



REPUBLIC OF ARMENIA  
MINISTRY OF  
ENVIRONMENT



*“Armenia's Third Biennial Update Report to the UNFCCC”  
UNDP-GEF//0112638 Project*

# **“Requirements For National GHG Inventory Reports As Part Of The Biennial Transparency Report Under The Paris Agreement”**

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*27 January 2022*

# Objective of the Workshop

- Introduce the Enhanced Transparency Framework of Paris Agreement
- Present the requirements for GHG national inventory reports under the Enhanced Transparency Framework of Paris Agreement
- Introduce 2006 IPCC guidelines of the Intergovernmental Panel on Climate Change (IPCC)
- Introduce the main approaches to the assessment of greenhouse gas emissions in the "Energy" sector, the country's experience, existing gaps and directions for further improvement
- Support the establishment of a national greenhouse gas inventory management system

# Transparency Framework Under the UN Framework Convention on Climate Change (UNFCCC)

- To achieve the purpose of the Convention, the Parties need reliable, transparent and comprehensive information on GHG emissions, climate action and support.
- The requirement to submit national communications is set out in Article 4.1a and 4.1b and Article 12.1 of the Convention; the requirement to submit a biennial update report is set out in the relevant decisions of Conference of the Parties (CP): 1 / CP.16 and 2 / CP.17.
- National Communications, Biennial Update Reports and GHG National Inventory are the main tools used to provide information on the country's progress towards the UNFCCC's goal, as well as on the country's needs and challenges in making that progress.

# Paris Agreement

The first-ever universal, legally binding global climate change agreement, adopted at climate conference (COP21) in December 2015

Entry into force in 2016

196 Countries Pro (including EU)

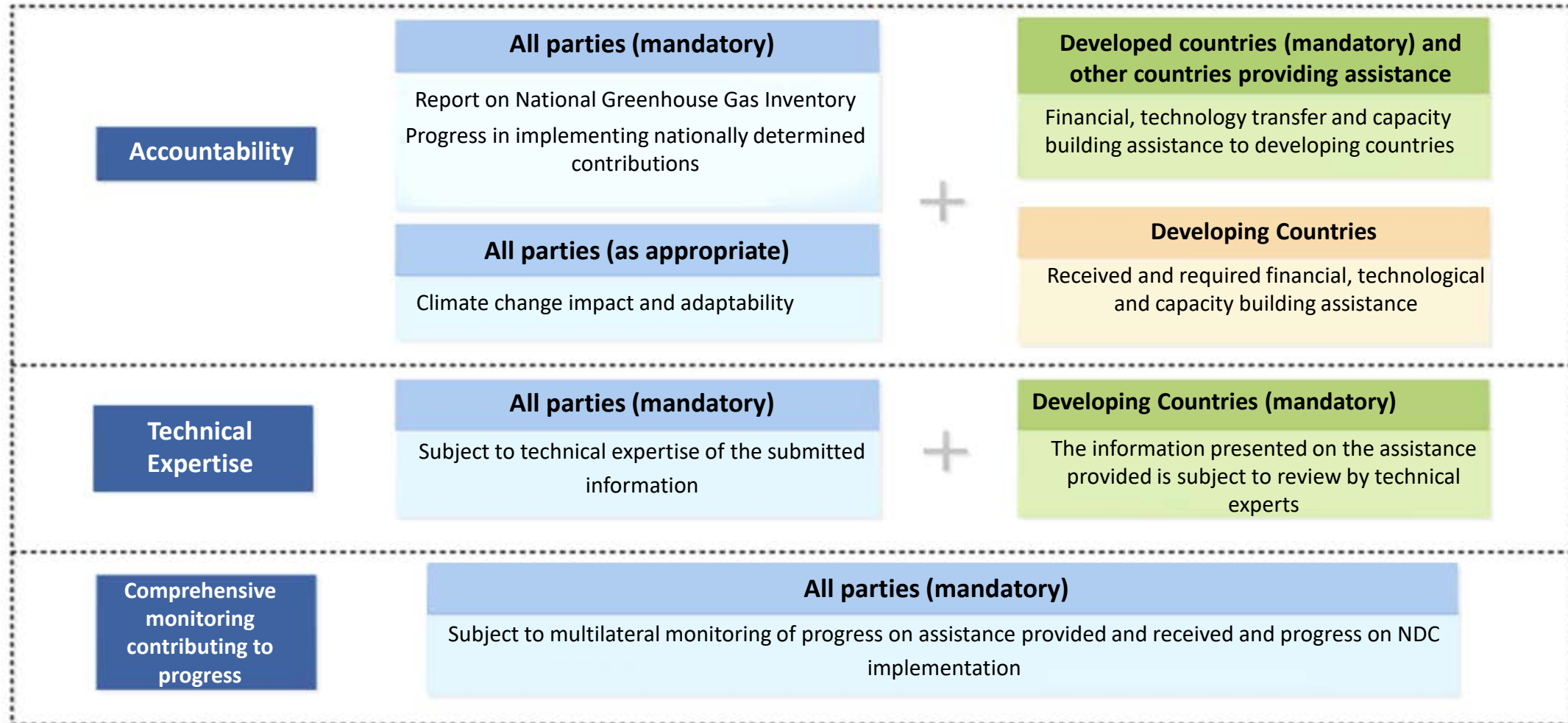
Ratified by the Republic of Armenia on 8 February, 2017



# Enhanced Transparency Framework of Paris Agreement

- Enhanced transparency framework is key commitment for implementation of the Paris Agreement. The development of the transparency requirements did not start from scratch; it includes national communications, biennial update reports, as well as international consultation and analysis, which formed the basis for the development of the guidelines and procedures under Article 13 of the Paris Agreement.
- Unlike previous UNFCCC requirements , the Paris Agreement intended to create a comprehensive set of universal guidelines for all countries, at the same time providing flexibility for developing countries in need.

# Enhanced Transparency Framework of Paris Agreement: Article 13



# The Guiding Principles of the Enhanced Transparency Framework

18 / CMA1 adopted Procedures and Guidelines (MPGs) **applicable to all Parties:**

- Provision of reporting and transparency improved over time
- Promotion of transparency, accuracy, completeness, comparability and consistency (TACCC)
- Ensuring that Parties maintain the frequency and quality of reporting
- Parties are required to submit their first biennial transparency report (BTR1) and national inventory report **by 31 December 2024 at the latest.**
- **Assistance will be provided to the developing Parties** for the implementation of Article 13 of the Paris Agreement and for the continued capacity development for transparency of the developing Parties

# Technical Examination and Comprehensive Progress Monitoring

- The information submitted by each Party shall undergo a technical examination to which the following are subject:
  - National Greenhouse Inventory Report
  - Information on NDC implementation and tracking progress on achievement of targets
- The purpose of the technical examination is also to identify areas for improvement and the relevance of the information provided to the terms, procedures and guidelines.
- Each Party **should** participate in a comprehensive discussion of the progress made on the assistance received / provided and the progress in implementing its NDCs and achieving targets.



# Comparison of Transparency Frameworks

Existing transparency frameworks under UNFCCC	Enhanced Transparency Framework of Paris Agreement
Different requirements for developed and developing countries	Countries have a common set of guidelines and processes. Flexibility is provided for the developing countries that need it, given their capabilities, but that flexibility is limited by specific provisions of the guidelines.
Different reporting tools: biennial reports for developed countries and biennial update reports for developing countries	All countries will submit a Biennial Transparency Report. The scope of the Biennial Transparency Report is similar to previous reports, but has been expanded to include voluntary information on climate change impacts and adaptation (including loss and damage) and focus on tracking progress towards NDCs.
Different expert review processes	All countries are subject to the same technical expert review and comprehensive monitoring contributing to progress. The progress discussion will now have an online component.
There is no process for improvement planning	Countries need to develop an improvement plan on how they intend to improve their reporting over time.

# Comparison of Transparency Frameworks

## Biennial Transparency Report

National Greenhouse Gas Inventory Report

Progress in implementing nationally determined contributions

Climate change impact and adaptation (as appropriate)

Received and required support

## National Communication

National greenhouse Inventory

Adaptation support programs

Mitigation programs

Technology transfer

Research and Observations

Education, public awareness raising

Capacity Building

Information, networking

Gaps, needs

## Biennial Update Report

National Greenhouse Gas Inventory Report

Mitigation measures and their impact

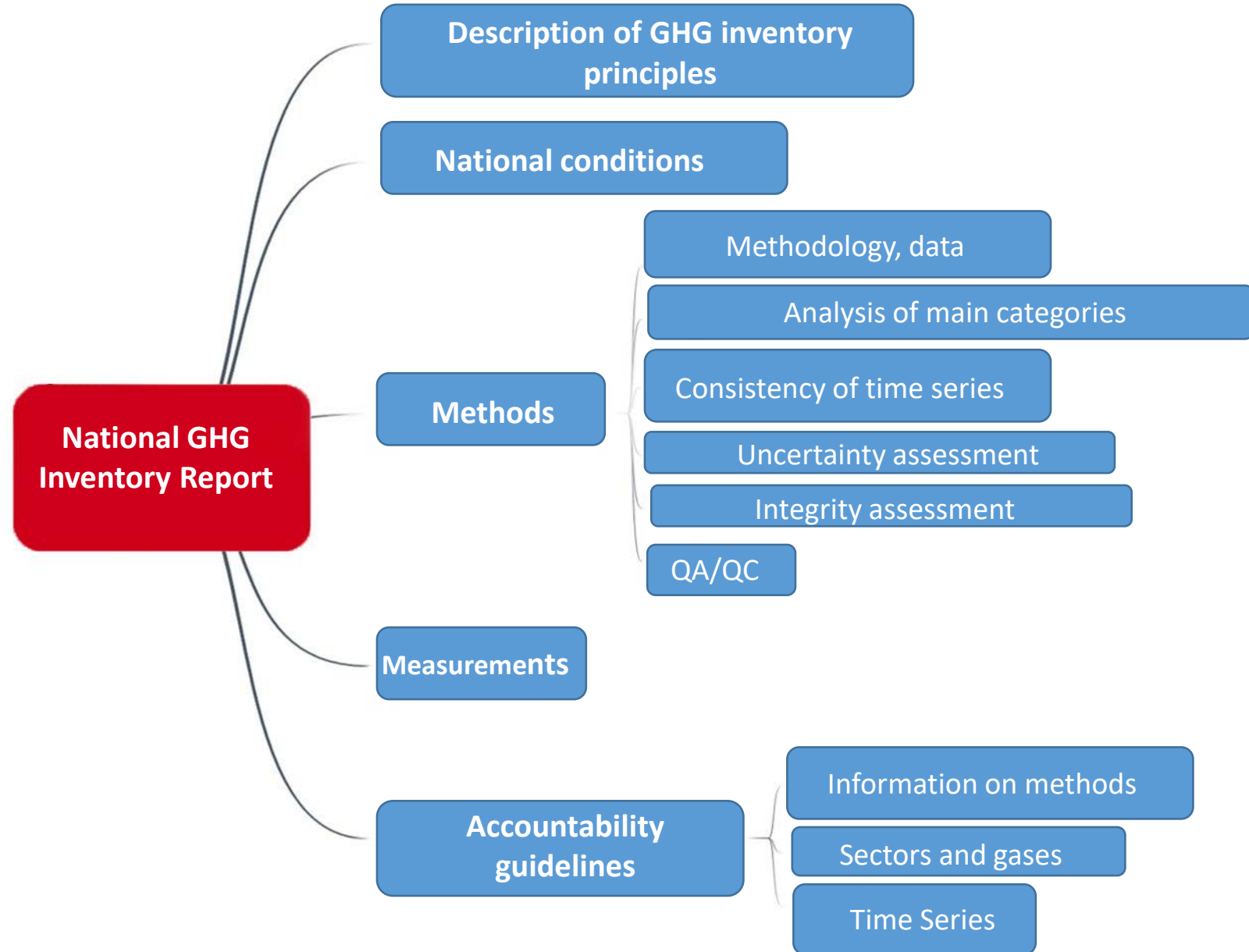
Financial, technological and capacity building needs

# National Greenhouse Gas Inventory Report

# Principles of Greenhouse Gas Inventory

- The principles of greenhouse gas inventory **shall** be in accordance with the Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines Volume 1, Chapter 1, Section 1.4 - TACCC Principles (transparency, accuracy, completeness, comparability and consistency).
  - The IPCC 2006 National GHG Inventory Guidelines was commissioned by the United Nations Framework Convention on Climate Change (UNFCCC) to update the 1996 GHG National Inventory Guidelines to provide internationally agreed GHG emission assessment methodologies for reporting to the Convention.
- Requirements for the National Greenhouse Gas Inventory Report are now common to all Parties, with no distinction between developing and developed countries.

# National Inventory Reporting Requirements as part of Biennial Transparency Reports (BTRs)



# Sectors and Gases (1)

Each Party must report on seven gases:

- carbon dioxide (CO<sub>2</sub>)
- methane (CH<sub>4</sub>)
- nitrous oxide (N<sub>2</sub>O)
- hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs) - *absent in Armenia*
- sulfur hexafluoride (SF<sub>6</sub>)
- nitrogen trifluoride (NF<sub>3</sub>) - *absent in Armenia*

# Global Warming Potential

- To express greenhouse gas emissions in CO<sub>2</sub> equivalent (CO<sub>2-eq</sub>), each Party **shall** apply the Global Warming Potential (GWP) values for the 100-year perspective as set forth in the IPCC Fifth Assessment Report
  - At present developed countries use the Global Warming Potential (GWP) values proposed in the Fourth Assessment Report for the 100-year horizon, while developing countries use the Second Assessment Report.

GHG	Global Warming Potential	
	Second Assessment Report	Fourth Assessment Report
CO <sub>2</sub>	1	1
CH <sub>4</sub>	21	28
N <sub>2</sub> O	310	265
HFC-32	650	677
HFC-125	2800	3170
HFC-134a	1300	1300
HFC-152a	140	138
HFC-143a	3800	4800
HFC-227ea	2900	3350
SF <sub>6</sub>	23900	23500

## Sectors and Gases (2)

- Each Party shall submit a report on the precursors:
  - nitrogen oxides (NO<sub>x</sub>),
  - non-methane volatile organic compounds (NMVOC),
  - carbon monoxide (CO)
  - sulfur dioxide (SO<sub>2</sub>),

Detailed emission assessment methodologies of which are provided in the EMEP / CORINAIR Emissions Inventory Guide.

*Those emissions are not included in the country's total emissions.*

- Each Party shall report on international aviation and marine bunker emissions as two separate records and **these emissions should not be included in the country's total emissions.**

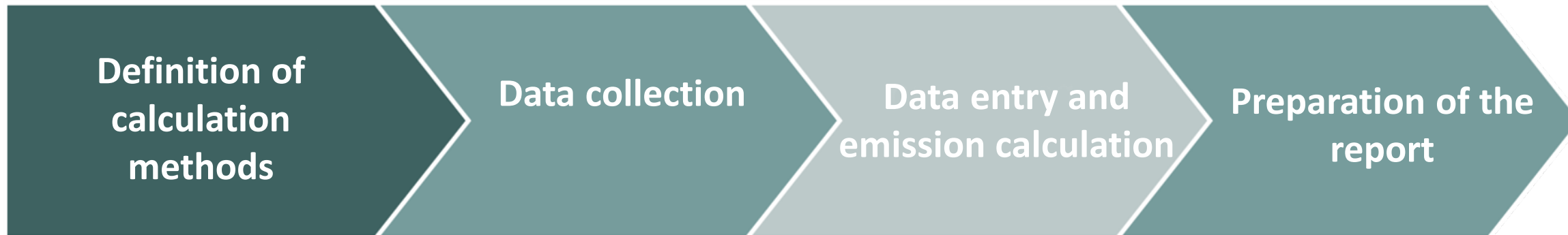


# Sectors and Gases (3)

Each Party shall report to the following sectors in accordance with the 2006 IPCC Guidelines:

- "Energy"
- "Industrial Processes and Product Use" (IPPU)
- "Agriculture, Forestry and Other Land Use" (AFOLU)
- "Waste"

# Summary of Inventory Development Process



- Review of implemented calculation methods and implementation of possible changes in them;
- The choice of methodology depends on the availability of additional activity data for the application of a higher methodology.

- Requirements definition: data source review and selection;
- Use of publicly accessible national data;
- Collection of the remaining data by the Ministry of Environment;
- Receiving data;
- Quality Assurance and Quality Control;
- Archiving.

- Update of national coefficients and development of new national coefficients (as appropriate);
- Quality management of emissions estimates;
- Quality control.

- Emission data aggregation;
- Consolidation of sectoral reports;
- Quality assurance and quality control of the draft report;
- Review and approval of the draft report by the Interagency Coordination Council;
- Presentation to UNFCCC;
- Archiving.

# National Conditions and Institutional Arrangements

Each Party **must**:

Ensure and maintain development arrangements of national greenhouse gas inventory, including institutional, legal, and procedural arrangements for the ongoing evaluation, compilation, and timely submission of national inventory reports.

## National Conditions and Institutional Arrangements (2)

- On the following functions related to the inventory planning, preparation and management of the report:
  - **on the national body responsible for the development and submission of the GHG national inventory**
  - **on the specific responsibilities of the inventory process, including the institutions involved in preparing the inventory**
  - **all information on archiving related to the national inventory**
- Introduce the formal inventory review and approval process.

# Methods

## Methodologies, Parameters and Data

Each Party

- **shall** use 2006 IPCC Guidelines and any subsequent versions or revisions to the IPCC Guidelines agreed upon by the Conference of the Parties;
- **applies 2006 IPCC Guidelines** and may use nationally relevant methodologies if they better reflect its national requirements and are in line with the IPCC Guidelines. In such cases, each Party shall provide a transparent explanation of the national methods, data and / or parameters selected;
- **it is encouraged** to use country-specific coefficients and activity data where possible.

# The Main Sources of Emissions

- The main sources are the categories of emissions or absorptions, which should be given special attention in the process of compiling the national inventory management system, as they have a significant impact on the absolute values or trends of the country's GHG emissions.
- Each Party **shall** identify the main categories of the start and end of the reporting year using an analysis of the main categories consistent with the IPCC guidelines.
- In the 2017 National Greenhouse Inventory Report, 12 out of 19 main sources were rated with high (2nd and 3rd) category methodology.

# Time Series Comparability and Recalculations

- To ensure time series comparability, the same methods and consistent approach to activity data and emission rates should be applied for each reporting year.
- In the event of a change in methods or assumptions, time series should be recalculated in accordance with IPCC guidelines, ensuring that changes in emission trends are not due to changes in time series methods or assumptions.

# Uncertainty Assessment

- Each Party shall estimate in terms of quantity and discuss in terms of quality the uncertainty of all sources of emissions and absorptions, including the uncertainty of total emissions, at least for the initial year and the last reporting year.
- Each Party should also assess the uncertainty of emissions and emission assessment trends using at least one approach as outlined in the IPCC Guidelines.



# Completeness Assessment

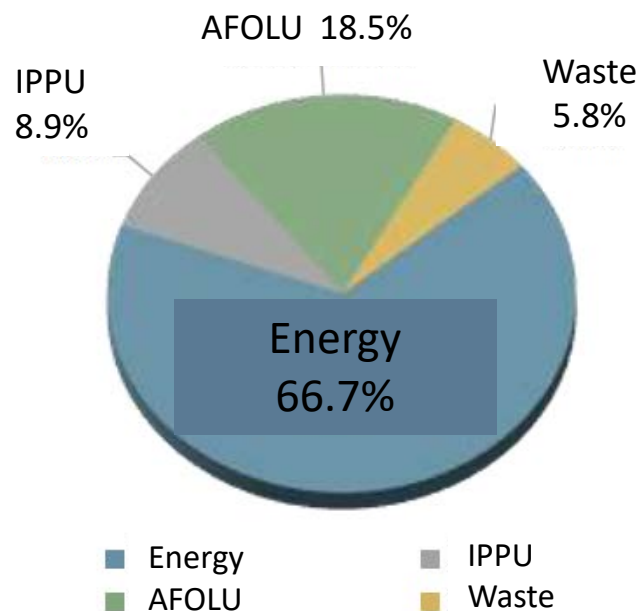
- Each Party shall indicate the sources that are not included in the national inventory report but whose assessment methods are included in the IPCC guidelines and explain the reasons for such exclusion.
- Notation Keys are used for this purpose when digital data is not available when completing general reporting tables, indicating the reasons why this data is not reported for certain industries, categories, subcategories or gases.

NA	Not applicable: activity or category exists, but no emissions of this type occur
NE	Not estimated: emissions / absorptions exist but not estimated
NO	No occurrence: the activity or process does not occur in the country

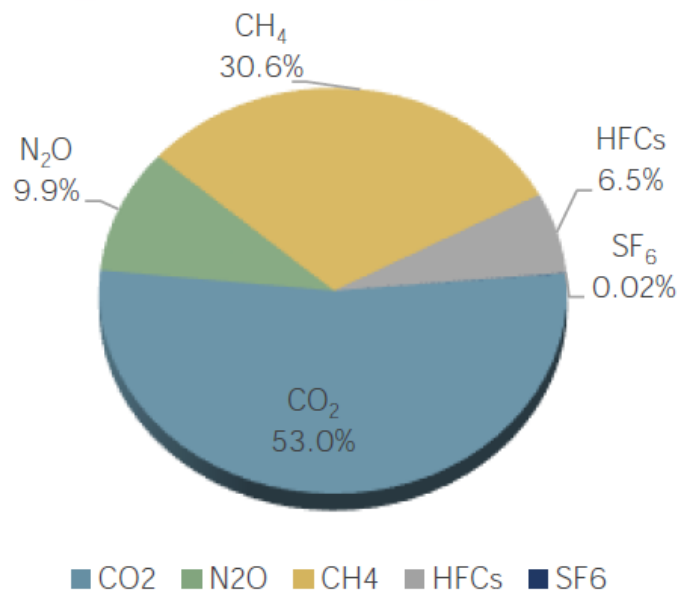
# Quality Control / Quality Assurance

- Each Party shall develop an inventory Quality Control / Quality Assurance (QC/QA) plan in accordance with IPCC guidelines, including information on the agency responsible for implementing QC / QA, and provide information on the Quality Control process performed.
- In addition, Parties shall apply QC procedures for the main categories in accordance with IPCC guidelines and for those categories in which significant methodological changes and / or data revisions have occurred.

# The Main Results of The GHG Inventory in 2017



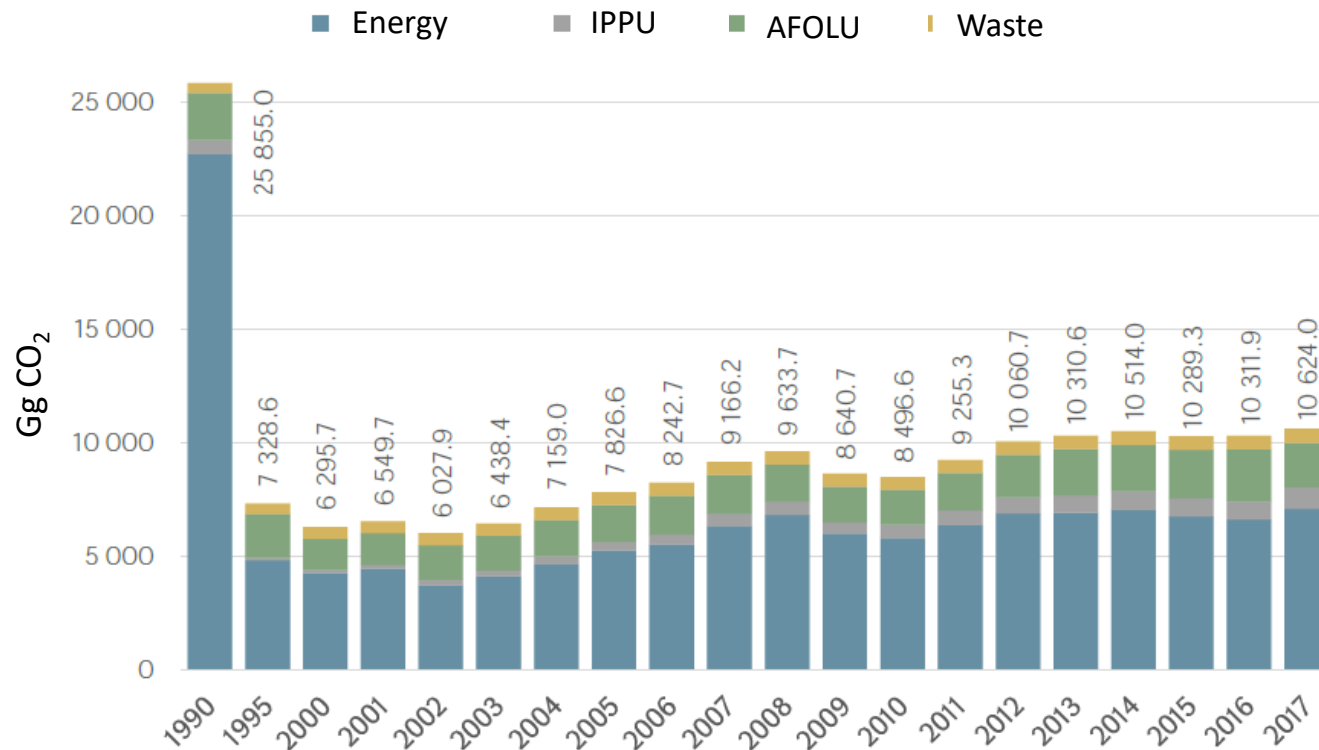
The majority of emissions, 66.7%, come from the "Energy" sector. Next in terms of emissions is "Agriculture, Forestry and Other Land Use" sector - 18.5%, followed by "Industrial Processes and Product Use" and "Waste" sectors - 8.9% and 5.8%, respectively.



The most significant greenhouse gas in Armenia is carbon dioxide (CO<sub>2</sub>) - about 53%, followed by methane - 30.6%, the share of nitrous oxide and fluorocarbons is much smaller - 9.9% and 6.5% respectively, and the share of SF<sub>6</sub> is negligible.

# Time Series

- Each Party **shall** report the comparable time series of GHG annual emissions starting from 1990.
- The final reporting year for each Party **shall** be no more than two years before the submission of its national inventory report.



The ratio of emissions from different sectors is stable, and emissions from the "Energy" sector have continued to maintain absolute dominance.

Overall, compared to 1990, GHG emissions decreased by about 59%, mainly due to the reduction of emissions from the "Energy" sector.

# Improvements to the National Inventory in 2017

- The GHG inventory improvements were made under the UNDP-GEF Third Biennial Progress Report for Armenia (BUR3) to make the national inventory more transparent, accurate, complete, comparable and consistent (TACCC principles), taking into account:
  - Recommendations of the group of technical experts conducting the technical analysis of the Second Biennial Update Report for Armenia, presented in the summary report of the technical analysis
  - Recommendations of “National Greenhouse Gas Inventory Management System and Quality Assurance of GHG National Inventories” workshop organized by UNFCCC (2019)
  - Improvements provided in the previous National Inventory Report

## Improvements to the National Inventory in 2017 (2)

- Sulfur hexafluoride (SF<sub>6</sub>) emissions were first assessed
- GHG emissions were estimated for 6 new subcategories
- A higher methodology was used for 5 subcategories
- The analysis of the main sources was carried out by assessing both the level and the trends
- Uncertainties were assessed for all emission / absorption subcategories
- The 1990-2017 time series have been recalculated to ensure their comparability, taking into account recent changes of improved methodology and completeness and accuracy of activity data.

**THANK YOU**