

Greenhouse Gases Emission GUIDANCE BOOK







GREENHOUSE GAS (GHG) EMISSIONS

CONTENT

- 01 WHAT ARE GREENHOUSE GASES (GHGs)?
- 02 HOW DO HUMAN ACTIVITIES PRODUCE GREENHOUSE GASEs?
- 03 WHAT IS INCLUDED IN A NATIONAL GREENHOUSE GAS INVENTORY?
- 04 WHAT IS THE MEANING OF EMISSIONS BY SOURCES AND REMOVALS BY SINKS?
- 05 HOW ARE GHG EMISSIONS AND REMOVALS ESTIMATED?
- 06 WHAT ARE THE QUALITY OBJECTIVES OF A GREENHOUSE GAS INVENTORY?
- 06 TRANSPARENCY
- 07 ACCURACY
- 07 CONSISTENCY
- 08 COMPARABILITY
- 09 COMPLETENESS
- 10 WHAT IS THE MEANING OF GOOD PRACTICE?
- 11 INVENTORY PREPARATION CYCLE
- 12 GREENHOUSE GAS (GHG) INVENTORY OF AFGHANISTAN

- 13 **WHAT ARE THE REPORTING OBLIGATIONS OF AFGHANISTAN?**
- 15 **REVISION & UPDATE OF GUIDELINES BY THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)**
- 17 **SUMMARY OF AFGHANISTAN'S NATIONAL GHG INVENTORY FOR 1990-2017 TIME SERIES**
- 19 **GREENHOUSE GAS EMISSION FROM ENERGY SECTOR**
- 21 **GREENHOUSE GAS EMISSION FROM INDUSTRIAL PROCESSES AND PRODUCTS USE SECTOR**
- 23 **GREENHOUSE GAS EMISSION FROM AGRICULTURE SECTOR**
- 25 **GREENHOUSE GAS EMISSION FROM WASTE SECTOR**
- 27 **GREENHOUSE GAS (GHG) EMISSIONS PER CAPITA OF SELECTED COUNTRIES**
- 28 **WHAT IS THE GREENHOUSE GAS EFFECT?**

WHAT ARE GREENHOUSE GASES (GHGs)?

Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3) are the primary greenhouse gases in the Earth's atmosphere.

The UNFCCC and its Kyoto Protocol deals with the carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). Water vapours because of its short life in the atmosphere and not directly attributed to human generated activities are not estimated in the national GHG inventories. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances, dealt with under the Montreal Protocol.

Carbon dioxide (CO_2) from burning fossil fuels is by far the largest single source of greenhouse gas emissions from human activities. Extraction and distribution activities of fossil fuels also releases greenhouse gases. Globally, deforestation is the second largest source of CO_2 emissions. Raising of livestock animals, rice cultivation and fertilizer application as well as the treatment of waste and wastewater emit significant amounts of methane (CH_4) and nitrous oxide (N_2O). Producing lime to make cement is a significant industrial source, as well as the industrial production (and subsequent use in many areas of life) of many of the man-made gases, the so-called fluorinated gases (F-gases). The F-gases have a high global warming potential (GWP).



HOW DO HUMAN ACTIVITIES PRODUCE GREENHOUSE GASES?

Greenhouse gases (GHGs) are gases in the atmosphere that trap energy from the sun as infrared radiation in form of heat. Some greenhouse gases occur in nature such as water vapour, carbon dioxide, methane, nitrous oxide and ozone, while others are man-made such as products or by-products of foam production, refrigeration, and air conditioning. Each greenhouse gas differs in its ability to absorb heat in the atmosphere which is expressed as Global Warming Potential (GWP). The man-made gases, the so-called fluorinated gases (F-gases), are the most heat

absorbent, while carbon dioxide is the least absorbent. Concern about these gases comes from the fact that human actions are increasing their concentrations, creating the prospect of global climate change. According to the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report (TAR), today's CO₂ concentration has not been exceeded during the past 420,000 years and likely not during the past 20 million years. For further information, visit www.IPCC.ch.

THE GWP OF THE MAIN GHGs ARE PROVIDED IN THE TABLE BELOW:

Type	Gas name	Chemical formula / Abbreviation	Global Warming Potential (GWP)(Time Horizon) based on the effects of GHGs over a 100-year time horizon
Common	Carbon dioxide	CO ₂	1
	Methane	CH ₄	25
	Nitrous oxide	N ₂ O	298
Man-made	Sulphur hexafluoride	SF ₆	23,800
	Hydrofluorocarbons	HFC	HFCs and PFCs consist of different substances, therefore GWPs have to be calculated individually depending on the substances
	Perfluorocarbons	PFC	
	Nitrogen trifluoride	NF ₃	17,200

Source: IPCC Fourth Assessment Report (AR4)

WHAT IS INCLUDED IN A NATIONAL GREENHOUSE GAS INVENTORY?

All countries compile national greenhouse gas inventories as part of their obligations under the inventory quantifies the greenhouse gases being released into, or sequestered from, the atmosphere as a result of a country's human activities,

on a gas-by-gas basis. Under the UNFCCC, countries report their emissions and removals of greenhouse gases for five sectors:

01

IPCC Sector Name: **Energy**

IPCC Sector Abbreviation: **NA**

02

IPCC Sector Name: **Industrial Processes and Product Use**

IPCC Sector Abbreviation: **IPPU**

03

IPCC Sector Name: **Agriculture**

IPCC Sector Abbreviation: **NA**

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预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_13690

