 or 13.0 percent are to Strategic objective four, 3 or 2.8 percent to Strategic objective five and 8 or 7.4 percent pertained to Strategic objective six (shown in table 2.1).

TABLE 2.1. NUMBER OF GREEN DEVELOPMENT POLICY INDICATORS, by each strategic objectives

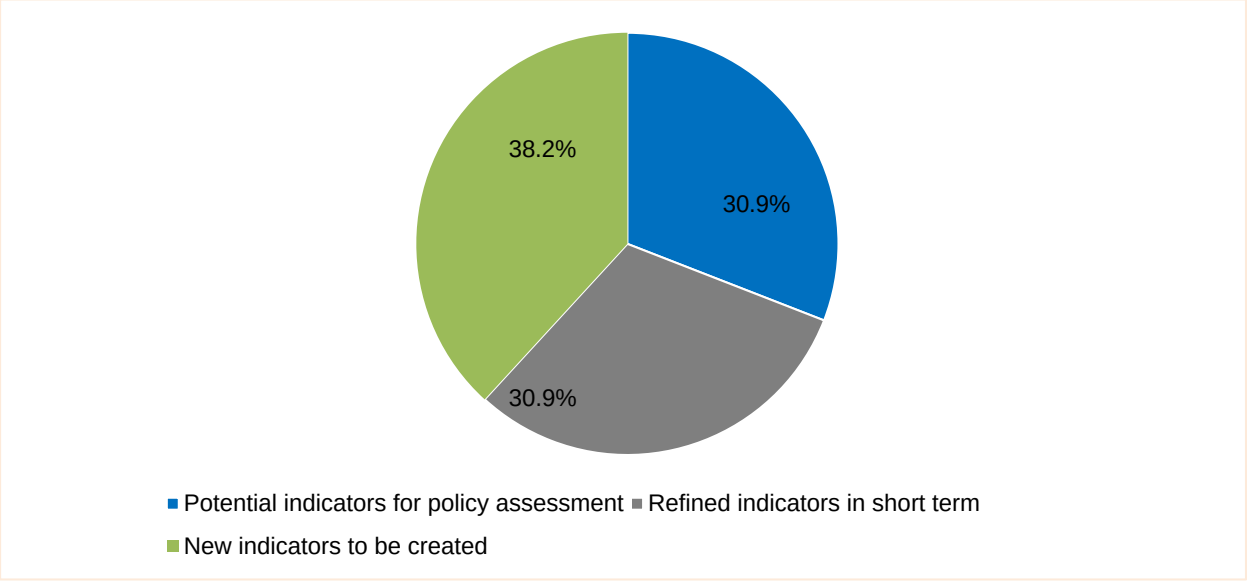
Strategic objective	Total		Core set of indicators		Non-core set of indicators	
	#	%	#	%	#	%
Бүгд	**108**	**100.0**	**55**	**100.0**	**53**	**100.0**
Strategic objective 1: Promote resource efficient, low greenhouse gas emission and waste less production and services	39	36.1	16	29.1	23	43.4
Strategic objective 2: Preserve ecosystem balance through intensification of environmental protection and restoration activities and reducing environmental pollution and degradation	35	32.4	22	40.0	13	24.5
Strategic objective 3: Introduction of financing, tax, lending and other optimal incentives for supporting green economy and increasing investments to promote environmental protection, human development and clean technologies.	9	8.3	3	5.5	6	11.3
Strategic objective 4: Promotion of green employment and poverty reduction engraining/promoting green life style	14	13.0	9	16.4	5	9.4

Strategic objective	Total		Core set of indicators		Non-core set of indicators	
	#	%	#	%	#	%
Strategic objective 5: Promotion of “Live in harmony with nature” living and culture values and make education, science and innovation as catalysts for green development.	3	2.8	1	1.8	2	3.8
Strategic objective 6: Develop and implement population settlement plan in accordance with the climate change, availability of natural and other resources in the regions and restoration capacity.	8	7.4	4	7.3	4	7.5

Priority of the indicators: Taking into account the level of importance and conformity with Green Development Policy approaches of the suggested indicators, core set of indicators are 55 or 50.9 percent and non-core set of indicators are 53 or 49.1 percent.

Core set of indicators: Of the core set of 55 green development core set of indicators, potential indicators for measurement are 17 or 30.9 percent, immediate indicators with refined methods and quality are 30.9 percent and the rest accounted for new indicators with data sources.

FIGURE 2.3. COMPOSITION OF INDICATORS, by assessment result



Suggested core set of indicators broken down by each strategic objectives of Green Development Policy are expressed as below.Within the framework of **Strategic objective 1**, core set of indicators are 16 or 41 percent out of suggested 39 indicators (shown in Table 2.2). 2 indicators can be used directly to assess the Green Development Policy, 8

indicators are to be refined in methods and quality and 6 indicators are to be identified through new data collection system based on specific surveys and census.

TABLE 2.2. CORE SET OF INDICATORS WITHIN FRAMEWORK OF STRATEGIC OBJECTIVE ONE, by each measurement for the implementation of the strategic objectives

Measurement	Core set indicator		Evaluation of indicator**
Measurement 1.1	1.1.1	Share of renewable energy in total installed capacity of energy production*	C
Measurement 1.3	1.3.1	Share of enterprises certified ISO14001 in total number of enterprises	B
Measurement 1.4	1.4.1	Share of agriculture in GDP*	A
	1.4.2	Employment in agricultural sector and number of green job	B
	1.4.3	Share of R&D in agriculture by total investment by agriculture sector	C
Measurement 1.5	1.5.1	Share of protective forests to total planted forest	C
	1.5.2	Unified land territory of Mongolia, by type	A
	1.5.3	Pesticides used on cultivated area [kg / ha]	B
	1.5.4	Chemical fertilizers used, kilogram per hectare of cultivated area [kg / ha]	B
Measurement 1.7	1.7.1	Output of eco-tourism products	C
Measurement 1.8	1.8.1	The total amount of recycled water to total amount of water used in mining industry	C
	1.8.2	Mineral resources, by type	C
	1.8.3	Extraction rates of minerals	B
Measurement 1.9	1.9.1	Share of the rehabilitation area to mineral extraction area	B
Measurement 1.10	1.10.1	Share of introduced national standards in conventional and unconventional oil sites to total number of standards that should be introduce	B
Measurement 1.11	1.11.1	Share of contribution of mining industry to natural resource fund	B

* - Indicators defined in 4.2 of “Green Development Policy”
** - A: Potential indicators for policy assessment, B: Refined indicators in short term, C: New indicators to be created

Within the framework of **Strategic goal 2,** core set of indicators are 22 or 62.9 percent out of suggested 35 indicators (shown in Table 2.3). 5 indicators can be used directly to assess the Green Development Policy, 6 indicators are to be refined in methods and quality and 11 indicators are to be identified through new data collection system.

TABLE 2.3. CORE SET OF INDICATORS WITHIN FRAMEWORK OF STRATEGIC OBJECTIVE TWO, by each measurement for the implementation of the strategic objectives

Measurement	Core set indicator		Evaluation of indicator**
Measurement 2.1	2.1.1	Proportion of terrestrial protected areas to total surface area, %*	A
Measurement 2.3	2.3.1	Greenhouse gas emission, by categories and sources	A
	2.3.2	The annual average concentrations of air pollutants, by industry, [mkg/m3]	B

Measurement	Core set indicator		Evaluation of indicator**
Measurement 2.4	2.4.1	Gene and area protected types of flora and fauna	C
Measurement 2.6	2.6.1	Imports of genetically modified products and products with GMO inputs	C
Measurement 2.7	2.7.1	Land with forest resources	A
	2.7.2	Proportion of land area covered by forest*	A
	2.7.3	Carbon dioxide removals (CO2) [мян.тонн]	C
Measurement 2.8	2.8.1	Annual environment protection expenditure	C
	2.8.2	Expenditure on natural resource management	C
	2.8.3	Annual protection expenditure of partnership based on ommunity for environment protection to total expenditure	B
Measurement 2.9	2.9.1	Number of households with mobile water supply, by drinking water resource	B
	2.9.2	Percentage of population that has access to safe drinking water*	C
	2.9.3	Available freshwater resources [thousand m3 per capita]	B
	2.9.4	Total freshwater abstraction [thousand m3 per capita]	B
	2.9.5	Percentage of population connected to improved sanitation facilities*	C
Measurement 2.10	2.10.1	Share of treated water according with the standards to total wastewater caused by industrial and service activities	B
Measurement 2.11	2.11.1	Number and volume of water facilities used for accumulation from rain, snow and flooding	C
Measurement 2.12	2.12.1	Land area affected by degradation, to total land area	A
	2.12.2	Desolation land	C
Measurement 2.14	2.13.1	Expenditure of activities for rehabilitation of environment by fee on usage of natural resource	C
	2.14.1	Total amount of investment for rehabilitation and protection of environment*	C

* - Indicators defined in 4.2 of “Green Development Policy”
** - A: Potential indicators for policy assessment, B: Refined indicators in short term, C: New indicators to be created

Within the framework of **Strategic goal 3,** core set of indicators are three out of suggested 9 indicators (shown in Table 2.4) and there are new indicators needed to be identified through the collaboration within Ministries and Agencies. 2 indicators has included in the Green Development Policy of Mongolia.

TABLE 2.4. CORE SET OF INDICATORS WITHIN FRAMEWORK OF STRATEGIC OBJECTIVE THREE, by each measurement for the implementation of the strategic objectives

Measurement	Core set indicator		Evaluation of indicator**
Measurement 3.1	3.1.1	Share of expenditures for green development in total GDP*	C
Measurement 3.4	3.4.1	Amount of environmental tax to total amount of taxes	C
Measurement 3.6	3.6.1	Share of green procurement in total government procurement*	C

* - Indicators defined in 4.2 of “Green Development Policy”
** - A: Potential indicators for policy assessment, B: Refined indicators in short term, C: New indicators to be created

Within the framework of **Strategic goal 4,** Core set of indicators are 9 out of suggested 14 indicators (shown in Table 2.5) and 1 indicator (poverty rate) has covered in the Green Development Policy of Mongolia. All these indicators are available to directly assess the Green Development Policy.

TABLE 2.5. CORE SET OF INDICATORS WITHIN FRAMEWORK OF STRATEGIC OBJECTIVE FOUR, by each measurement for the implementation of the strategic objectives

Measurement	Core set indicator		Evaluation of indicator**
Measurement 4.1	4.1.1	Labour force participation	A
Measurement 4.2	4.2.1	Labour productivity [GDP per person employed]	A
Measurement 4.5	4.5.1	Poverty headcount*	A
	4.5.4	Minimum subsistence level of population	A
	4.5.5	GINI coefficient	A
	4.5.6	Food supply	B
	4.5.7	Access to food	B
	4.5.8	Calories and nutrients of adult equivalent receives from food	B
	4.5.9	Level of contamination of food products	C

* - Indicators defined in 4.2 of "Green Development Policy"
** - A: Potential indicators for policy assessment, B: Refined indicators in short term, C: New indicators to be created

Within the framework of **Strategic goal 5,** core indicator is 1 out of suggested 3 indicators and it has included in the Green Development Policy of Mongolia (shown in Table 2.6)

TABLE 2.6. CORE SET OF INDICATORS WITHIN FRAMEWORK OF STRATEGIC OBJECTIVE FIVE, by each measurement for the implementation of the strategic objectives

Measurement	Core set indicator		Evaluation of indicator**
Measurement 5.4	5.4.1	Share of expenditures for scientific and technological research in total GDP*	B

* - Indicators defined in 4.2 of "Green Development Policy"
** - A: Potential indicators for policy assessment, B: Refined indicators in short term, C: New indicators to be created

Within the framework of **Strategic goal 6,** core indicators are 4 out of suggested 8 indicators (shown in Table 2.7).

TABLE 2.7. CORE SET OF INDICATORS WITHIN FRAMEWORK OF STRATEGIC OBJECTIVE SIX, by each measurement for the implementation of the strategic objectives

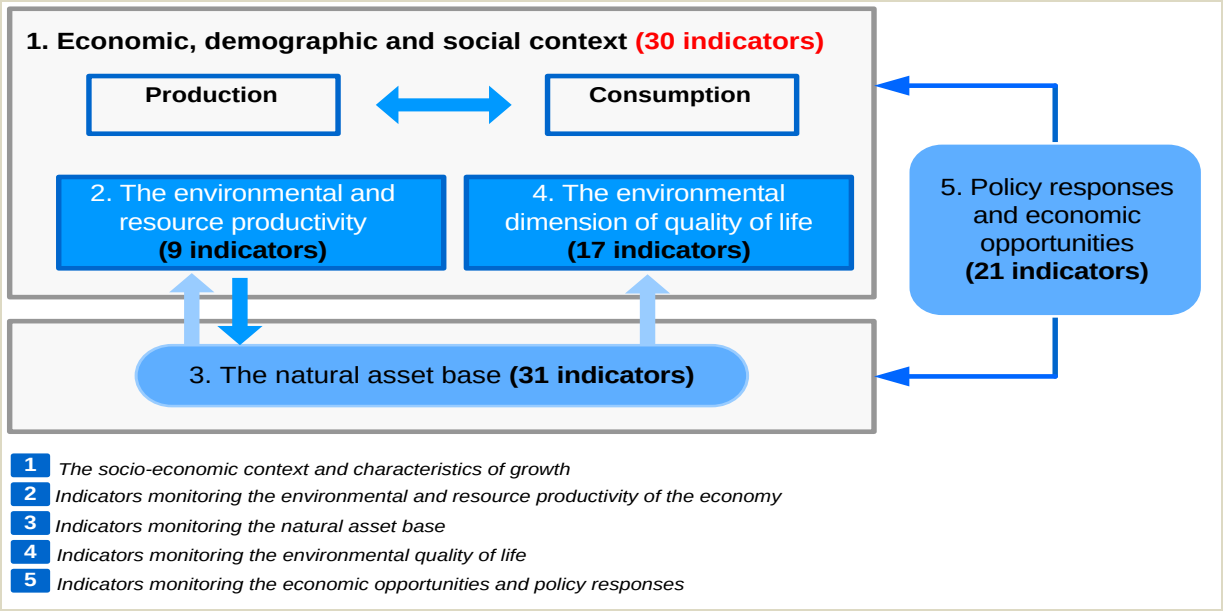
Measurement	Core set indicator		Evaluation of indicator**
Measurement 6.2	6.2.1	Concentration of particulate matter (PM10, PM2.5) in urban air	A
Measurement 6.3	6.3.1	Municipal waste collected, by type of treatment*	C
Measurement 6.4	6.4.1	Total amount of waste recycling, by type	B
	6.4.2	Waste recycling rate	B
	6.4.3	Concentration of particulate matter (PM10, PM2.5) in urban air*	C

2.3. Comparison between Green Development Indicators of Mongolia and proposed indicators by International Organizations

2.3.1. In comparison with proposed OECD indicators

Classifying the Green Development Indicators of Mongolia under the proposed OECD indicators framework, there are 30 indicators to define economic and population and social situation, 9 indicators to monitor the environmental and resource productivity, 31 indicators to define natural asset base, 17 indicators to monitor the environmental dimension of quality of life and 21 indicators on economic opportunities and policy responses.

FIGURE 2.4. FRAMEWORK OF GREEN DEVELOPMENT POLICY INDICATORS OF MONGOLIA, by OECD classification



2.3.2. In comparison with UNSD indicators

One of the main sources to identify Green Development Indicators of Mongolia was the indicators proposed by UNSO.

The indicators proposed by UNSO are deeply rooted from the proposed OECD Green Growth indicators framework.

34 indicators (shown in table 2.08 and figure 2.5) adopted to Green development indicator of Mongolia from the OECD proposed 97 indicators and from which 17 are core

indicators and 17 are non-core indicators.

TABLE 2.8. A COMPARISON BETWEEN GREEN DEVELOPMENT INDICATORS OF MONGOLIA AND UNSD PROPOSED INDICATORS

№	Section and subsections	Total		Coreset		Non-core set	
		UNSD	Mongolia	UNSD	Mongolia	UNSD	Mongolia
Total		**97**	**34**	**44**	**17**	**53**	**17**
1	**Economic, demographic and social context for sustainable development**	**34**	**8**	**15**	**2**	**19**	**6**
1.1	Demographic trends	7	-	2	-	5	-
1.2	Economic growth, structure of economy and productivity	8	3	1	-	7	3
1.3	Labour	5	4	2	2	3	2
1.4	Poverty, income distribution and other social issues	8	1	6	-	2	1
1.5	Inflation and commodity prices	2	-	1	-	1	-
1.6	International trade and tourism	4	-	3	-	1	-
2	**The environmental and resource productivity**	**10**	**5**	**6**	**2**	**4**	**3**
2.1	Carbon emissions	3	1	3	1	0	-
2.2	Energy	7	4	3	1	4	3
3	**The natural asset base**	**29**	**14**	**14**	**9**	**15**	**5**
3.1	Renewable resources	10	3	7	3	3	-
3.2	Non-renewable resources	2	2	2	2	0	-
3.3	Land and agriculture	10	6	3	3	7	3
3.4	Biodiversity and ecosystems	5	3	2	1	3	2
3.5	Footprints	2	-	0	-	2	-
4	**The environmental dimension of quality of life**	**12**	**5**	**7**	**3**	**5**	**2**
4.1	Environmental health and risks	1	1	1	1	0	-
4.2	Environmental services and amenities	11	4	6	2	5	2
5	**Policy responses and economic opportunities**	**12**	**2**	**2**	**1**	**10**	**1**
5.1	Regulations and management	4	2	2	1	2	1
5.2	Environmental goods and services	5	-	0	-	5	-
5.3	International financial flows	3	-	0	-	3	-

FIGURE 2.5. A CONFORMITY BETWEEN GREEN DEVELOPMENT INDICATORS OF MONGOLIA AND UNSD PROPOSED INDICATORS

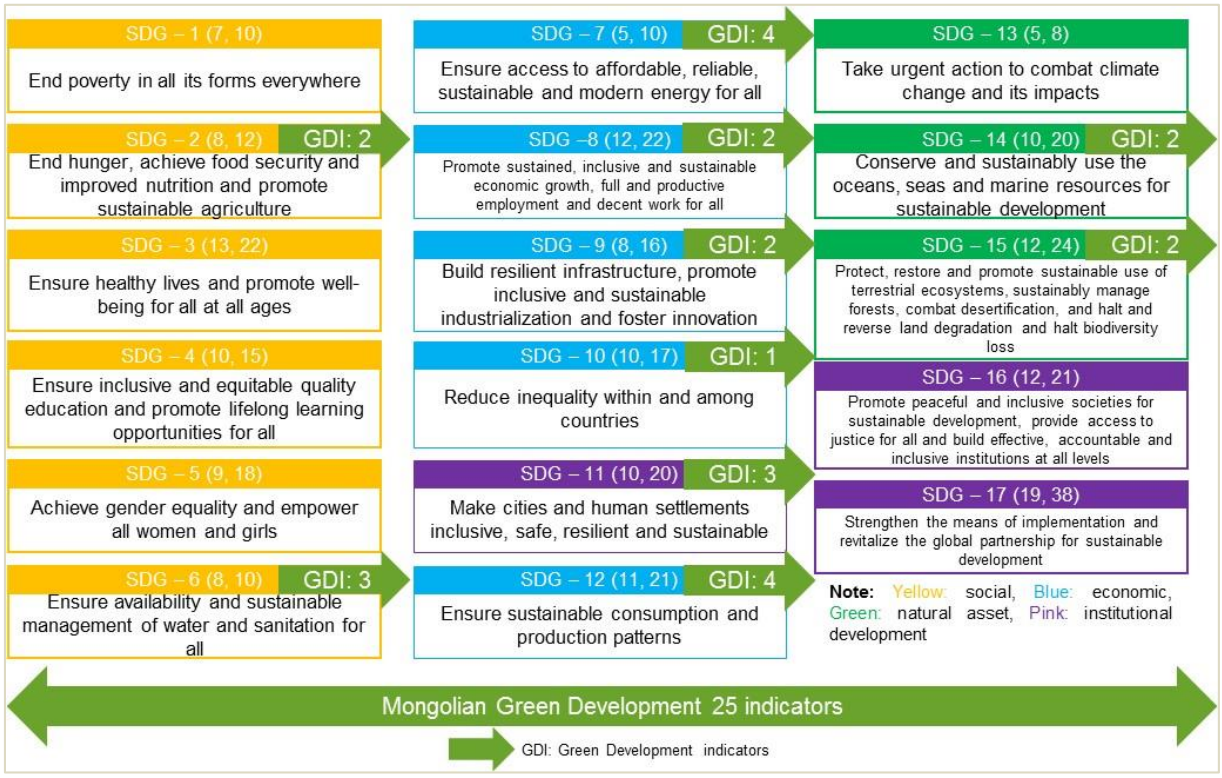
1.Economic, demographic and social context for sustainable development	1. GDP, NI, Net Disposable Income (Total/Net) 2. Share of agriculture in GDP 3. GDP per capita 4. Labour force participation 5. Unemployment rate 6. Number of green jobs 7. Labour productivity 8. GINI coefficient
2.The environmental and resource productivity	9. Share of renewable energy to total energy production output/consumption 10. Energy productivity 11. Energy intensity 12. Proportion of bioenergy in total renewable energy production 13. Carbon dioxide removals
3.The natural asset base	14. Unified land territory of Mongolia, by type 15. Pesticides used on cultivated area 16. Chemical fertilizers used, kilogram per hectare of cultivated area 17. Natural fertilizer use, kilogram per hectare of cultivated area 18. Area equipped for irrigation as % of agricultural area 19. Mineral resources, by type 20. Extraction rates of minerals 21. Proportion of terrestrial protected areas to total surface area 22 Number of known flora and fauna species by status category 23. Threatened flora and fauna species by class 24. Proportion of land area covered by forest 25. Available freshwater resources [thousand m3 per capita] 26. Total freshwater abstraction [thousand m3 per capita] 27. Land area affected by degradation to total land area
4.The environmental dimension of quality of life	28. Percentage of population that has access to safe drinking water 29. Percentage of population connected to improved sanitation facilities 30. Concentration of particulate matter (PM10, PM2.5) in urban air 31. Municipal waste collected, by type of treatment 32. Total hazardous waste collected, by type of treatment
5.Policy responses and economic opportunities	33. Annual environment protection expenditure 34. Amount of environmental tax to total amount of taxes

2.3.3. In comparison with Sustainable Development Indicators

As a further process to the MDGs to be achieved by 2015, international organizations designed the **proposed indicators (304) for sustainable development** to show compliance with post 2015 Development Agenda with Sustainable development goals (17) and proposed targets (169).

25 indicators from Green development policy of Mongolia are designed to align the indicators for Sustainable Development. In accordance with the classification of Indicators for Sustainable Development, there are 5 indicators concentrated on Social development, 13 on economic development, 4 on environmental development and 3 indicators concentrated on institutional development, accordingly.

FIGURE 2.6. A COMPARISON BETWEEN GREEN DEVELOPMENT INDICATORS OF MONGOLIA AND INDICATORS FOR SUSTAINABLE DEVELOPMENT



There are 5 indicators concentrated on Social development, from which 2 indicators (greenhouse gas emission, by types and sectors) related to SDG Goal 2 to end poverty, achieve food security and promote sustainable agriculture and 3 indicators related to SDG Goal 6 to ensure availability and sustainable management of water and sanitation (share of population using safe drinking water, percentage of wastewater flows treated to national standards, share of water in water resource).

1. End hunger, achieve food security and improved nutrition and promote sustainable agriculture (SDG: 2)
    a. GHG emissions, by types and by sectors
    b. GHG emissions in agriculture sector, by types
2. Ensure availability and sustainable management of water and sanitation for all (SDG: 6)
    a. Percentage of population using safe drinking water
    a. Үйлдвэрлэл, үйлчилгээнээс бохирдсон нийт усанд стандартын шаардлагад нийцэх түвшинд цэвэршүүлсэн усны эзлэх хувь

There are 13 indicators concentrated on Economic development, from which 4

indicators pertained to SDG Goal 7 to ensure access to affordable, reliable and sustainable, modern energy for all, 2 indicators to SDG Goal 8 to promote sustained, inclusive and sustainable economic growth, 2 indicators to SDG Goal 9 to build resilient infrastructure, promoting inclusive and sustainable industrialization, 1 indicator to SDG Goal 10 to reduce inequality within and among countries and 4 indicators pertained to SDG Goal 12 to ensure sustainable consumption and production pattern.

1. Ensure access to affordable, reliable, sustainable and modern energy for all (SDG: 7)
    a. Share of renewable energy to total energy production output/consumption
    b. Energy productivity
    c. Greenhouse gas emission in energy sector
    d. Energy intensity, by industry
2. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG: 8)
    a. GDP per capita
    b. Unemployment rate
3. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (SDG: 9)
    a. Share of expenditure for R&D and innovation to GDP
    b. Main indicators of civil air, road, railway transport (number of passenger, passenger turnover, carried freight, freight turnover)
4. Reduce inequality within and among countries (SDG: 10)
    a. GDP, NI, Net Disposable Income (Total/Net)
5. Ensure sustainable consumption and production patterns (SDG: 12)
    a. The annual average concentrations of soil, air and water pollutants
    b. Pupils and students receiving sustainable development education by total number of pupils and students in general educational schools and university
    c. Municipal waste collected, by type of treatment
    d. Waste recycling rate

There are 4 indicators concentrated on Environmental development, from which 2 indicators pertained to SDG Goal 14 to conserve and sustainably using the oceans, seas and marine resources for sustainable development and 2 indicators related to SDG goal 15 to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably

manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

1. Conserve and sustainably use the oceans, seas and marine resources for sustainable development (SDG: 14)
    a. Chemical fertilizers and natural fertilizer used for cultivated area
    b. Proportion of terrestrial protected areas to total surface area
2. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (SDG: 15)
    a. Land with forest resources
    b. Governmental expenditure on forest management

There are 3 indicators concentrated on institutional development which related to SDG Goal 11 to make cities and human settlements inclusive, safe, resilient and sustainable.

1. Unified land territory of Mongolia, by type
2. Concentration of particulate matter (PM10, PM2.5) in urban air
3. Waste recycling rate

2.3.4. Excluded indicators from UNSD proposed core set

Comparing the Green Development Indicators (108) of Mongolia with UNSD proposed core set of 44 indicators, there is 1 indicator captured as a core indicator and 16 indicators captured as non-core indicator and 27 indicators are not captured.

TABLE 2.9. LIST OF CORE SET OF INDICATORS PROPOSED BY UNSD, as captured in the Green Development Indicator of Mongolia

№	Indicator	Status of coverage	№	Indicator	Status of coverage	№	Indicator	Status of coverage
1	Percentage of urban population		16	Carbon dioxide emissions (CO2), thousand metric tons of CO2	+	31	Proportion of agricultural area to total land area	+
2	Growth rate of urban population		17	Carbon dioxide emissions (CO2), metric tons of CO2 per capita		32	Pesticides used on crop areas [kg / ha]	+
3	Real GDP, index		18	Carbon dioxide emissions (CO2), kg CO2 per $1 GDP (PPP)		33	Chemical fertilizers used, kilogram per hectare of crop land	+
4	Labour force participation	+	19	Energy consumption per capita		34	Proportion of marine protected areas to territorial waters, %	

№	Indicator	Status of coverage	№	Indicator	Status of coverage	№	Indicator	Status of coverage
5	Labour productivity	+	20	Renewable energy supply	+	35	Proportion of terrestrial protected areas to total surface area, %	+
6	Percentage of population living in poverty and extreme poverty		21	Renewable electricity		36	Concentration of particulate matter (PM10) in urban air [main cities]	+
7	Proportion of population below $1.25 (PPP) per day		22	Available freshwater resources	+	37	Proportion of total population using an improved drinking water source	+
8	Proportion of urban population living in slums		23	Total freshwater abstraction	+	38	Proportion of urban population using an improved drinking water source	
9	Total net enrolment ratio in primary education		24	Proportion of freshwater abstracted to total available freshwater resources		39	Proportion of rural population using an improved drinking water source	
10	Total public expenditure on education as a percentage of GDP		25	Forest area	+	40	Proportion of total population using an improved sanitation facility	+
11	Total expenditure on health per capita (PPP)		26	Proportion of land area covered by forest [percentage]		41	Proportion of urban population using an improved sanitation facility	
12	Consumer price index		27	Deforestation [Ha and % of forest area per year]		42	Proportion of rural population using an improved sanitation facility	
13	Terms of trade index		28	Fish catch, total [marine and freshwater]		43	Annual government environment protection expenditure	+
14	International tourist arrivals in % to population		29	Mineral resources	+	44	Participation in multilateral environmental agreements	
15	International tourism, receipts		30	Extraction rates of selected minerals	+			

CHAPTER 3. CURRENT STATISTICS OF INDICATORS TO ASSESS GREEN DEVELOPMENT POLICY

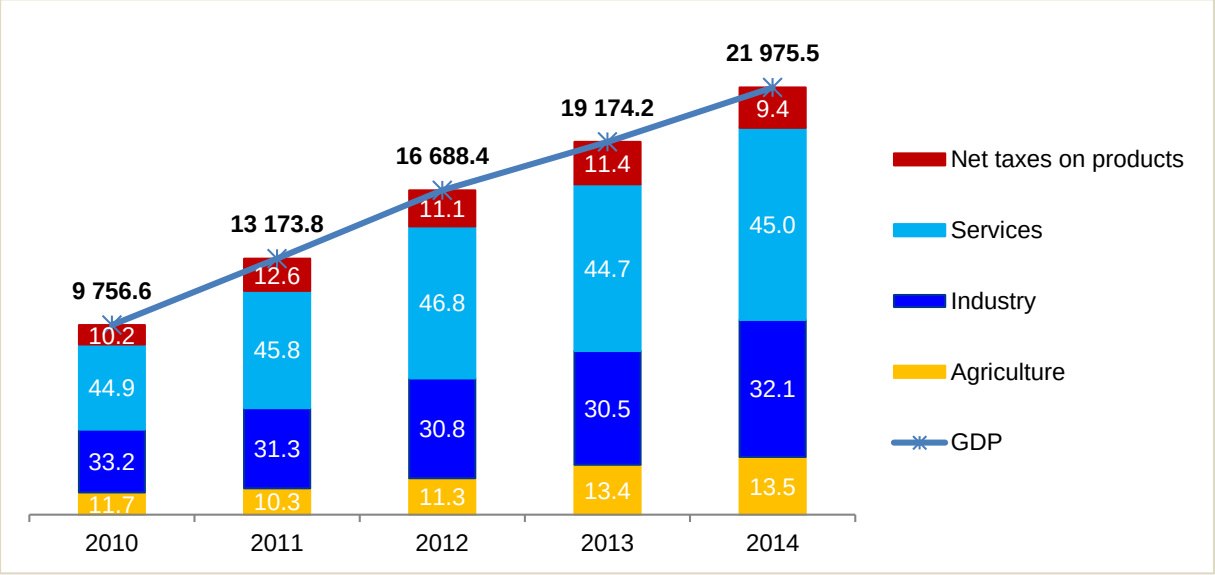
Core set of indicators to assess the Green Development Policy of Mongolia broken down by each strategic objectives are expressed as below.

Strategic objective 1: Promoting resource efficient, low greenhouse gas emission and wasteless production and services.

Share of Agriculture to Gross Domestic Product:

Gross Domestic Product (GDP) is total value of all final goods and services produced by all domestic and foreign unit residents in the economy in a given year. It is an important macro-economic indicator to demonstrate the extent of economic activity of the country. Output-based GDP approach captures the economic activity sectors and it demonstrates the share of contribution of economic sectors in total GDP.

FIGURE 3.1. GDP, industrial structure, at current prices, by percentage

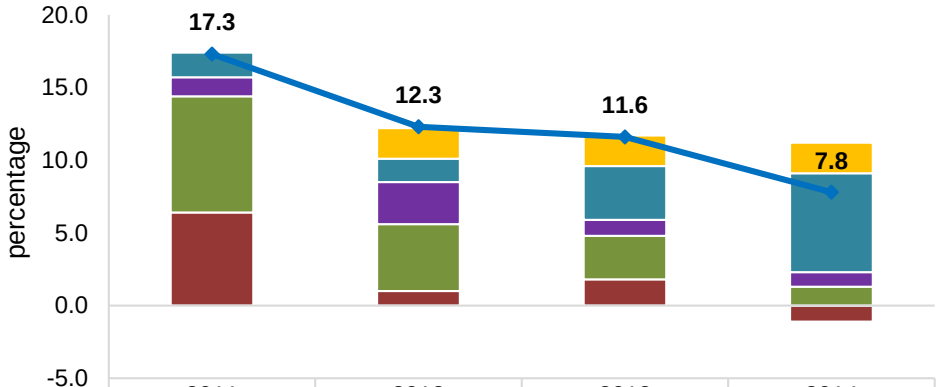


Share of Agriculture reached to 13.5 percent and increased by 0.1 percentage points compared to the previous year.

GDP increased by 7.8 percent compared to the previous year. Rises in value added of agriculture sector by 225.5 bln.tog or 13.7 percent, mining and quarrying sector by 554.8 bln.tog or 19.1 percent, administrative support activity by 0.8 bln.tog or 0.9 percent, transportation and storage sector by 117.2 bln.tog or 14.1 percent and financial and insurance sector by 217.3 or 32.6 percent were main factors leading to increase in

GDP.

FIGURE 3.2. CHANGE OF GDP, by sectors



	2011	2012	2013	2014
Agriculture	0.0	2.1	2.1	2.1
Mining	1.7	1.6	3.7	6.8
Non mining	1.3	2.9	1.1	1.0
Services	8.0	4.6	3.0	1.3
Net taxes on products	6.4	1.0	1.8	-1.1
GDP real growth	17.3	12.3	11.6	7.8

Strategic objective 2. Preserve ecosystem balance through intensification of environmental protection and restoration activities and reducing environmental pollution and degradation.

Unified land territory of Mongolia, by main type

According to the Law of Mongolia on Land, Land shall be used for common purposes under classification of agricultural land, public tenure lands in cities, villages and other settlements, lands with forest resources and lands with water resources. **Land** means a piece of space including the land surface, its soil, forests, water and plants; **To use land** means to undertake a legitimate and concrete activity to make use of some of the land's characteristics in accordance with contracts made with owners and possessors of land.

In 2014, by the classification of Unified land territory of Mongolia, agricultural land cover 73.5 percent, special protected areas cover 13.5 percent and land with forest resources covers 7.8 percent of total Land territory of Mongolia (as shown in Table 3.1).

TABLE 3.1. UNIFIED LAND TERRITORY OF MONGOLIA, by main types

Classification	2010	2011	2012	2013	2014
TOTAL AREA	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Agricultural land	73.9	73.8	73.8	73.8	73.5
pasture land	71.1	71.1	71.0	71.0	70.7
cultivated land	0.6	0.6	0.7	0.6	0.6
Land of Cities, villages and other settlements	0.4	0.4	0.4	0.4	0.5
Land under roads and networks	0.3	0.3	0.3	0.3	0.3
Land with forest resources	9.1	9.1	9.1	9.1	9.2
forest area	7.7	7.7	7.7	7.8	7.8
Land with water resources	0.4	0.4	0.4	0.4	0.4
Land for special needs	15.9	15.9	15.9	15.9	16.1
protected areas	13.4	13.4	13.4	13.4	13.5

Share of Land degradation in total Land area, by types of damage

Land degradation is classified as degradation in pasture and other wood land, lands in cities, villages and other settlements, lands with forest resource, land with water resource, digged and damaged land as stated in the “Unified Land territory report” approved as attachment to the Government Resolution #204 dated September 17, 2003 in accordance with article 26.4 of Law of Mongolia on Land. Land degradation is estimated by the result of baseline survey and monitoring carried out by Administration of Land Affairs, Geodesy, and Cartography.

Degraded cultivated area includes land affected by soil erosion, loss of soil nutrient, exposure to rodent and insects, soil pollution and exposure to hazardous plants.

Degraded pasture and other woodland includes land affected by overgrazing, erosion, mudding, sand dune encroachment, exposure to rodents and insects, desertification, mineral extraction and pollution due to exploration of oil.

Degraded land of cities, villages and other settlements includes land affected by plant cover loss, sand dune encroachment, chemical and radioactive contamination and pollution due to industrial and solid waste.

Degraded land with forest resources includes land affected by wildfire, exposure to rodents and insects, logging of trees, bushes, shrubs and saxauls and mineral resources extraction.

Degraded land with water resources includes land affected by contamination of surface and ground water, rivers and lakes areas affected by industrial poisoning and contamination and rivers and lake areas damaged due to mineral resources extraction.

In 2014, land degradation affects 6.0 percent of total land territory of Mongolia, of which degradation to pasture and other woodland accounted for 95.9 percent, degradation to land with forest resources for 2.0, degradation to cultivated are for 1.8 percent and digged and damaged land accounted for 0.1 percent (as shown in Table 3.2). For the digged and damaged land, damage due to mineral resources exploration accounted for 82.8 percent and damage due to construction and repair of roads, transportation, and communication accounted for 12.2 percent.

TABLE 3.2. SHARE OF LAND DEGREDATION IN TOTAL LAND AREA, by main classifications

	2010	2011	2012	2013	2014
TOTAL LAND DEGRADATION	**4.7**	**5.9**	**5.4**	**5.8**	**6.0**
Cultivated area	2.5	0.6	0.5	0.4	1.8
Pasture and other wood land	92.0	96.1	94.1	97.7	95.9
Land of cities, villages and settlements	0.1	0.1	0.1	0.1	0.2
Land with forest resources	5.1	3.2	5.2	1.7	2.0
Land with water resources	0.0	0.0	0.0	0.0	0.0
Digged and damaged land	0.3	0.1	0.1	0.1	0.1
Due to geology exploration and prospecting	9.8	4.0	7.1	2.3	1.7
Due to mineral resources exploration	82.7	85.6	81.5	81.6	82.8
Due to defense and security operations	1.6	2.8	2.1	0.4	0.5
Due to construction of buildings, cable, network maintenance repair	0.5	0.6	1.3	1.1	2.9
Due to construction and repair of roads, transportation and communication	5.4	7.0	8.1	14.5	12.2

Greenhouse gas emission

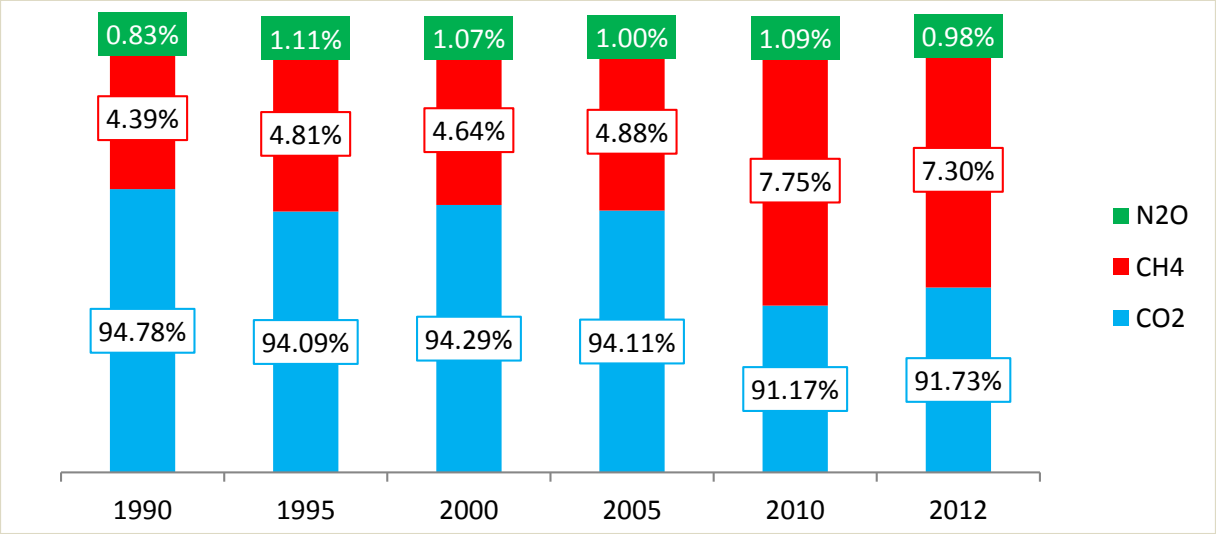
Greenhouse gas refers to gases in the clouds and earth's atmosphere absorbs and re-emit infrared radiation which occurs naturally and resulting from human activities.

Greenhouse gas: Greenhouse gas includes gases such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur dioxide (SO2), hydrofluorocarbons, (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6).

Greenhouse gas emission: An increase of greenhouse gas concentration in the atmosphere for a specific period.

Greenhouse gas inventory in Energy sector compiled by period of 1990-2012 and it captured GHG data on carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). In addition, reactive gases such as carbon monoxide (CO), nitrogen oxides (NOx), Non-methane volatile organic compounds (NMVOCs) and sulfur dioxide (SO2) are included. Greenhouse emission from burning fossil fuels (solid and liquid) and Carbon dioxide emission from coal combustion are also represented in the Energy sector. Majority (63-84 percent) of Greenhouse gas emissions in the energy sector produced by energy productions (thermal power plant, electricity and heating production in heating furnaces).

FIGURE 3.3. GHG EMISSION GENERATED BY ENERGY SECTOR, by main chemical substances, percentage



Strategic goal 3: Introduction of financing, tax, lending and other optimal incentives for supporting green economy and increasing investments to promote environmental protection, human development and clean technologies.

Gross national income and National disposable income

Gross national income (GNI) is a total gross value added produced by all economic residents of the country. GNI is estimated sum of GDP and net income from rest of world or income from economic residents minus expenses paid to non-residents. Income from rest of world is consists of 2 type of transaction between resident and non-resident which are compensation of employees paid to non-resident workers and foreign investment income.

National disposable income is the sum of the disposable incomes of all resident institutional units. National disposable income is calculated by adding net current transfers by residents and non-residents units on Gross national income performance.

As of 2014, GNI reached 20168.5 bln.tog and representing increase of 11.5 percent compared to 2013. The performance of GNI was 1807.0 bln.tog less than the GDP.

In 2014, GNI amounted to 20426.5 bln.tog at current prices and it has increased by 11.6 percent compared to the previous year.

TABLE 3.3. GDP, GROSS NATIONAL INCOME, NATIONAL DISPOSABLE INCOME, at current price, billion togrog

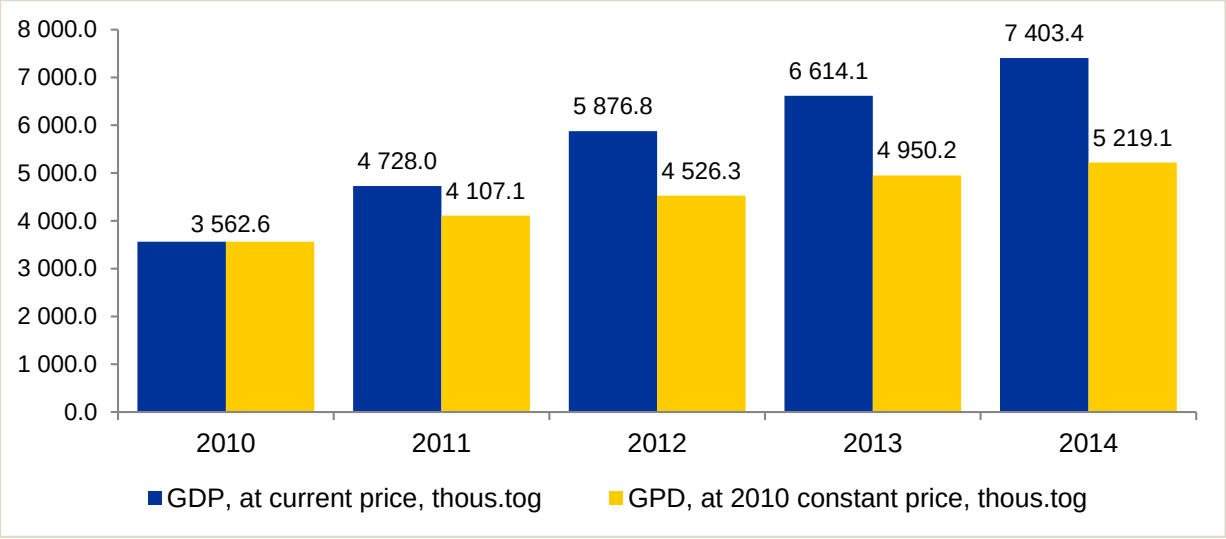
	2010	2011	2012	2013	2014	2014% 2013
GDP	**9 756.6**	**13 173.8**	**16 688.4**	**19 174.2**	**21 975.5**	**114.6**
Transfer from foreign economies	**- 812.0**	**-1 067.2**	**-1 288.8**	**-1 082.9**	**-1 807.0**	**166.9**
Personnel salary, net	- 43.7	- 146.0	- 331.0	- 285.2	-206.1	72.6
received salary (+)	24.8	38.1	46.4	69.9	97.6	139.5
paid salary (-)	68.6	184.1	377.4	355.1	303.7	85.5
Investment, net	- 768.3	- 921.2	- 957.9	- 797.7	-1 600.9	200.7
investment income (+)	14.4	17.2	31.3	9.1	6.0	65.9
investment expenditure (-)	782.7	938.4	989.2	806.8	1 606.9	199.2
GNI	**8 944.6**	**12 106.5**	**15 399.6**	**18 091.3**	**20 168.5**	**111.5**
Transfer from foreign economies	253.6	301.4	325.4	218.0	258.0	118.3
Government transfer, net	44.6	22.4	49.7	45.3	51.1	112.8
received transfer (+)	47.5	35.9	55.6	52.3	58.4	111.7
remittance (-)	2.9	13.5	5.9	7.0	7.3	104.3
Personnel transfer, net	175.4	74.0	55.7	36.2	55.3	152.8
received transfer (+)	336.2	315.5	389.1	320.2	366.0	114.3
remittance (-)	160.7	241.5	333.4	284.0	310.7	109.4
Penalties	33.5	204.9	220.1	136.5	151.6	111.1
received transfer (+)	35.8	221.1	237.5	151.9	169.5	111.6
remittance (-)	2.4	16.2	17.4	15.4	17.9	116.2
GNDI	**9 198.2**	**12 407.9**	**15 725.0**	**18 309.3**	**20 426.5**	**111.6**

GDP per capita

GDP per capita at current price in 2014 has reached 7403.4 thous.tog and GNI has reached 6894.8 thous.tog, compared with the previous year it has increased by 11.9 percent and 10.5 percent, respectively. GDP per capita estimated by World Bank Atlas

method at current price in 2014 reached 4,523 US Dollars, compared to 2013 it has decreased by 40 USD or 0.9 percent and per capita GNP at current price reached to 4,166 US Dollars and compared to 2013 it has increased by 140 US Dollars or 3.3 percent. (Figure 3.4)

FIGURE 3.4. GDP PER CAPITA, thousand tog



Per capita GDP (at constant prices in 2010) has reached 5219.1 thousand tog and compared with 2013 it has increased by 5.4 percent.

Strategic goal 4: Promotion of green employment, poverty reduction and engraining/promoting green life style

Labor force participation rate

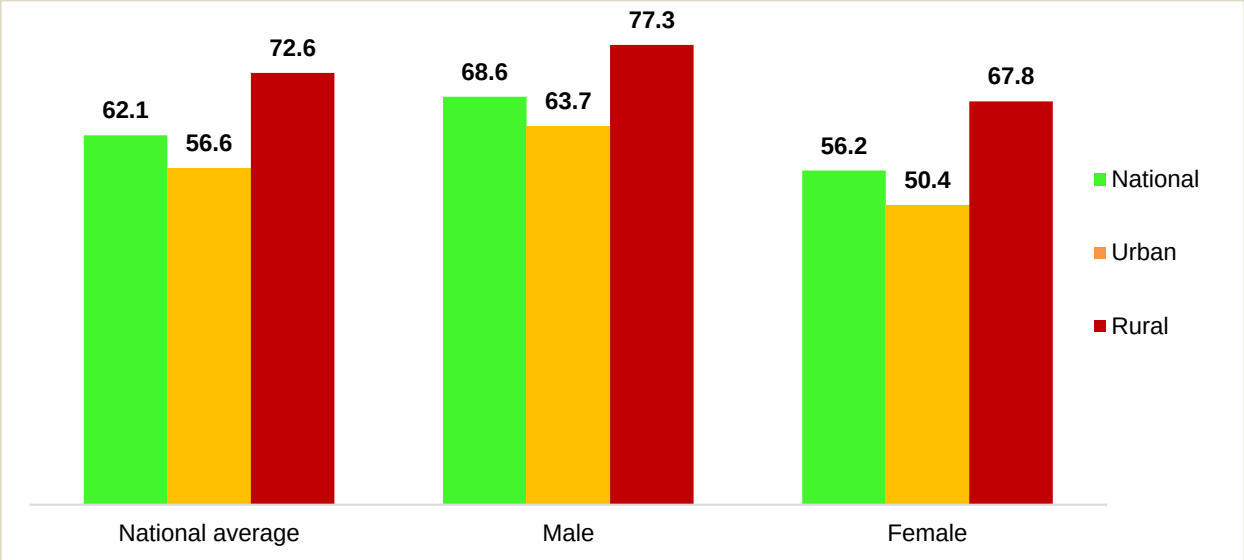
NSO conducts the Labor Force Survey data on quarterly basis and disseminates its results on employment and labor force participation rate disaggregated by region, urban and rural, the capital and district and economic sectors, types of occupations and employment status.

Labour force participation rate is the comparison ratio of the economically active population to the working age population and economically active population comprises all persons of employed and unemployed and it divided by working age population. This provides an indication of the relative size of the supply of labor available for the production of economic goods and services.

$$\text{Labor force participation rate} = \frac{\text{Economically active population}}{\text{Working age population}} \times 100$$

Comparing the results of Labor force survey in 2014 disaggregated by location, the labor force participation rate was 56.6 percent in urban area and 72.6 percent in rural area, which shows the enrollment rate is higher in urban area compared to rural area.

FIGURE 3.5.LABOR FORCE PARTICIPATION RATE, by location and gender, 2014



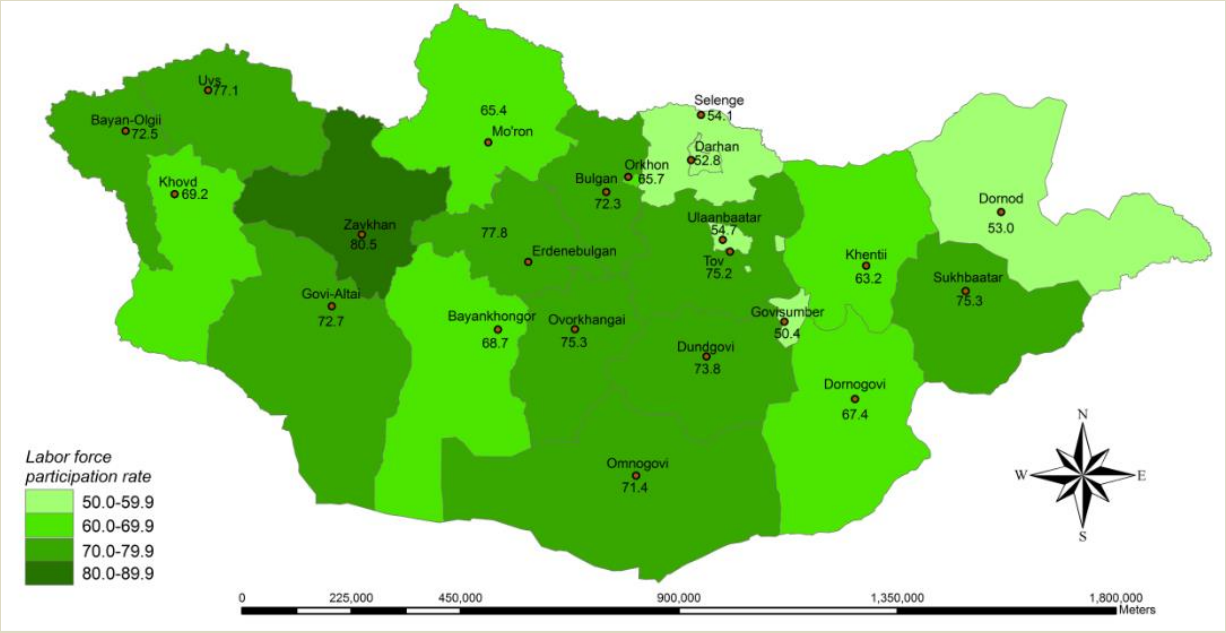
In order to illustrate the rate variations within age groups, the age specific labor force participation rate is calculated. In 2014, Labor force participation rate was 11.7 percent in age group 15-19 and it has increased to 54 percent in age group 20-14, 78.5 percent in 25-29, and has increased to 82.4-86.0 percent in age group of 30-44. It gradually decreased in age group 25-29, reached to 44.5 percent in age group 55-59 and 19.3 percent in age group 60-64. The highest labor force participation rate is 86.0 percent in age group of 40-44.

TABLE 3.4. LABOR FORCE PARTICIPATION RATE OF POPULATION AGED 15 AND OVER, by age group and gender, 2014

Age group	Total	Male	Female
National Average	**62.1**	**68.6**	**56.2**
15-19	11.7	14.9	8.4
20-24	54.0	61.1	46.5
25-29	78.5	88.0	69.4
30-34	82.4	91.3	74.3
35-39	85.4	91.2	80.0
40-44	86.0	90.1	82.4
45-49	82.2	85.0	79.8
50-54	71.3	77.4	65.7
55-59	44.5	60.5	31.6
60-64	19.3	25.5	13.9
64-69	16.2	17.9	14.8
70 +	7.1	10.2	5.0

The high rate of labor force participation in rural areas had lowered the currently inactive population in the area and it is less than half of the urban sector. Therefore, the main contributing factors to high labor force participation rate in rural areas can be the domination of nomadic herding and poor access to schools and education services.

FIGURE 3.6. LABOR FORCE PARTICIPATION RATE, by aimags, 2014



Labor productivity

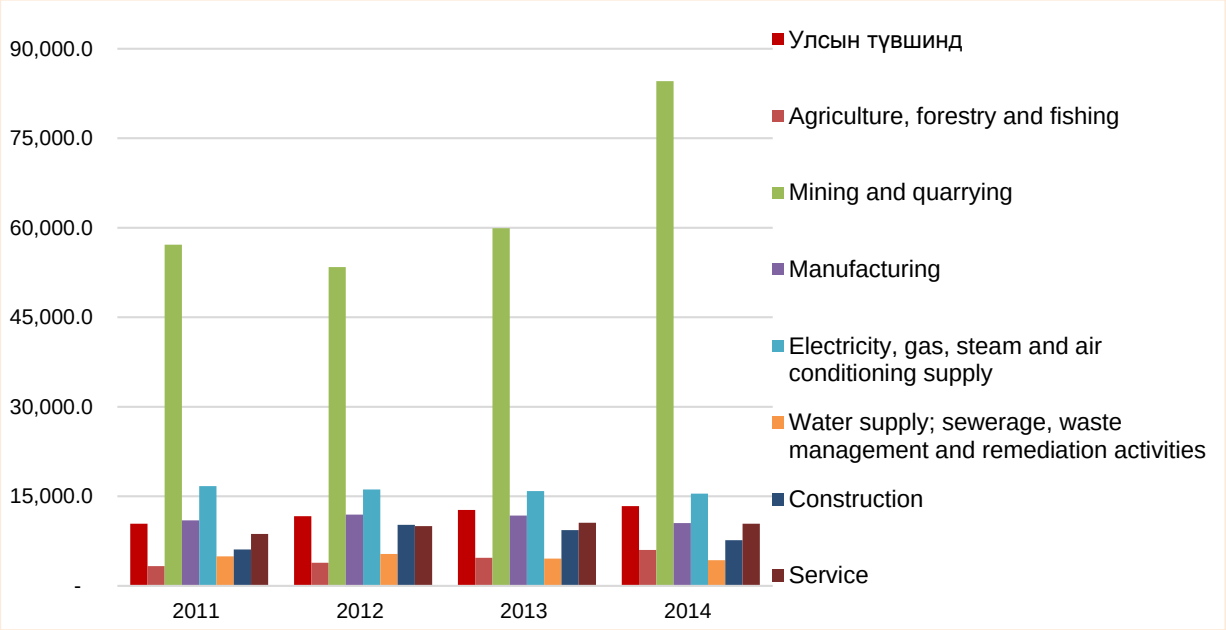
The labor productivity determines the labor efficiency which is one of the total factors of production. The labor productivity is calculated by the ratio of value added and annual average of employees.

In 2014, the total labor productivity at constant prices of 2010 reached 13357.0 thousand togrogs, indicating an increase of 4.9 percent compared to 2013.

In 2013, it has increased by 9.0 percent compared to previous year and in 2012 it has increased by 12.0 percent compared to previous year.

Labor productivity rate disaggregated by divisions, it indicates highest score in mining and quarrying division and the lowest score in accommodation and food service activities (as shown in Figure 3.7).

FIGURE 3.7. LABOR PRODUCTIVITY, by divisions, at 2010 constant price



Head-count index of poverty

Head-count index of poverty is the indication of proportion of household living under poverty line within whole household and this is very commonly used approach. In addition, indices of poverty gap and poverty severity are utilized to measure the poverty outlook.

TABLE 3.5. MAIN POVERTY MEASURES, by urban and rural, region and location, percentage

	Poverty Headcount				Poverty Gap				Poverty Severity			
	2010	2011	2012	2014	2010	2011	2012	2014	2010	2011	2012	2014
National Average	38.8	33.7	27.4	21.6	11.5	9.2	7.1	5.2	4.6	3.5	2.7	1.9
Urban	33.2	28.7	23.3	18.8	9.4	7.7	6.2	4.9	3.7	3.0	2.4	1.9
Rural	49.0	43.2	35.4	26.4	15.2	11.8	8.8	5.8	6.4	4.5	3.2	2.0
Region												
Western	52.7	40.5	32.3	26.0	16.9	11.2	7.7	5.3	7.2	4.4	2.6	1.7
Khangai	51.9	49.1	38.5	25.3	16.1	13.6	10.1	5.4	6.8	5.2	3.7	1.7
Central	29.9	28.1	28.2	22.2	8.3	7.4	7.2	5.5	3.2	2.8	2.7	2.1
Eastern	42.3	40.0	33.4	31.4	13.2	12.1	9.8	8.6	5.6	5.0	4.0	3.3
Ulaanbaatar	31.2	25.8	19.9	16.4	8.5	6.6	5.1	4.5	3.2	2.5	2.0	1.7
Location												
Ulaanbaatar	31.2	25.8	19.9	16.4	8.5	6.6	5.1	4.5	3.2	2.5	2.0	1.7
Aimag centers	37.3	34.6	30.4	23.8	11.2	9.9	8.4	5.8	4.6	4.0	3.3	2.1
Soum centers	39.7	35.8	27.5	24.7	11.9	9.9	7.3	5.7	4.9	3.9	2.8	2.0
Countryside	56.1	47.2	39.6	27.9	17.7	12.8	9.6	6.0	7.5	4.8	3.3	1.9

The poverty measures of Mongolia reached to 21.6 percent in 2014 which represents that 22 out of 100 people cannot afford essential foods and non-food stuffs.

Minimum subsistence level of population

The National Statistical Office has been estimating “Minimum subsistence level of population” and using Minimum subsistence level of population as standard indicator in accordance with the Law of Mongolia on defining Minimum subsistence level of population adopted in January 8, 1998 by the Parliament.

Minimum subsistence level of population has increased by 9.7-12.0 percent compared to previous year. Disaggregated by the regions, it has shown increase of 12.0 percent in Western region, 11.8 percent in Khangai region, 11.3 percent in Eastern region, 11.3 in Central region and 9.7 percent in Ulaanbaatar city and the highest increase is in Ulaanbaatar.

TABLE 3.6. MINIMUM SUBSISTANCE LEVEL OF POPULATION, compared with previous year, by region, percentage

Region	Minimum subsistence level of population						
	2012	2013	2013 / 2012	2014	2014 / 2013	2015	2015 / 2014
Western	115 600	132 000	114.2	146 600	111.1	164 200	112.0
Khangai	116 800	130 900	112.1	149 600	114.3	167 200	111.8
Central	117 500	132 400	112.7	149 700	113.1	164 300	109.8
Eastern	113 000	130 500	115.5	144 500	110.7	160 800	111.3
Ulaanbaatar	126 500	149 900	118.5	169 000	112.7	185 400	109.7

Gini Coefficient

Gini coefficient measures the income or consumption inequality among individuals or households within an economy. Gini coefficient formula is shown below:

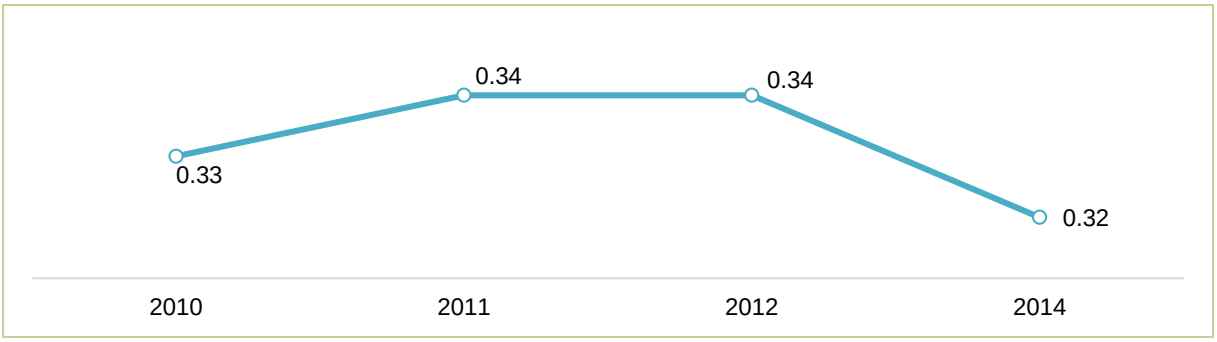
$$G = 1 - 2\sum_{i=1}^{n} x_i cumy_i + \sum_{i=1}^{n} x_i y_i$$

x_i – share of population group in total population (*i=1*);
y_i - (*i=1*) share of consumption of population group;
n – number of population group;
$cumy_i$ – amount of increase in share of income

Gini coefficient can range between 0 and 1. Thus a Gini value of 1 represents perfect inequality, while value of 0 denotes perfect equality and no poverty.

At national level, Gini coefficient was 0.33 in 2010 and it has reached 0.32 in 2014, which illustrates that income inequality was decreased by 0.02 percentage points.

FIGURE 3.8. GINI COEFFICENT, 2010-2014



Food availability

Food availability defined as comparing the food reserves in the country with annual food consumption of adult equivalent.

Identification of the food availability indicators made under the product classifications by Nutrition Research Center of the Ministry of Health and these products are meat and meat products, milk and milk products, flour and bakery products, all kinds of rice, sugar and sugar products, potatoes, vegetables, beans, fruits, eggs and vegetable oils.

1. **Adult equivalent to be measured.** Adult equivalent will be measured in order to define the annual food consumption of the total population.
   Adult equivalent identified through multiplying the ratio to convert population of particular age group into adult equivalent and total population and then adding the group results. The formula is shown as below:

$$ХА_{жиш} = \sum(K_a * ХА_a)$$

$ХА_{жиш}$ - Adult equivalent of the given year

K_a - Ratio to convert population of “a” age group of into adult equivalent

$ХА_a$ - population of “a” age group

2. **Annual food consumption of adult equivalent to be calculated.** Annual food consumption of adult equivalent will be defined by multiplication of annual food consumption of per capita adult equivalent and adult equivalent.

$$ЖХУ_{жиш} = ЖХ1_{жиш} * ХА_{жиш}$$

$ЖХУ_{жиш}$ - Annual food consumption of adult equivalent

$ЖХ1_{жиш}$ - Annual food consumption of per capita adult equivalent

$ХА_{жиш}$ - Adult equivalent of the given year

3. **Used reserves to be calculated on the basis of production volume index of production, export and import of food products.** Used reserves equal to sum of domestic production volume and net export of particular product. Net export is calculated by subtraction of import and export. Used reserves will be calculated as below.

$$н_ө = дү + (и - э)$$

$н_ө$ - reserves; дү - Domestic production volume;
и – import ; э - export

4. **Food availability percentage to be calculated by food products and production volume index.** Food availability is calculated as comparing the reserves of particular food product to its annual consumption of adult equivalent and then multiplying it by 100. The formula is shown as below:

$$xx_{хувь} = \frac{Н_{ө}}{ЖХ_{жиш}} *100$$

$ЖХ_{жиш}$ - Annual food consumption of adult equivalent
$Н_{ө}$ - Reserves
$xx_{хувь}$ - Food availability percentage

For an annual basis in 2014, adult equivalent consumed 100.0 percent of meat and meat products, 99.4 percent of potatoes, 93.2 percent of flour and 63.9 percent of vegetables that are produced domestically

TABLE 3.7. PERCENTAGE OF FOOD AVAILABILITY, by sources, 2014

Foodstuff	Consumption, thousand tons			Percentage of food availability	
		Domestic	Import	Domestic	Import
Meat, meat products	264.5	262.2	2.3	100.0	0.0
Flour, flour products	256.2	239.6	16.6	93.5	6.5
Potato	162.4	161.5	0.9	99.4	0.6
Vegetables	164.1	104.9	59.2	63.9	36.1

Food access

Food access is access to adequate resource for acquiring appropriate foods for a nutritious diet. The indicator calculates sufficiency of household food consumption on a quarterly basis.

Food access products such as meat and meat products, milk and dairy product, flour and sugar and sugar products is sufficient while access to other food products is limited. Meat and meat product, milk and flour are the still the main food staples of Mongolia.

Food access products such as meat and meat products, milk and dairy product, flour and sugar and sugar products is higher and food products such as bakery products, rice,

potatoes, fruits, eggs and vegetable oil is lower than daily food requirement for per capita adult equivalent in 2014.

TABLE 3.8. FOOD ACCESS, by foodstuff types, 2014

Foodstuffs	Daily food requirement for per capita adult equivalent, g	National average	Access to food	
			Difference	Percentage
Meat and meat products	200.0	334.5	134.5	167.3
Milk	150.0	252.0	102.0	168.0
Milk products	200.0	561.7	361.7	280.8
Flour	100.0	190.2	90.2	190.2
Bakery products	220.0	208.7	-11.3	94.8
Rice	78.0	66.8	-11.2	85.6
Sugar and sugar products	23.0	69.3	46.3	301.3
Potatoes	140.0	89.8	-50.2	64.1
Vegetables	200.0	82.2	-117.8	41.1
Fruits	180.0	43.9	-136.1	24.4
Eggs	19.0	8.2	-10.8	43.1
Vegetable oil	25.0	18.5	-6.5	74.2

Calories and nutrition intake of per capita adult equivalent

Calorie, nutrition is composition of nutrients in foods that are essential for development of body and normal metabolism. **Calorie** is the energy (1 g protein, fat, carbohydrates converted into energy) it takes to raise the temperature of water 1 degree Celsius. **Nutrient** is protein, fat, carbohydrates, various vitamins and minerals in meal and food products.

In summer: Daily foodstuff consumption and calories of per capita adult equivalent in summer season was 2989.5 kkal calorie, 130.3 g protein, 94.1 g fat and 401.7 g carbohydrates in 2014, which was higher than the recommended minimum intake.

TABLE 3.9. DAILY FOODSTUFF CONSUMPTION AND CALORIES OF PER CAPITA ADULT EQUIVALENT IN SUMMER, by national average, urban and rural, 2014

	Calories intake of per capita adult equivalent	National average		Urban		Rural	
		2013	2014	2013	2014	2013	2014
Calorie, kkal	2500.0	2519.7	2989.5	2154.2	2652.1	2975.7	3569.5
Protein, gram	101.0	113.1	130.3	90.1	108.1	141.7	168.5
Fat, gr	69.0	77.4	94.1	60.6	77.2	98.3	123.1
Carbohydrate, gram	365.0	341.3	401.7	310.0	377.4	380.4	443.5

In winter: Daily foodstuff consumption and calories of per capita adult equivalent in winter season was 2800.7 kkal calorie,123.6 g protein, 87.4 g fat and 376.3 g carbohydrates in 2014, which was 5.1-25.0 percent higher than the recommended minimum intake.

TABLE 3.10. DAILY FOODSTUFF CONSUMPTION AND CALORIES OF PER CAPITA ADULT EQUIVALENT IN WINTER, by national average, urban and rural, 2014

	Calories intake of per capita adult equivalent	National average		Urban		Rural	
		2013	2014	2013	2014	2013	2014
Calorie, kkal	2500.0	2298.3	2800.7	2084.5	2637.5	2565.6	3084.8
Protein, gram	106.0	102.2	123.6	88.4	112.0	119.5	143.8
Fat, gr	70.0	67.1	87.5	58.2	78.3	78.2	103.5
Carbohydrate, gram	358.0	319.5	376.3	299.6	367.4	344.5	391.7

Food contamination rate

Food contamination rate is expressed by percentage of contamination identified by the authorized and accredited laboratory through food inspection. The relevant indicators identified through chemical, bacteriological, heavy metal and toxicology, plant quarantine and radiation tests and analysis and it classified by 13 food products and drinking water.

Contaminated foods accounted for 0.6 thousand or 3.5 percent as a result of Bacteriological examination that conducted to 18.4 thousand food products and contaminated foods accounted for 0.8 thousand or 2.5 percent as a result of chemical analysis that conducted to 33.3 thousand food products in 2014.

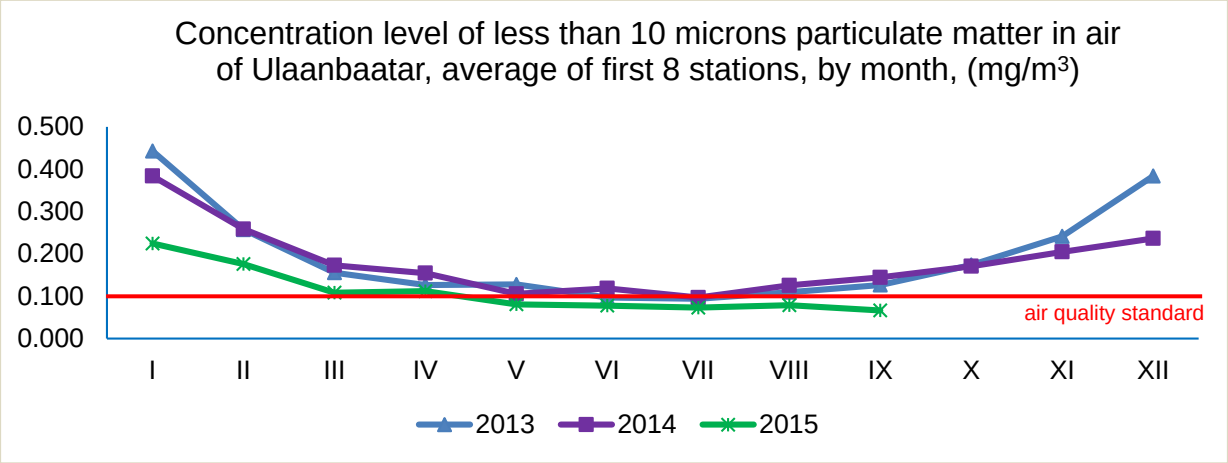
Strategic goal 6. Develop and implement population settlement plan in accordance with climate change, availability of natural and other resources in regions and restoration capacity.

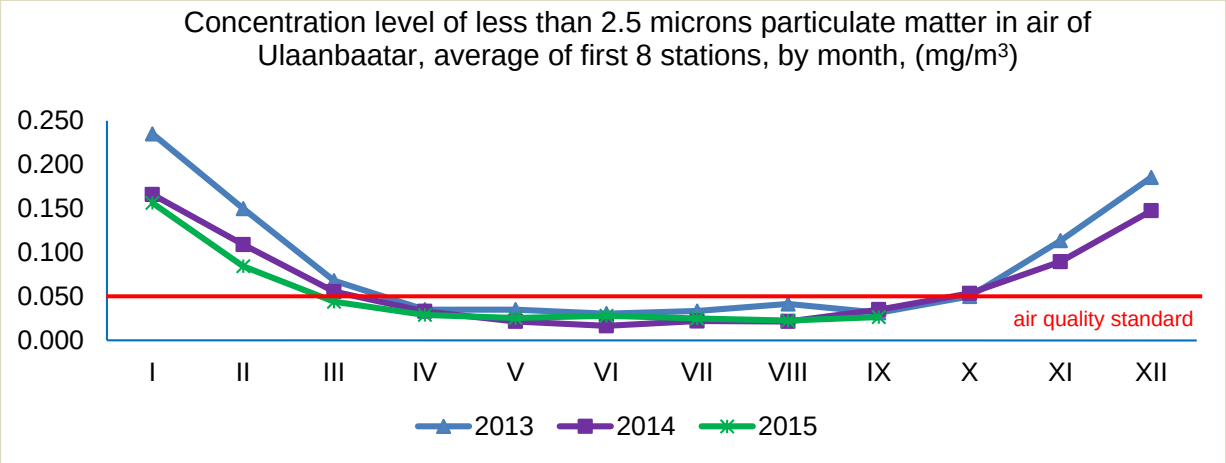
Particulate matter (PM10, PM2.5)

PM10 refers to particles with a diameter less than 10 microns and they formed by natural (wind and dust storm) and and human-induced processes. (automobiles, roads and traffic). PM2.5 refers to particles with a diameter of less than 2.5 microns formed by natural and human-induced processes. NSO obtains data on concentration of PM in air of Ulaanbaatar from Institute of Meteorology on a monthly basis and disseminates the results.

In September 2015, concentration level of PM10 in air of Ulaanbaatar was 0.0034 mg/m3, PM2.5 was 0.024 mg/m3 lower than the air quality standard. Concentration of Particulate matter in air of Ulaanbaatar is comparably higher than air quality standard in winter season as shown in the Figure 3.9.

FIGURE 3.9 CONCENTRATION OF PARTICULATE MATTER IN AIR OF ULAANBAATAR (PM10, PM2.5), мг/м^3



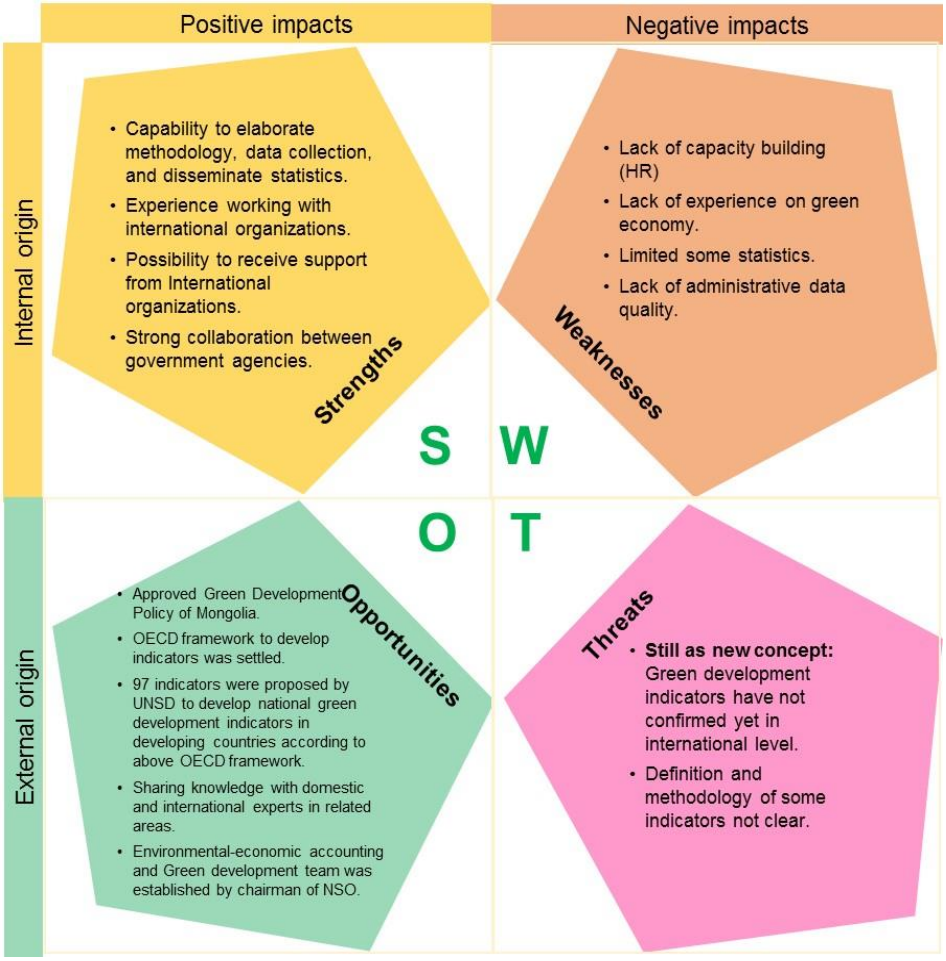


CHAPTER 4. SWOT ANALYSIS, FUTURE ACTIVITIES TO BE TAKEN

4.1. Defining the future activities based on SWOT analysis

SWOT analysis was employed with aim to assess the current progress on identifying indicators to measure the Green Development Policy and to suggest actions for its improvements.

FIGURE 4.1. SWOT ANALYSIS



As a result of SWOT analysis, the following matching strategies can be considered to undertake the future actions.

Strategy of Strength and Opportunity: NSO strength: "International organizations support", "Collaboration between Government organizations:

NSO opportunity: "Own experience" , "Green Growth Indicators framework proposed by OECD", "Proposed set of 97 indicators by UNSO", "Competent knowledge of National and International experts", "Working group in charge of development of the Environmental and Economic Accounts"

Strategy of Weakness and Opportunity: To use the existing opportunities "Green

Growth Indicators framework proposed by OECD", Proposed set of 97 indicators by UNSO, "Competent knowledge of National and International experts", "Working group in charge of development of the Environmental and Economic Accounts" to overcome the weaknesses such as "Shortage of Human resources", "Experience in Green Economy" and "Quality of Administrative data".

Strategy of Strengths and Threads: To minimize the threads such as "Green Economy is still new concept", "Definition and measuring method of some indicators are still indefinite" by taking advantage of strength characteristics such as "International organizations support", "Collaboration between Government organizations" and "Own experience".

Strategy of Weakness and Threads: It is important to find out best approaches to avoid the weaknesses and threads.

4.2. Future activities to be taken

15.6 percent of indicators from the suggested set of 212 indicators to measure the implementation results of the "Green Development Policy" and 4 criteria from 14 criteria reflected in the Policy can be calculated on the basis of baseline data as of 2013 (as stated in 2.4 of "Green Development Policy") for compilation and release.

The following activities shall be carried out within the framework of identifying indicators to implement the Green development policy and to measure the implementation results. These activities are:

1. To submit action plan and indicators set to implement "Green Development Policy" for discussions and approval
2. To assess the Green development indicators and to identify priority core set of indicators.
3. To encourage collaboration between professional organizations for their professional recommendations and advices to development of methods to measure the indicators
4. To develop methods to measure Green Development Indicators and to create requirements of indicators in line with the Action plan of Green Development Policy, stage by stage.

REFERENCES

[1] “Green Development Policy of Mongolia” adopted by the Mongolian Parliament Resolution #43.

[2] UNSD, Development Account project, “Supporting developing countries measure progress towards achieving a Green Economy” төсөл (2014-2015), “Draft Reference List of Green Economy Indicators for developing countries”, New-York

[3] OECD (2011), Towards Green Growth: Monitoring Progress, OECD indicators

[4] OECD (2014), Green Growth indicators

[5] UNESCAP (2013), Green growth indicators, a practical approach for Asia and the Pacific

[6] UNSD (2013), Framework for the Development of Environment Statistics (FDES) 2013

[7] UNSD (2011), International Recommendations for Energy Statistics, New-York

[8] MEGDJ (2015), “Implementing activities of Green development policy of Mongolia”

[9] “Calculation methodology and required information of soum development index” adopted by the Mongolian Government 2014 Order # 242.

[10] “Methodology on Indicators of Environmental statistics” adopted by MNSO, at 27 December 2010 Order # 1/173.

[11] “Environmental statistical forms and its guidance” approved by MNSO, at 26 December 2008, order # 1/175.

[12] “Unified land classification form” adopted by by the Mongolian Government 2003 Order # 204.

[13] Green building institute in Mongolia (2014), “Assessment system of green building” http://www.mne.mn/mn/news/show/2079 web site.

[14] MNSO (2014), “Yearbook”

[15] MNSO (2015), “Monthly Bulletin of Statistics”

Annex 1.

LIST OF THE MONGOLIAN GREEN DEVELOPMENT INDICATORS

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
STRATEGIC OBJECTIVE 1: PROMOTE A SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERN WITH EFFICIENT USE OF NATURAL RESOURCES, LOW GREENHOUSE GAS EMISSIONS, AND REDUCED WASTE GENERATION.									
1.1.Reduce greenhouse gas emissions in the energy sector by 20 percent by 2030, through increased energy efficiency, and by ensuring that the share of renewable energy used in total energy production is at 20 percent by 2020, and at 30 percent by 2030. This will be achieved by renewing energy production and other industrial technologies, by reducing excessive consumption and transmission losses, and by the optimization of pricing policies.	1	Share of renewable energy to total energy production output/consumption	Non-Core Set Indicator	C	Industrial Statistics	NSO, ME	+	+	2
	2	Energy productivity	Non-Core Set Indicator	B	Energy Statistics	NSO	+	+	2
	3	Greenhouse gas emission in energy sector, thous.tons	Non-Core Set Indicator	A	Report on Greenhouse gas emission	MEGDJ		+	2
	4	Share of renewable energy in total installed capacity of energy production	Core Set Indicator	C		NSO, ME			2
	5	Energy intensity, by industry	Non-Core Set Indicator	C	Energy Statistics; National Accounts	NSO	+	+	2
	6	Proportion of bioenergy in total renewable energy production [%]	Non-Core Set Indicator	C		NSO, ME	+		2
	7	Carbon dioxide (CO2) removals from forest biomass stocks, thous.tons	Non-Core Set Indicator	B	Report on Greenhouse gas emission	MEGDJ			2
1.2. Reduce building heat losses by 20 percent by 2020, and by 40 percent by 2030, through the introduction of green solutions such as energy efficient and advanced technologies and standards, green building rating systems, energy audits, and the introduction of an incentives mechanism.	8	Share of green building's total construction cost in total construction cost, by type of green buildings	Non-Core Set Indicator	C		NSO, MCUD			1
1.3. Introduce environmental standards and norms consistent with international standards, and increase the results and quality of environmental assessments while promoting competitiveness and increased productivity.	9	Share of enterprises certified ISO14001 in total number of enterprises	Core Set Indicator	B		MEGDJ			5
	10	Share of special protected areas with defined the natural resources by total special protected area	Non-Core Set Indicator	B		LRGMD			3
	11	Share of agriculture in GDP	Core Set Indicator	A	National Accounts	NSO	+		1

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
1.4. 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 ofindustrial processing cluster that is export-oriented and based on green technology.	12	Employment in agricultural sector and number of green job	Core Set Indicator	B	Labor Force Survey	NSO, ML			1
	13	Share of R&D in agriculture by total investment by agriculture sector	Core Set Indicator	C		MF, MECS, MFA			5
	14	Share of production output for completely processed skin, wool and cashmere in total production output	Non-Core Set Indicator	C		MI, NSO, MCO			1
	15	Share of production output of organic food products in total food products	Non-Core Set Indicator	C		MFA, MEGDJ			1
	16	Share of production output of briquette board in total construction material production output, by monitory unit	Non-Core Set Indicator	C		MCUD, MI, NSO			1
1.5. Improve supply of domestic demand for wheat, potatoes and vegetables through reduced landdegradation due to crop production, and improved soil fertility, by introducingagro techniquesforsoil maintenance and efficient advanced technology for irrigation and establish forest zones.	17	Share of protective forests to total planted forest	Core Set Indicator	C	Report on forest management	MEGDJ			3
	18	Unified land territory of Mongolia, by type	Core Set Indicator	A	Report on land	LRGMD	+	+	3
	19	Pesticides used on cultivated area [kg / ha]	Core Set Indicator	B		MFA	+		3
	20	Chemical fertilizers used, kilogram per hectare of cultivated area [kg / ha]	Core Set Indicator	B		MFA	+	+	3
	21	Natural fertilizer use, kilogram per hectare of cultivated area [kg / ha]	Non-Core Set Indicator	B		MFA	+	+	3
	22	Area equipped for irrigation as % of agricultural area	Non-Core Set Indicator	C		LRGMD, MFA	+		3
	23	The annual average concentrations of soil contaminants, by industry	Non-Core Set Indicator	C		MEGDJ		+	4
1.6.Improve agricultural product supply chains and networks, and provide support for the introduction of environmentally friendly storage and packaging technologies for agricultural products.	24	Number of adequate warehouse to store for agricultural products	Non-Core Set Indicator	C		MFA, Agricultural Stock Exchange			1
	25	Share of sold agricultural products by brokers to total agricultural production	Non-Core Set Indicator	C		MFA, АУЯ, Agricultural Stock Exchange			1
1.7. Develop eco-tourism products and services that meet environmental and sanitation requirements.	26	Output of eco-tourism products	Core Set Indicator	C		MEGDJ			1
	27	Share of the number of tourists for eco-tourist operators in total number of tourists	Non-Core Set Indicator	C		MEGDJ			1

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
1.8. Promote resource efficient and low waste technologies for the mineral resources sector.	28	The total amount of recycled water to total amount of water used in mining industry	Core Set Indicator	C		MEGDJ			3
	29	Mineral resources, by type	Core Set Indicator	C		Ministry of mining	+		3
	30	Extraction rates of minerals	Core Set Indicator	B		Ministry of mining, NSO	+		3
	31	Contamination and soil degradation caused by mining activities	Non-Core Set Indicator	C		LRGMD, MEGDJ			4
1.9. Prevent the negative impacts on human health and the environment arising from mining activities by engraining transparent and responsible mining practices, by improvingthe effectiveness of introducing offset mechanisms and by improvingenvironmental protection, and restoration activities.	32	Share of the rehabilitation area to mineral extraction area	Core Set Indicator	B		Mineral resource authority			3
1.10. Prevent pollution through the use of international standards for conventional and un-conventional oil deposit exploration and mining, and through frequent monitoring and evaluation.	33	Share of introduced national standards in conventional and unconventional oil sites to total number of standards that should be introduce	Core Set Indicator	B		Petroleum authority, FRC			5
	34	Decertificated area caust by oil extraction to total oil area	Non-Core Set Indicator	B		Petroleum authority			3
	35	The annual average concentrations of water pollutants of oil extraction, mg/l	Non-Core Set Indicator	C		Petroleum authority			4
	36	Share of alternative forms of protected area to total oil extraction area	Non-Core Set Indicator	B		Petroleum authority			3
	37	Total waste generated due to oil exploration, by type waste	Non-Core Set Indicator	C		Petroleum authority, MEGDJ			4
1.11. Creation of a Sovereign Wealth Fund using mining sector income, and utilizefor ensuring long-term sustainable development.	38	Share of contribution of mining industry to natural resource fund	Core Set Indicator	B		MF, Ministry of mining			5
	39	Rehabilitation expenditure of mining enterprises to the total expenditure	Non-Core Set Indicator	B		MF, Ministry of mining			5

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
STRATEGIC OBJECTIVE 2. SUSTAIN ECOSYSTEM'S CARRYING CAPACITY BY ENHANCING ENVIRONMENTAL PROTECTION AND RESTORATION ACTIVITIES, AND REDUCING ENVIRONMENTAL POLLUTION AND DEGRADATION.									
2.1. Conserve pristine nature and maintain ecosystem sustainability by protecting at least 60 percent of fresh water reservesand stream formation areas, expanding protected areas to 25 percent by 2020 and 30 percent by 2030, and creating sustainable financing mechanisms for protection.	40	Proportion of terrestrial protected areas to total surface area, %	Core Set Indicator	A	Report on land	LRGMD	+	+	3
	41	Share of affected area with soil contamination and damages to total land area of cities, villages, and other settlements	Non-Core Set Indicator	C		MEGDJ, City Government			3
	42	Share of restored river and fountain to total number of dried river and fountain	Non-Core Set Indicator	C		MEGDJ			3
2.3. Strengthen the national capacity to adapt to climate change and reduce the negative impacts of climate change.	43	Greenhouse gas emission, by categories and sources	Core Set Indicator	A	Report on Greenhouse gas emission	MEGDJ		+	2
	44	The annual average concentrations of air pollutants, by industry, [mkg/m3]	Core Set Indicator	B	Air quality report	MEGDJ		+	4
2.4. Reduce the loss of biodiversity by creating a gene fund, which will supply sufficient resources to maintain biodiversity and preserve the habitat.	45	Gene and area protected types of flora and fauna	Core Set Indicator	C		MEGDJ			3
	46	Number of known flora and fauna species by status category	Non-Core Set Indicator	B	Report on Fauna Reserve	MEGDJ	+		3
	47	Number of known flora and fauna species by status category	Non-Core Set Indicator	B	Report on Flora Reserve	MEGDJ	+		3
	48	Threatened flora and fauna species by class (mammals, reptiles, etc.)	Non-Core Set Indicator	B		MEGDJ	+		3
2.6. Limit the import and trade of genetically modified organisms by strengthening the capacity to assess the risks associated with genetically modified organisms, and prevent the impact of genetically modified organisms on human health and the environment.	49	Imports of genetically modified products and products with GMO inputs	Core Set Indicator	C		Mongolian Customs, NSO, MEGDJ			1
2.7. Enhance forest absorption of greenhouse gasses by intensifying reforestation efforts and expanding forest areas to 9 percent of the country's territory by 2030.	50	Land with forest resources	Core Set Indicator	A	Report on land	LRGMD		+	3
	51	Proportion of land area covered by forest	Core Set Indicator	A	Report on land	LRGMD	+		3
	52	Carbon dioxide removals (CO2) [мян.тонн]	Core Set Indicator	C		MEGDJ	+		2
	53	Governmental expenditure on forest management	Non-Core Set Indicator	C		MF, MEGDJ		+	5

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
2.8. Create sustainable financing systems through the introduction of community-based natural resource management in the protection and sustainable use of forests, non-timber resources, flora and fauna.	54	Annual environment protection expenditure	Core Set Indicator	C		MF, MEGDJ	+		5
	55	Expenditure on natural resource management	Core Set Indicator	C		MF, MEGDJ, NSO			5
	56	Annual protection expenditure of partnership based on comminity for environment protection to total expenditure	Core Set Indicator	B		MF, MEGDJ			5
2.9. Provide at least 90 percent of the population with access to safedrinking water, and provide 60 percent of the population with access to improved sanitation facilities by increasing watersupply and seweragesystem capacity and productivity.	57	Number of households with mobile water supply, by drinking water resource	Core Set Indicator	B	Population and Housing Census	NSO			4
	58	Percentage of population that has access to safe drinking water	Core Set Indicator	C		MEGDJ	+	+	4
	59	Available freshwater resources [thousand m3 per capita]	Core Set Indicator	B	Fresh water resources and depletion report	MEGDJ	+		3
	60	Total freshwater abstraction [thousand m3 per capita]	Core Set Indicator	B	Fresh water resources and depletion report; Population statistics	MEGDJ	+		3
	61	Percentage of population connected to improved sanitation facilities	Core Set Indicator	C		MEGDJ	+		4
	62	Waste sludge area of water supply and sewerage facilities to total equiped area	Non-Core Set Indicator	C		MEGDJ			4
	63	Amount of recycled and removed sludge to total sludge	Non-Core Set Indicator	C		MEGDJ			4
2.10. Promote the introduction of technologies for therecycling, reuse and retreatment of wastewater up to permissible standard level, by limiting the use of ground water for industrial purposes.	64	Share of treated water according with the standards to total wastewater caused by industrial and service activities	Core Set Indicator	B	Wastewater treatment facilities report	MEGDJ		+	3
2.11. Promote experimentation and research activities for ground water resources expansion and restoration, and promote projects for surface water accumulationand utilization, and initiatives for using rain water harvesting.	65	Number and volume of water facilities used for accumulation from rain, snow and flooding	Core Set Indicator	C		MEGDJ, MCUD			3
	66	Surface water resources to total water resources	Non-Core Set Indicator	B	Fresh water resources and depletion repor	MEGDJ		+	3
	67	Number of the restored source of surface water	Non-Core Set Indicator	B	Fresh water resources and depletion repor	MEGDJ			3

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
2.12. Reduce the impact of desertification, land degradation and drought, by creating conditions to minimizeand reducethe human impact on the environment in periods of rapid economic growth and climate change.	68	Land area affected by degradation to total land area	Core Set Indicator	A	Report on land	LRGMD	+		3
	69	Desolation land	Core Set Indicator	C		LRGMD			3
	70	Total expenditure for recovery of pastures and soil protection activities by total pastural fees and livestock taxes	Non-Core Set Indicator	C		MF, General department of taxation, MFA			5
2.13. Promote efforts aimed at reclaiming at least 70 percent of degraded, polluted and abandoned land from industrial activities, and reusing it for different economic purposes.	71	Damaged and polluted fallow land area due to industrial activities	Non-Core Set Indicator	C		LRGMD			3
	72	Expenditure for recovery of damaged and polluted fallow land due to industrial activities	Non-Core Set Indicator	C		MF, MEGDJ, LRGMD			5
2.14. Improve mechanisms for increased investment returns and regulatory mechanisms for optimal utilization of natural resources.	73	Expenditure of activities for rehabilitation of environment by fee on usage of natural resource	Core Set Indicator	C		MF, MEGDJ			5
	74	Total amount of investment for rehabilitation and protection of environment	Core Set Indicator	C		MF, MEGDJ			5
STRATEGIC OBJECTIVE 3. INCREASE INVESTMENT IN NATURAL CAPITAL, HUMAN DEVELOPMENT AND CLEAN TECHNOLOGY BY INTRODUCING FINANCING, TAX, LENDING AND OTHER INCENTIVES FOR SUPPORTING A GREEN ECONOMY.									
3.1. Increase investment to increase efficiency of resource utilization and productivity, and reduce greenhouse gas emissions per unit of production by allocatingtwo percent of GDP annually for green development.	75	GDP per capita	Non-Core Set Indicator	A		NSO	+	+	1
	76	GDP, NI, Net Disposable Income (Total/Net)	Non-Core Set Indicator	A		NSO	+	+	1
	77	Share of expenditures for green development in total GDP	Core Set Indicator	C		MF, MEGDJ			5
	78	Amount of funding for promoting green technology and innovation in science, technological research and experimentation	Non-Core Set Indicator	B		MF, MECS			5
3.2. Create economic incentives to increase productivity of natural resource use andsupport, and engrain environmentally friendly consumption and production habits.	79	Amount of green loans and funding of green project by bank	Non-Core Set Indicator	C		MF, Bank of Mongolia			1

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
3.3. Increase investments for nature conservation and natural resourcerehabilitation by 20 percent by disseminating the benefits of and valuing and supporting ecosystem services such as capacity of forest water containment, carbon absorption, floodplain water collection and treatment, and environmental protection and restoration.	80	Construction cost for building tanks to manage river flow	Non-Core Set Indicator	C		MF, MEGDJ, MCUD, NSO			5
	81	Construction cost for building tanks to collect rain and glaciar water	Non-Core Set Indicator	C		MF, MEGDJ, MCUD, NSO			5
3.4. Establish a green taxation system to reduce the production and import of goods and services which are harmful to the environment.	82	Amount of environmental tax to total amount of taxes	Core Set Indicator	C		General department of taxation, NSO	+		5
3.6. Increasethe purchasing of environmentally sound, effective, and resource efficient goods, works and servicesup to 20% of total public procurement.	83	Share of green procurement in total government procurement	Core Set Indicator	C		MF			5
STRATEGIC OBJECTIVE 4. ENGRAIN A GREEN LIFESTYLE BY REDUCING POVERTY AND PROMOTING GREEN JOBS.									
4.1. Create employment opportunities with secured incomes for at least 80% of the available workforce, by increasing permanent jobs through public-private partnerships.	84	Labour force participation	Core Set Indicator	A	Labor Force Survey	NSO	+		1
	85	Unemployment rate	Non-Core Set Indicator	A	Labor Force Survey	NSO	+	+	1
	86	Number of green jobs	Non-Core Set Indicator	B		NSO	+		1
4.2. Enhance labor productivity through the creation of a competitive and professional workforce, obtaining internationally qualified educations available in the home country.	87	Labour productivity [GDP per person employed]	Core Set Indicator	A	National Accounts	NSO	+		1
4.4. Involve citizens in vocational training programs, provide job placement services, and offer a sufficient salary for women taking care of children, and provide them suitable compensation for their work.	88	Number of students on vocational and technical education, by type of professions	Non-Core Set Indicator	B	Education statistics	MECS			1
4.5. Ensure equal access to social services necessary for healthy living and for ensuring food safety, by improved supply and availability of food for production.	89	Poverty headcount	Core Set Indicator	A	Household income and expenditure survey	NSO			1
	90	Minimum subsistence level of population	Core Set Indicator	A	Household income and expenditure survey	NSO			1

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
	91	GINI coefficient	Core Set Indicator	A	Household income and expenditure survey	NSO	+		1
	92	Food supply	Core Set Indicator	A	Statistics on Food security	MFA			1
	93	Access to food	Core Set Indicator	A	Statistics on Food security	MFA			1
	94	Calories and nutrients of adult equivalent receives from food	Core Set Indicator	A	Statistics on Food security	MFA			1
	95	Level of contamination of food products	Core Set Indicator	A	Statistics on Food security	MFA			1
	96	Total number of social insured herders	Non-Core Set Indicator	A	Social Insurance Statistics	Social Insurance General Office			1
	97	Total number of social insured farmers	Non-Core Set Indicator	C		Social Insurance General Office			1
STRATEGIC OBJECTIVE 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.									
5.1.Engrain a resource efficient and effective consumption culture, environmentally friendly lifestyle, and traditional customs of protecting the environment through sustainable development education.	98	Pupils and students receiving sustainable development education by total number of pupils and students in general educational schools and university	Non-Core Set Indicator	C		MECS		+	1
5.4. Encourage the development of clean technology and innovation to support green development by increasing the share of GDP expenditure for science and technology research and experimentation by two percent by 2020, and by three percent by 2030, and use it as the catalysts for green development.	99	Share of expenditure for R&D and innovation to GDP	Core Set Indicator	B		MF, MECS, NSO		+	5
	100	Number of projects for promoting green technology and innovation in science, technological research and experimentation	Non-Core Set Indicator	B		MECS			5
STRATEGIC OBJECTIVE 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.									
6.2. Reduce air, water, and soil pollution by implementing an improved plan for urban land use, construction zoning and	101	Concentration of particulate matter (PM10, PM2.5) in urban air	Core Set Indicator	A	Environmental Statistics	MEGDJ	+	+	4

Startegic objective and measure	№	Name of indicator	Type of indicator	Evualtion of indicator*	Data sources	Responsible institute	Comparison of indicator		
							Proposed by UNSD	SDG	OECD**
A	Б	B	1	2	3	4	5	6	7
infrastructure provisioning, and through the creation of a legal environment for accountability for its implementation.	102	The annual average concentrations of water pollutants [mg/l]	Non-Core Set Indicator	C		MEGDJ		+	4
6.3. Increase the share of green space in the urban area by 15% by 2020, and by 30% by 2030 through the re-development of Ulaanbaatar and other urban settlement areas.	103	Percentage of greenery spaces in Ulaanbaatar and other settlement areas	Non-Core Set Indicator	C		LRGMD, City Government			4
6.4. Reduce solid waste in landfills by 20% by 2020, and by 40% by 2030, by improving proper reduced waste management by promoting efficient technology, providing knowledge and ensuring healthy habits and lifestyles, and through increased waste recycling and processing, and promoting the production of value added products.	104	Municipal waste collected, by type of treatment	Core Set Indicator	B		MEGDJ	+	+	4
	105	Total amount of waste recycling, by type	Core Set Indicator	B		MEGDJ			4
	106	Waste recycling rate	Core Set Indicator	C		MEGDJ		+	4
	107	Total hazardous waste collected, by type of treatment	Non-Core Set Indicator	C		MEGDJ	+		4
6.5. Develop an environmentally sound, adequate, and safe public transportation service, and create a comfortable environment for passengers.	108	Main indicators of civil air, road, railway transport (number of passenger, passenger turnover, carried freight, freight turnover)	Non-Core Set Indicator	A	Statistics on transport	MRT		+	1

* A: Potential indicators for measurement, B: Refined Indicators with immediate needs C: New indicators to be created

** 1- The socio-economic context and characteristics of growth; 2- Indicators monitoring the environmental and resource productivity of the economy; 3- Indicators monitoring the natural asset base; 4- Indicators monitoring the environmental quality of life; 5- Indicators monitoring the economic opportunities and policy responses.