Current situation with MRV development in Azerbaijan

Roadmap for the development of a functional National Greenhouse Gas Emissions Inventory System – Problems encountered

Regional Workshop

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GHG inventory review expert to UNFCCC and NIC of AR

1995

UNFCCC ratified

2000

FNC submitted

Kyoto Protocol ratified

2010

SNC submitted

2014

FBUR submitted

2015

TNC submitted

Doha Amendment ratified

FNDC submitted (to reduce GHG emissions for 35% by 2030 vis-a-vis 1990 level)

2016

Paris Agreement signed and ratified

2020

Climate Change Action Plan for 2020-2030 approved

State Commission on Climate Change Re-established

2021

COP26 Revised SNDC (new goals to reduce GHG emissions for 40% by 2050 and create a zero-emission zone in the liberated territories)

NC4 submitted

COP26 OUTCOMES

- Azerbaijan announced the country's new goals to reduce greenhouse gas emissions for 40% by 2050 and create a zero-emission zone in the liberated territories.

Azerbaijan announce also that these goals can only be achieved by providing access to modern technologies and the support of the relevant mechanisms of the UNFCCC, as well as international financial institutions

Azerbaijan endorse also following initiatives at COP26

STATEMENT ON THE BREAKTHROUGH AGENDA

- POWER Clean power the most affordable and reliable option for all countries to meet their power needs efficiently by 2030.
- ROAD TRANSPORT Zero emission vehicles the new normal – accessible, affordable and sustainable in all regions by 2030.
- STEEL Near-zero emission steel the preferred choice in global markets, with efficient use and near-zero emission steel production established and growing in every region by 2030.
- HYDROGEN Affordable renewable and low carbon hydrogen globally available by 2030.
- AGRICULTURE Climate-smart, sustainable agriculture the most attractive and widely adopted option for farmers everywhere by 2030.

GREEN GRIDS INITIATIVE

DECLARATION ON ACCELERATING THE TRANSITION TO 100% ZERO EMISSION CARS AND VANS

The State Commission on Climate Change (CCC) was reestablished in 2020.

It consists of representatives of ministries and agencies on high level.

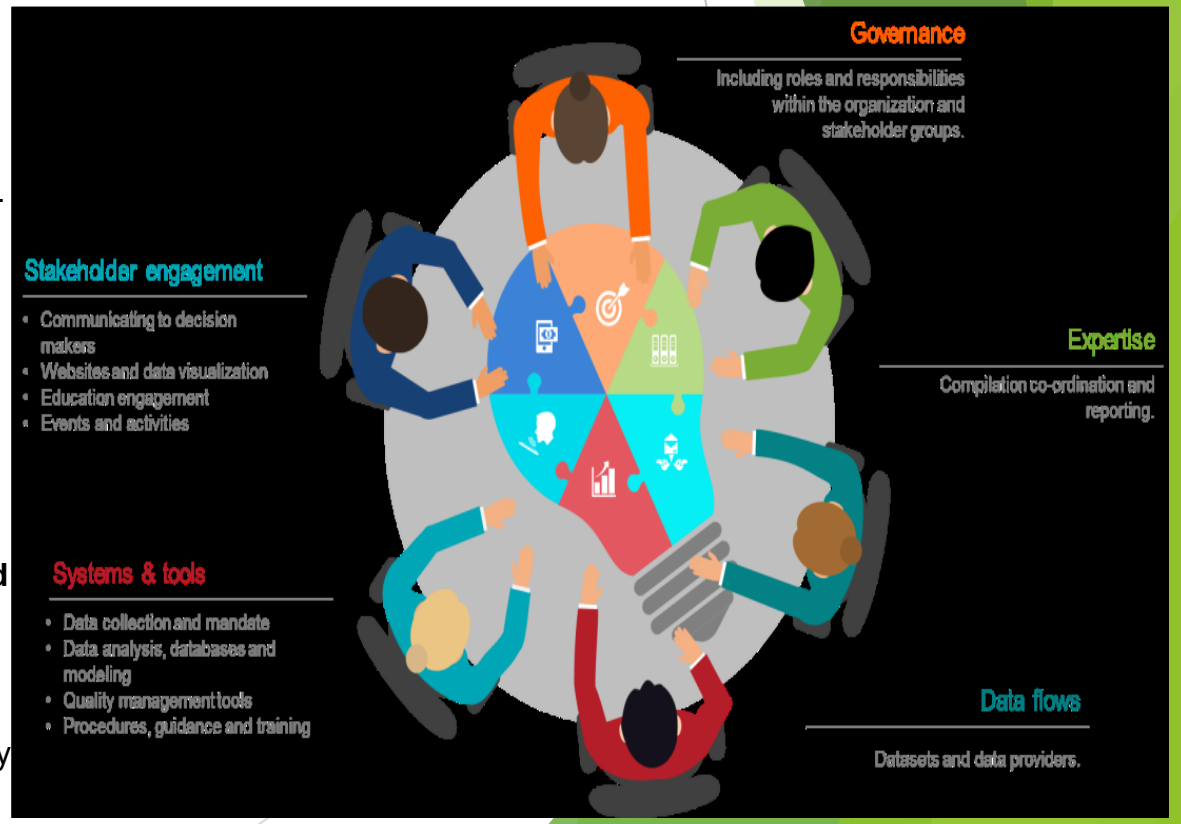
WG under CCC consists of climate experts from representing ministries, state agencies, scientific societies and oil&gas companies, as well as members of NGOs

Action plan of WG under CCC was prepared and approved on high level. It includes all relevant components for National MRV system improvement, entities responsible for implementation of the relevant components are listed in plan.

1. Governance such as agreements, laws, and commitments

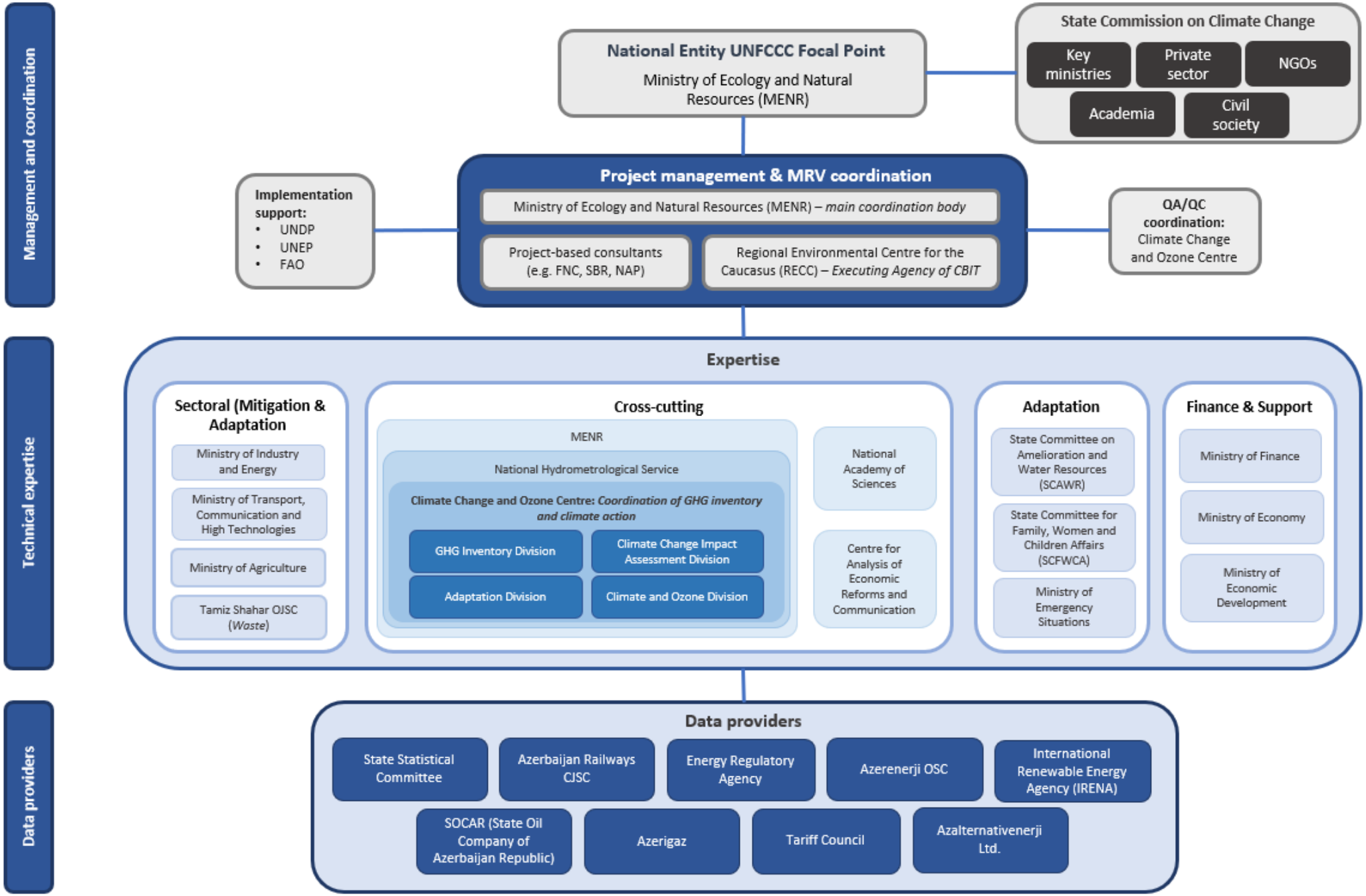
To address this component in 2021 MENR prepared a draft **law of the Republic of Azerbaijan "On management of greenhouse gas emissions resulting from human activities"** and submitted it for comments and suggestions.
The law consists of 20 articles and provides definitions related to greenhouse gas management.
The law includes:

- rules for state registry of greenhouse gases
- rules for issuing quotas to limit emissions level
- ✓ above 150,000 tons per year for the period up to 2024
- ✓ Above 50,000 tons per year for the period after 2024
- rules of domestic carbon trade
- carbon emissions monitoring and verification rules
- a system of penalties for violations of the legislation on emissions and absorption of GHGs



İn framework of EU4Climate project following MRV supporting documents were prepared

- MRV roadmap for Azerbaijan Republic
- The guidelines to assist the government to identify the key criteria and/or standards for emitters selection
- A draft of the Business registry of key emitters with potential more than 150,000 ton CO2 eq/y
- Monitoring and verification guidelines.


Management and coordination
National Entity UNFCCC Focal Point
Ministry of Ecology and Natural Resources (MENR)
State Commission on Climate Change
Key ministries
Private sector
NGOs
Academia
Civil society
Implementation support:
• UNDP
• UNEP
• FAO
Project management & MRV coordination
Ministry of Ecology and Natural Resources (MENR) – main coordination body
Project-based consultants (e.g. FNC, SBR, NAP)
Regional Environmental Centre for the Caucasus (RECC) – Executing Agency of CBIT
QA/QC coordination: Climate Change and Ozone Centre
Technical expertise
Expertise
Sectoral (Mitigation & Adaptation
Ministry of Industry and Energy
Ministry of Transport, Communication and High Technologies
Ministry of Agriculture
Tamiz Shahar OJSC (Waste)
Cross-cutting
MENR
National Hydrometrological Service
Climate Change and Ozone Centre: Coordination of GHG inventory and climate action
GHG Inventory Division
Climate Change Impact Assessment Division
Adaptation Division
Climate and Ozone Division
National Academy of Sciences
Centre for Analysis of Economic Reforms and Communication
Adaptation
State Committee on Amelioration and Water Resources (SCAWR)
State Committee for Family, Women and Children Affairs (SCFWCA)
Ministry of Emergency Situations
Finance & Support
Ministry of Finance
Ministry of Economy
Ministry of Economic Development
Data providers
Data providers
State Statistical Committee
Azerbaijan Railways CJSC
Energy Regulatory Agency
Azerenerji OSC
International Renewable Energy Agency (IRENA)
SOCAR (State Oil Company of Azerbaijan Republic)
Azerigaz
Tariff Council
Azalternativenerji Ltd.

Improvements on institutional arrangements to ensure transparent reporting of GHG inventory, mitigation actions and their effects, including GHG projections were made in framework of support received for NC4 project implementation:

- **GHG inventory**

✓ 2006 İPCC GLs used

✓ recalculations provided for basic year (1990) and all consequent years accordingly

✓ Key category analysis (LULUCF excluding) performed

- **Mitigation actions and their efects**

✓ Information were collected in tabular format

✓ All reported MA were monitored and results verified (World's first of its kind LDAR project on SOCAR upstream, registered under German ETS and UERs issued early 2022)

✓ LEAP software recommended by UNFCCC were implemented to forecast emissions till 2030 and 2050

✓ Training activity on use of LEAP software organized in framework of NC4 project by software developers - experts from Stockholm Environment Institute (SEI)

✓ Baseline Scenario, Existing Action Scenario (hereinafter, to be called 'WM (with measures) scenario'), Additional Action Scenario (hereinafter, to be called 'WAM (with additional measures) scenario developed and published.

To ensure transparency of information provided and readiness to ETF

- **From 30 November – 7 December of 2020 Azerbaijan voluntary participated in "Quality Assurance of the National Greenhouse Gas Inventory Management System and National Greenhouse Gas Inventories" excersize orginized by UNFCCC Secretariat and performed remotly**

Main outcomes/sugessions from GHG inventory management system assessment:

- ✓ For effective coordination of inventory preparation and management, it is of value to have one institution that has overall responsibility for the national inventory.
- ✓ There should be an agreed inventory cycle with a detailed workplan that has an audience larger than the inventory team. It should describe the anticipated tasks, who will do them and by what date, the expected actions and/or products at each stage and the resources budgeted.
- ✓ Documentation of the Party's inventory arrangements (legal, institutional, procedural) should cover the entire inventory development process.

- To improve level of expertise on functionning of MRV system experts from Climate Change Center under National Hydro meteorological Service of the Azerbaijan Republic participated in:

- ✓ Online trainings on IPCC 2006 GLs implementation provided by UNFCCC on annual basis
- ✓ Workshop on outcomes and recommendations of the Air Pollution in ASIA and the PACIFIC: Sub regional Dialogue Series
- ✓ Remote Training on the IPCC Inventory Software for National Greenhouse Gas Inventories for the Asia-Pacific and Eastern Europe Regions

- **In 2022 with support from UNFCCC it is planned to organize "Remote technical assistance to the developing countries to establish/improve their NIIP (National Inventory Improvement Plan)"**

Ongoing or planned capacity building projects

Project title	Lead organization	Funding agency	MRV Theme	Needs addressed	Timeframe	Status
EU4Climate	UNDP	EU	Mitigation; Adaptation; Support	Addressing capacity building for NDC, long-term LEDS, MRV system, EU Climate Acquis, climate mainstreaming and climate investment	2019 – 2022	Ongoing
CBIT: Capacity Building for Azerbaijan to meet the requirements of enhanced transparency framework of the Paris agreement	Regional Environmental Centre for the Caucasus; Ministry of Ecology and Natural Resources	Global Environment Facility (GEF)	Mitigation; Adaptation; Support	Institutional arrangements and training for GHG inventory and NDC tracking	2020 - 2023	Ongoing
Scaling up investment in energy efficiency in buildings through enhanced energy management information system (EMIS) and green social housing	Ministry of Ecology and Natural Resources;	Global Environment Facility (GEF)	Mitigation; Support	Institutional arrangements, systems, tools and training for energy sector activities	2020 - 2025	Funding secured

Ongoing or planned capacity building projects

Project title	Lead organization	Funding agency	MRV Theme	Needs addressed	Timeframe	Status
Green Climate Fund (GCF) Enhancing Climate Information and Multi-hazard Early Warning for Resilience in Azerbaijan	Ministry of Ecology and Natural Resources; UNEP	Green Climate Fund (GCF)	Adaptation; Support	Timely, accurate and actionable climate information; early warning system for hazards	5 years	Idea
Green Climate Fund (GCF) National Adaptation Plan (NAP) Support Project for adaptation planning and implementation in Azerbaijan	Ministry of Ecology and Natural Resources; UNDP	Green Climate Fund (GCF)	Adaptation; Support	Capacity for adaptation planning and implementation in three key sectors: water, agriculture, coastal areas	2019 - 2022	Ongoing

Thank You for Attention!

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Governance of the Energy Union and Climate Action

Izabela Grundova

Climate Governance, Plans and Mainstreaming, European Commission, DG CLIMA

Context and objectives

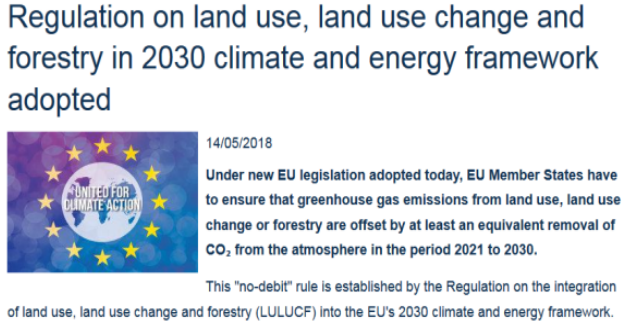
- Meet Energy Union objectives (notably the 2030 targets)
- Streamline planning and reporting
- Allow for investor certainty and predictability
- Synchronise cycles with the Paris Agreement
- Ultimately to reach the climate-neutrality objective

Member States' emission reduction targets for 2021 to 2030 adopted

14/05/2018

The Council today formally adopted binding annual greenhouse gas emission reduction targets for EU Member States from 2021 to 2030. The legislation is a major step in implementing the EU's climate goals.

The Regulation on binding annual emission reductions by Member States from 2021 to 2030, also known as the Effort Sharing Regulation, sets targets for those sectors of the economy that fall outside the scope of the EU Emissions Trading System (EU ETS). These sectors, including transport, buildings, agriculture, non-ETS industry and waste, account for almost 60% of the EU's total domestic emissions.

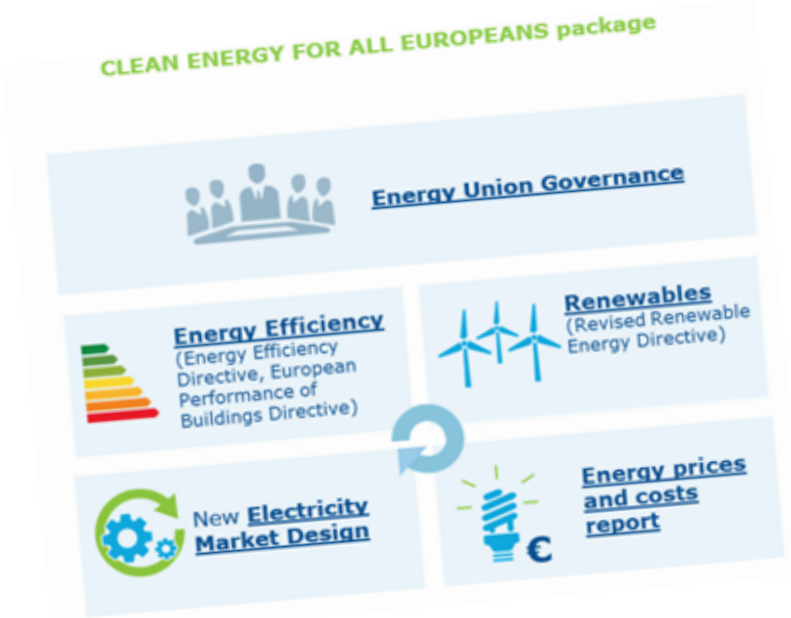


Regulation on land use, land use change and forestry in 2030 climate and energy framework adopted

14/05/2018

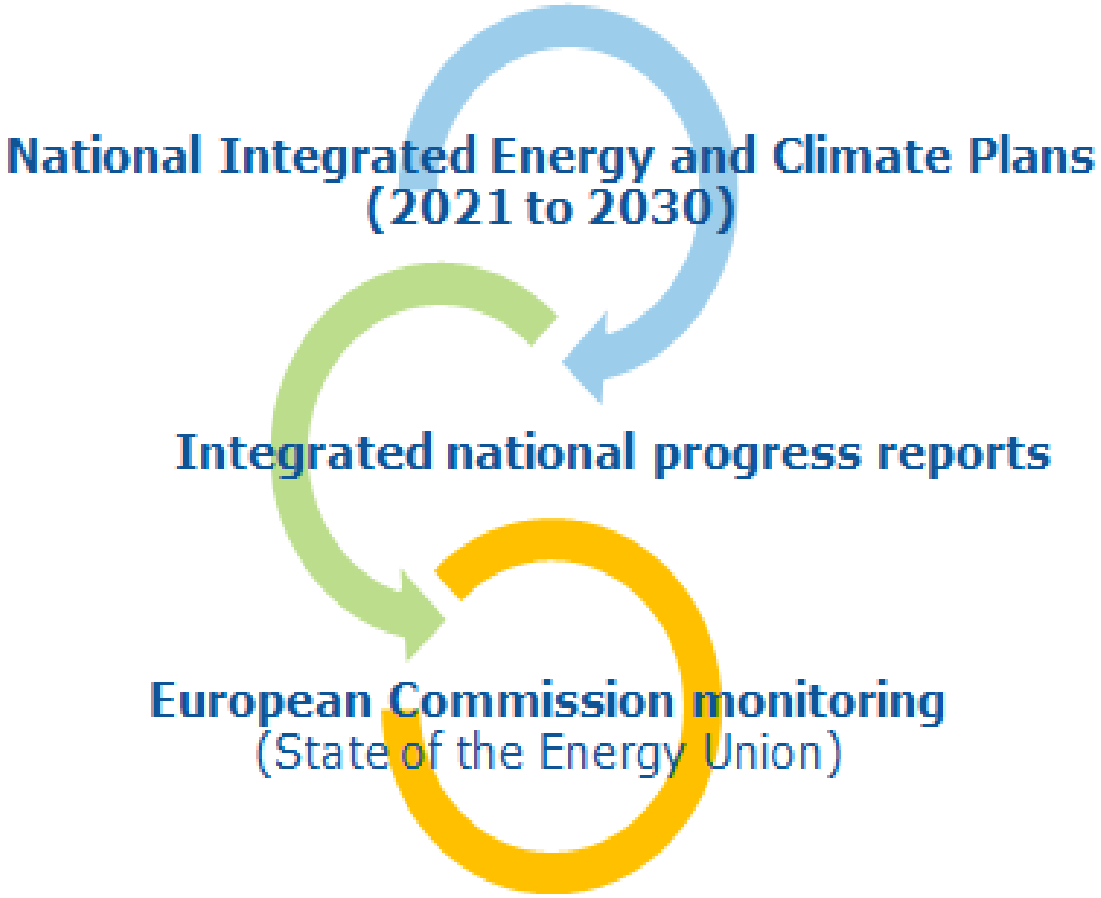
Under new EU legislation adopted today, EU Member States have to ensure that greenhouse gas emissions from land use, land use change or forestry are offset by at least an equivalent removal of CO_2 from the atmosphere in the period 2021 to 2030.

This "no-debit" rule is established by the Regulation on the integration of land use, land use change and forestry (LULUCF) into the EU's 2030 climate and energy framework.



European Commission

Governance process - overview



European Commission

Integrated national energy and climate plans

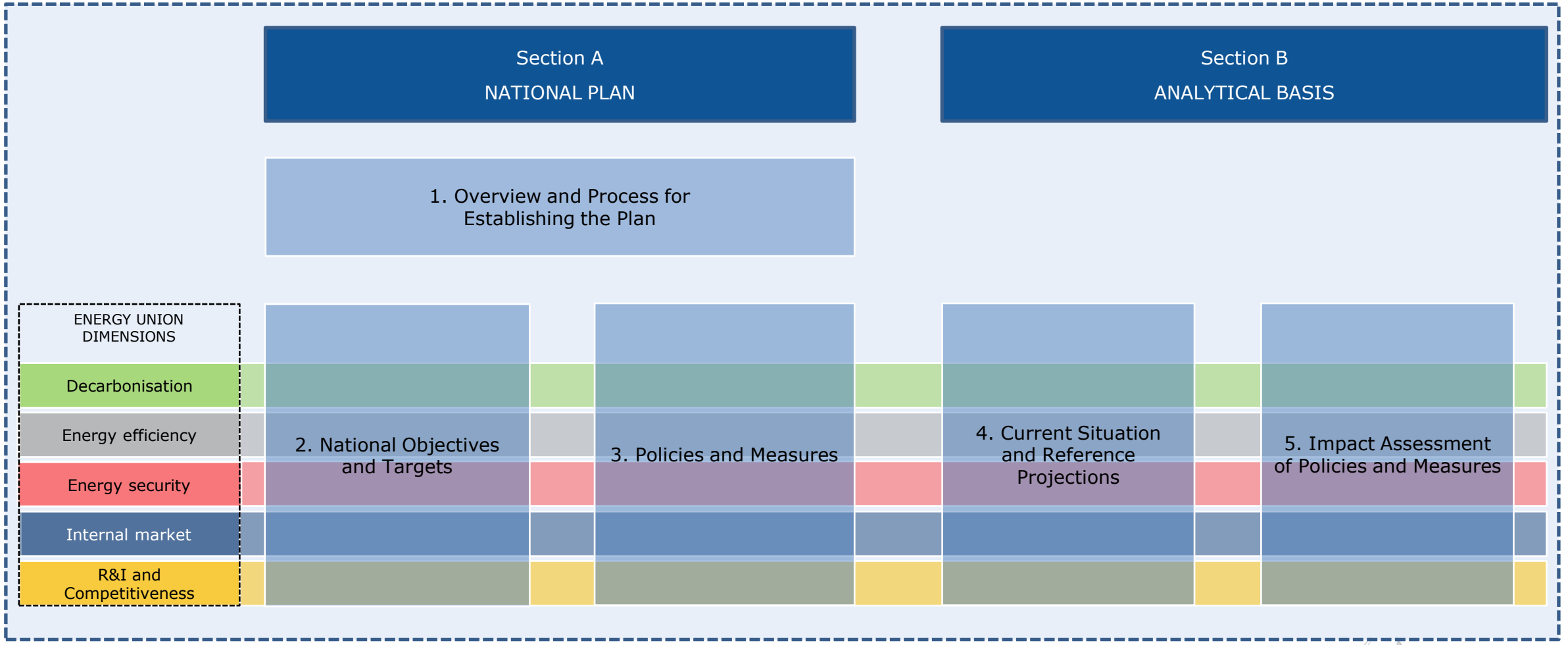
- **Drafts** by 31 December 2018, and subsequently by 1 January 2028 and every 10 years thereafter (Art. 9). **Final** plans by 31 December 2019, and subsequently by 1 January 2029 and every 10 years thereafter (Art. 3)

- To include (Art. 3-8 and elements of Annex I):
  - Overview and process for establishing the Plan
  - National objectives, targets and contributions for the 5 Energy Union dimensions
  - Policies and measures (PAMs)
  - Analytical basis (projections, impact assessment of planned PAMs)
  - List of parameters and variables
  - Etc

- Draft plans (and draft updated plans) to be **consulted with the public and with neighbouring Member States** (Art. 10, 12), **iterative process with the Commission through recommendations**

- Plans to be **updated** in **draft** form by 30 June 2023 and in **final** form by 30 June 2024, subsequently by 1 January 2033 and 1 January 2034 and every 10 years thereafter (Art. 14)

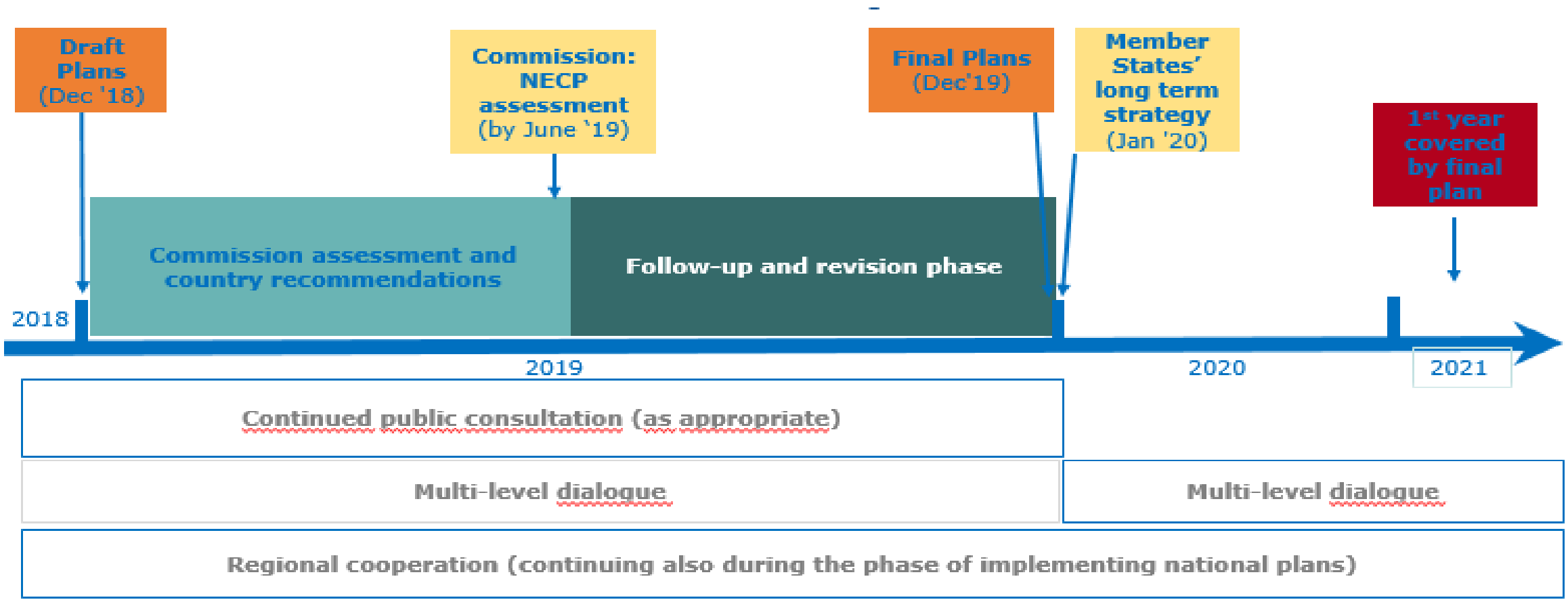
Integrated national energy and climate plans



Public consultation and regional cooperation

- **Public** to be given early and effective opportunities to participate in the preparation of the national energy and climate plan (NECP) as well as the long-term strategy (LTS) (Art. 10)
- Member States to establish a **multilevel climate and energy dialogue** for active engagement and discussion of scenarios for energy and climate policies, including for the long term, and to review progress (Art. 11)
- Member States to identify opportunities for **regional cooperation** and consult neighbouring Member States (Art. 12)

From draft to final: NECP process and timeline



European Commission

Assessment of the NECPs: main steps

- All NECPs are publicly accessible, see https://ec.europa.eu/info/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en
- The Commission assesses draft NECPs and may issue country-specific recommendations to Member States.
- After the submission of final NECPs, the Commission publishes particularly whether
  - The objectives, targets and contributions in the plans are sufficient for the collective achievement of the Energy Union objectives, and
  - The plans comply with the legal provisions, and take into account Commission‘s recommendations

Long-term strategies

- Paris Agreement (Art 4.19) and Decision 1/CP.21 (para 35): all countries should communicate long term low GHG emission development strategies (by 2020)
- Article 15 Governance Regulation:
  - By 1 January 2020, by 1 January 2029 and every 10 years thereafter, Member States submit to the Commission their LTS with a perspective of at least 30 years (updated where necessary every 5 years)
  - The Commission shall by 1 April 2019 adopt a proposal for a Union LTS, including an analysis covering various scenarios and their implications on the carbon budget
  - Elements to be contained in the MS LTS: Art 15(4) and Annex IV
- Article 18 and Annex VI (b) Governance Regulation: Updates to long-term strategies and progress in implementing these to be reported by 15 March 2021 and every two years thereafter

Integrated reporting

- Integrated reporting across all 5 Energy Union dimensions
- Biennial reporting as main rule (biennial integrated progress reports)
- Annual reporting continued when needed due to EU's international climate commitments (and also for certain energy-related reporting)
- Establishment of e-reporting Platform to facilitate communication between the Commission and Member States, to promote cooperation, and to facilitate public access
- Annual State of the Energy Union report
- Commission assessment of progress, recommendations

Integrated progress reports on implementation of NECPs

- By 15 March 2023 and every two years thereafter: integrated reporting by Member States on the status of implementation of the National Plans across all 5 Energy Union dimensions, including inter alia:
  - Reporting on progress towards the NECPs' objectives, targets and contributions
  - Policies and measures implementation
  - Progress in establishing the multi-level climate and energy dialogue where applicable
  - Adaptation
  - Estimates on impact on air quality and emissions of air pollutants
  - Information on how recommendations of the Commission have been addressed
  - National objectives to phase out energy subsidies, in particular for fossil fuels

Integrated reporting on greenhouse gas policies and measures and projections

- By 15 March 2021 and every two years thereafter, Member States to report information on:
  - National policies and measures, e.g. objective, status of implementation, indicators used
  - National projections of GHG emissions by sources and removals by sinks, organised by gas
- National systems for policies and measures and projections
- Detailed rules laid down in Implementing Regulation (EU) 2020/1208

Integrated reporting on adaptation, financial and technology support, auctioning revenues

- Reporting on national climate change adaptation planning and strategies (by 15 March 2021 and every two years thereafter)
- Reporting on the use of auctioning revenues (by 31 July 2021 and every year thereafter)
- Reporting on support to developing countries (by 30 September 2021 and every year thereafter)
- Details provided in Implementing Regulation (EU) 2020/1208:

Annual reporting

- Member States to report annually (Article 26, Annex V):
  - Energy related information – minimum stocks of crude oil and petroleum, safety of offshore oil and gas opertations (by 15 March 2021 and every year thereafter)
  - Approximated greenhouse gas inventories (by 31 July 2021 and every year thereafter) Greenhouse gas inventories (from 2023, preliminary data by 15 January, final data by 15 March)
- Establishment of Union and national inventory systems, inventory review (Art. 37, 38)
- Detailed rules laid down in Implementing Regulation (EU) 2020/1208 and Delegated Regulation (EU) 2020/1044

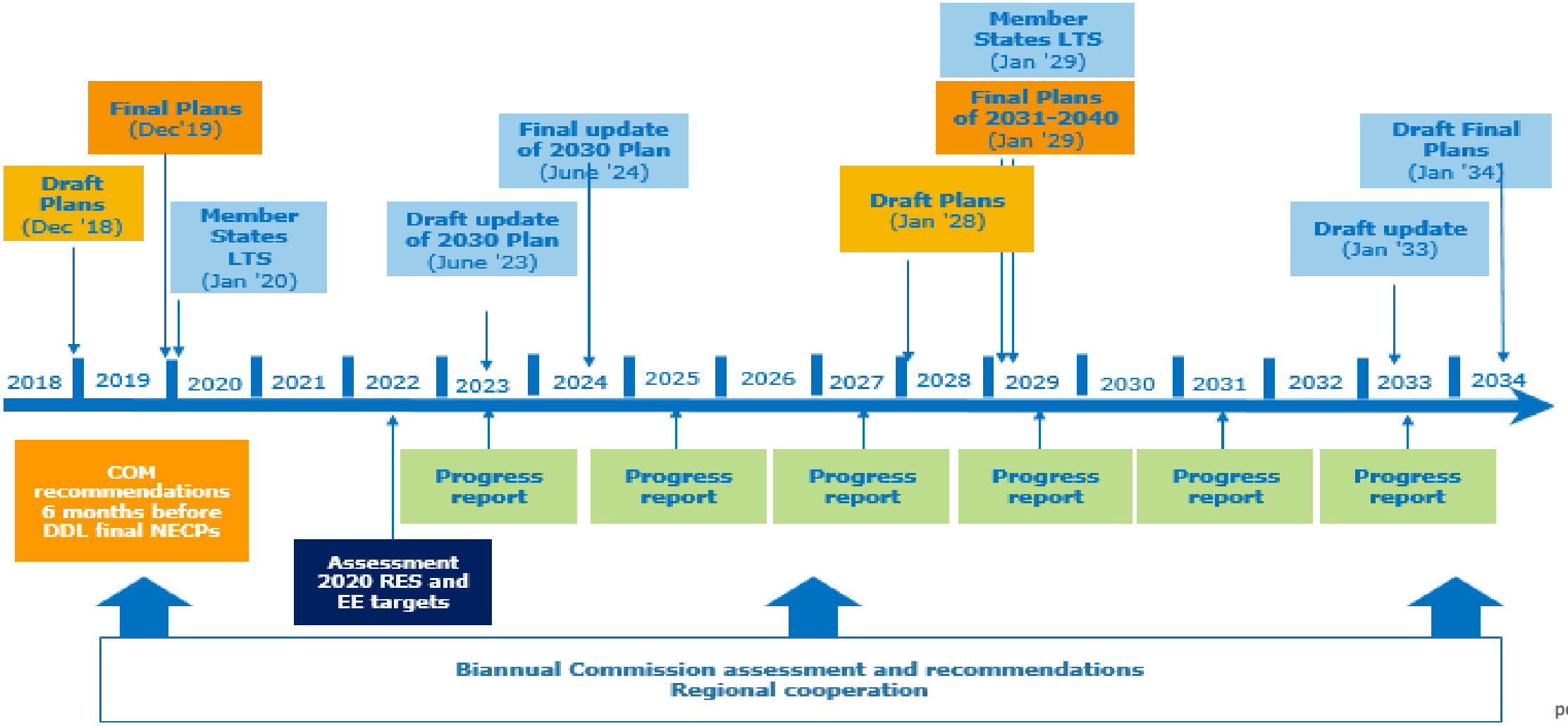
Commission assessment of progress

- Commission assessment by 31 October 2021:
  - Progress at Union level towards meeting the Energy Union objectives, 2030 energy and climate targets, progress by each Member State towards meeting its national plan's objectives, targets and contributions and implementing policies and measures, impact of aviation on the global climate, etc (every two years)
  - Whether sufficient progress was made towards meeting the commitments of UNFCCC and the Paris Agreement, ESR and LULUCF; objectives set out in the national plans in view of fulfilling targets for period 2021-2030 (every year)
- On the basis of the national energy and climate progress reports and other information reported under the regulation
- Commission reports on its assessment as part of the State of the Energy Union Report

Support

- Role of the European Environment Agency, inter alia:
  - compiling the Union inventory and Union approximated inventory
  - performing quality assurance/quality control checks on MS inventories, and MS information on projections and policies and measures
  - preparing estimates for missing data (gap-filling)
  - compiling data
  - disseminating information, including on mitigation policies and measures and adaptation (via ClimateADAPT, http://climate-adapt.eea.europa.eu/)
- Climate Change Committee and Energy Union Committee

Timeline



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mission

Keep in touch

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European Commission

Thank you

European Commission

Legal and Institutional Arrangements for the GHG Inventory in Ukraine

Igor Onopchuk

National Center for GHG Emission Inventory

Outline

- Legal framework of the GHG inventory in Ukraine
- Institutional arrangements of the GHG inventory in Ukraine
- Main lessons learned from the preparation of the National Inventory Report

Legal framework

Adoption by the Parliament of Ukraine the Laws on Ratification of the pillar agreements on climate change:

- United Nation Framework Convention on Climate Change (UNFCCC) (1996);
- Kyoto Protocol to the UNFCCC (KP) (2004);
- Paris Agreement (PA) (2016).

Legal framework

- President of Ukraine by its Order #1239/2005 authorized the Government to establish necessary legal and institutional arrangements for measures to fulfill the commitments under the UNFCCC and KP;
- The Ministry of Environmental Protection and Natural Resources of Ukraine was authorized to coordinate all measures aimed on fulfillment of the UNFCCC and KP.

Legal framework

- The Cabinet of Ministers of Ukraine established the National Inventory System and the procedures for the national GHG inventory (Resolution of the Cabinet of Ministers of Ukraine of April 21, 2006, of No. 554);
- Several other documents were adopted by the Government of Ukraine, aimed in fulfillment of the provisions of the KP related to the joined implementation mechanism, but not related to the GHG inventory.

Institutional arrangements

The Ministry of Environmental Protection and Natural Resources of Ukraine (MEPR) is responsible for the fulfillment of commitments of Ukraine under the UNFCCC, KP and PA, including the functioning of the National Inventory System.

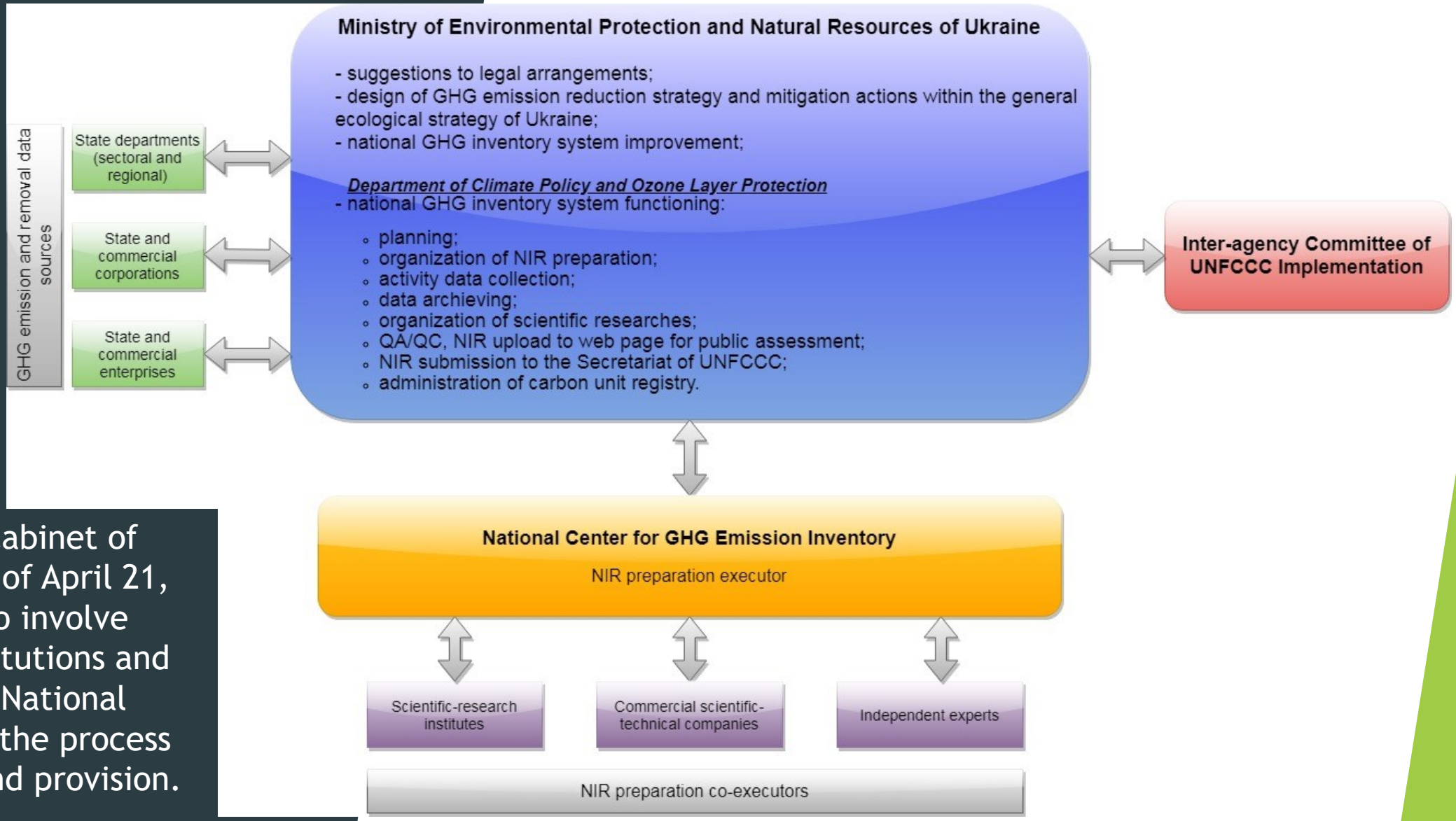
In 2011 the Government of Ukraine accepted the proposition of the MEPR to establish the National Center for GHG Emission Inventory (NCI) (Resolution 1194-p from 7.11.2011).

Institutional arrangements

NCI was established under the supervision of the MEPR, and is authorized to:

1) Select the methodologies, methods and other relevant factors necessary for the GHG inventory preparation, considering guidance from the COP/CMP and IPCC;
2) Collect necessary data for the GHG inventory;
3) Perform the calculations, including the QA/QC procedures;
4) Develop relevant sections of the National Inventory Report;
5) Facilitate the review process by the UNFCCC secretariat;
6) Other support to the MEPR (MRV as a part of the ETS).

Institutional arrangements



- Resolution of the Cabinet of Ministers of Ukraine of April 21, 2006, of No. 554 also involve other agencies, institutions and enterprises into the National Inventory System in the process of data collection and provision.

Lessons learned

1) Decree of the Government of Ukraine sometimes is not sufficient to resolve issues with data collection, when the limitations are related to Laws of Ukraine;
2) Automatic application of Decisions of COP/CMP/CMA in the GHG inventory avoids lengthy process of the national legislation adoption process, however some issues need to have national legislation in place;
3) Close cooperation between NCI and MEPR greatly facilitates the communication with different agencies, ministries and enterprises in the process of data collection;

Lessons learned

4) Establishment of the NCI created necessary institutional memory of data and supporting materials of GHG inventories in cases of reforms in the structure of governmental agencies and ministries;
5) Involvement of other specialized research institutions facilitates to comprehensively consider national circumstances in the GHG inventory;
6) NCI workers are not public servants, thus do not have limitations related to public servants' legislation;
7) Technical experts employed in the NCI have an opportunity to enhance its expertise by enrollment in other projects related to climate change or working in other institutions (educational, scientific).

Lessons learned

8) Training courses for the reviewers organized by the UNFCCC secretariat not only provide technical experts an opportunity to become internationally recognized experts in the GHG inventory, but also greatly enhances technical expertise of the experts themselves.

Practical experiences from the EU: Member state example of National MRV system

Visnja Grgasovic

May 2022

Legislative Framework

Funded by the European Union

International

UNFCCC, Paris Agreement

EU legislation

Regulation (EU) 2018/1999 on the Governance

National

Law on Climate Change and Ozone Layer Protection OG 127/2019
Chapter III of the document is related to monitoring greenhouse gas emissions and measures for mitigating and adapting to climate change

Regulation on the Monitoring of Greenhouse Gas Emissions, Policies and Mitigation measures in the Republic of Croatia (Official Gazette, No. 5/2017)
Decision on the establishment of the Committee for inter-sectoral coordination for a national system for monitoring greenhouse gas (Official Gazette, No. 6/2014)

SAČUVAJMO KLIMU

Croatian legal framework

Funded by the European Union

- Article 25 of the Law on Climate Change and Ozone Layer Protection

- public bodies competent for activities related to: environmental protection, the economy, agriculture, forestry, water management, sea, transport, official statistics, as well as the companies:
  - Hrvatske šume d.o.o. (Croatian Forests)
  - Hrvatske vode (Croatian Waters),
- which collect and/or hold data on activities according to sectors in which GHG are emitted or removed and which data are required for producing this report, should deliver such data to the Ministry

- data are delivered yearly to the Institute for environment and nature in the Ministry, free of charge, taking in consider deadlines, the scope and format published by the Ministry on its website

- the above mentioned bodies are obligated to participate in all phases of data preparation and data submission, report review and revision carried out by the UNFCCC Secretariat and European Commission

SAČUVAJMO KLIMU

Regulation on the Monitoring of Greenhouse Gas Emissions, Policies and Mitigation measures in the Croatia

Funded by the European Union

- Establishes National system for the estimation and reporting of anthropogenic greenhouse gas emissions by sources and removals by sinks
- the list of greenhouse gases
- roles of authorized bodies and other involved stakeholders
- method of calculating greenhouse gas emissions,
- deadlines for producing and submitting the reports specified in Article 22 of the Climate Act to the UNFCCC Secretariat and European Commission,
- manner of verifying reports and the methods
- Review of GHG Inventory

Institutional Arrangements

Funded by the European Union

- Decision 18/CMA.1 Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement
- Annex, II, B 18. Each Party should implement and maintain national inventory arrangements, including institutional, legal and procedural arrangements for the continued estimation, compilation and timely reporting of national inventory reports in accordance with MPGs. National inventory arrangements can vary by Party depending on their national circumstances and preferences, and change over time.
- Article 37. Regulation (EU) 2018/1999 on the Governance,
- Union and national inventory systems
- Institutional arrangement for inventory preparation in Croatia is regulated in Part II of the Regulation on the Monitoring of Greenhouse Gas Emissions

Institutional and organizational structure

Funded by the European Union

- **The Ministry of Economy and Sustainable Development (MESD)** is the central national authority responsible for maintaining the National System

- MESD is a national focal point for the UNFCCC, with overall responsibility for functioning of the National System such as:
- - communication with the UNFCCC, EU,
- - control of methodology for emission and greenhouse gas removal calculations,
- - approval of the GHG Inventory Report,
- - submission to EC, UNFCCC etc.

Institutional and organizational structure

Funded by the European Union

- **Institute for environment and nature in the Ministry is responsible for:**
- - organization of the GHG Inventory preparation,
- - collection of data,
- - development of QA/QC plan,
- - archiving of all documents used for inventory planning and preparation,
- - QA/QC procedure,
- - selection of Authorized Institution etc.
- The preparation of inventory itself is entrusted *to* **Authorized Institution** which is elected for three year period by public tendering

Committee for inter-sectorial coordination for a national system for monitoring greenhouse gases

Funded by the European Union

- From 2014 Committee (Government decision) responsible for monitoring the preparation of reports on greenhouse gas emissions, including removals by sinks, giving opinions on these reports and to participating in the review of these reports (Article 26. of the Climate Act has been established
- Includes representatives from:
  - Ministry of Economy and Sustainable Development
  - Ministry of the Interior
  - Ministry of Maritime Affairs, Transport and Infrastructure
  - Ministry of Agriculture
  - Paying Agency for Agriculture, Fisheries and Rural Development
  - Ministry of Regional Development and EU Funds

Committee for inter-sectorial coordination for a national system for monitoring greenhouse gases members

Funded by the European Union

- Croatian Bureau of Statistics
- Croatian center for Agriculture, Food and Rural Affairs
- Croatian Forest Ltd., Croatian Waters
- Croatian Forest Research Institute,
- Faculty of Agriculture
- Croatian Chamber of Economy
- Environmental protection and energy efficiency Fund
- Croatian Geological Survey

Committee for inter-sectoral coordination for a national system for monitoring greenhouse gases-tasks

Funded by the European Union

- annual preparation and submission of data from the sector needed to calculate greenhouse gas emissions in accordance with a given methodology
- control reliability, consistency and transparency of data from the sector
- Review the calculation of greenhouse gas emissions from the sector
- Review and help to answer the objections of experts of the United Nations Framework Convention on Climate Change in relation to annual inventory control (calculation) of greenhouse gas emissions
- participation in periodic review inventory of greenhouse gas emissions, answering questions from experts of the United Nations Framework Convention on Climate Change in relation to sources, the reliability and consistency of data from the sector;

Methodologies and Guidelines for GHG inventory

Funded by the European Union

- Revision of the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention, Decision 24/CP.19.
- Paris agreement MPGs, implementation from 2024, for period 1990-2022
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories, 2019 IPCC Refinement
- used for emission estimations of greenhouse gases which are result of anthropogenic activities,
- i.e. CO2, CH4, N2O, HFCs, PFCs, SF6 and NF3.

Methodologies and Guidelines for GHG inventory

Funded by the European Union

- Emissions of indirect GHGs have been taken from the emission inventory report ‘Republic of Croatia Informative Inventory Report for LRTAP Convention
- methodology applied to estimate emissions includes the product of activity data (e.g. fuel consumption, cement production, wood stock increment and so forth) and associated emission factor
- country-specific emission factors, if available, is recommended, should be based on well-documented research

Reporting requirements, CRF

Funded by the European Union

- the national inventory report (NIR) contain detailed descriptive and numerical information
- All inventory national arrangements, data, circumstances should be explained in specific details
- common reporting format CRF tables contain all greenhouse gas (GHG) emissions and removals, implied emission factors and activity data
- Croatia started to use CRF in 2003

Data management and data flow

Funded by the European Union

Institute for environment and nature in the Ministry is responsible for data collection

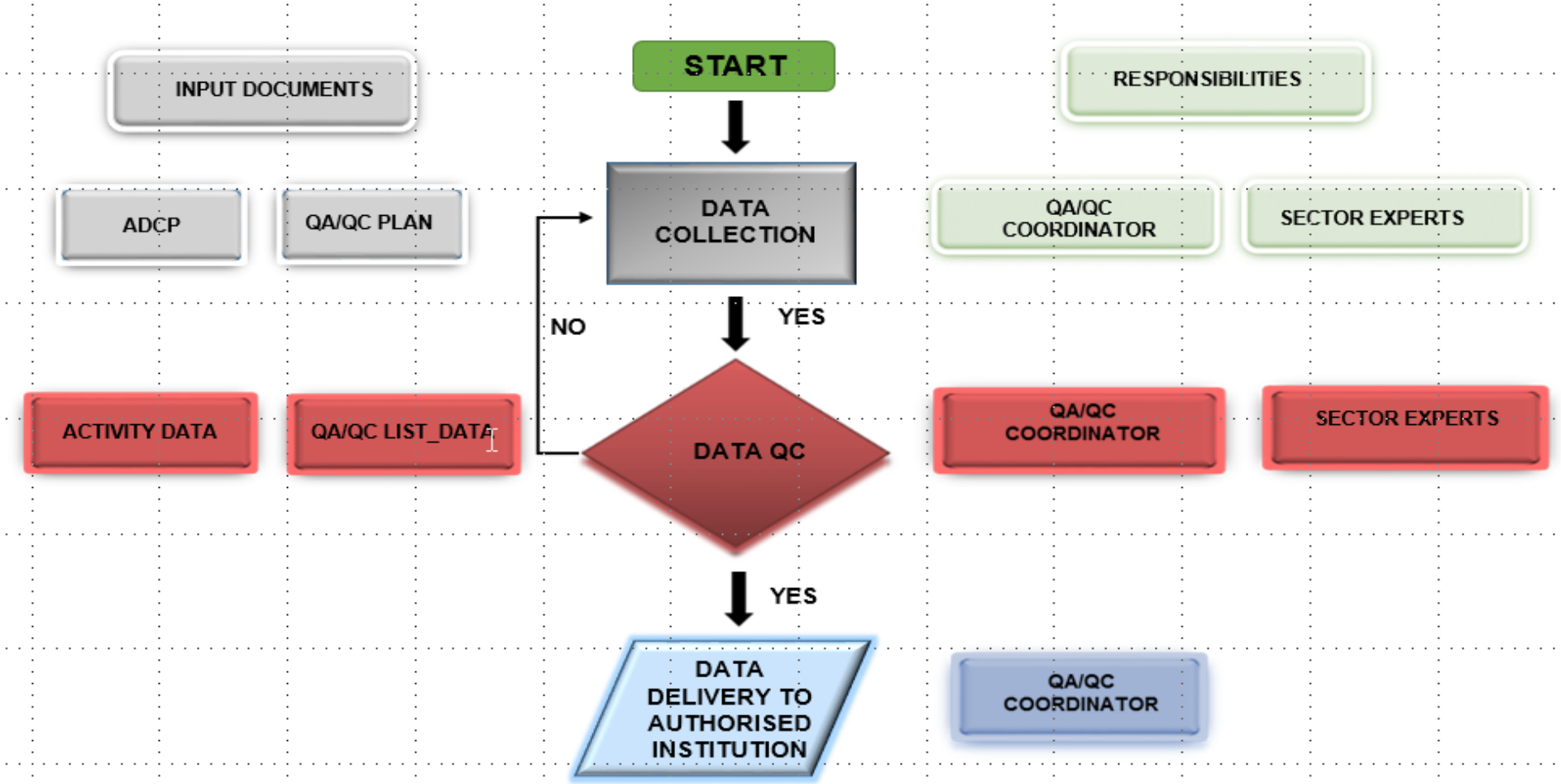
Main document for data collection is Annual data Collection Plan (ADCP)

Annual data Collection Plan (ADCP)

- Is made for each sector
- It contain source categories, activity, activity data, data source and competent authority
- This plan prepared by the Authorized Institution in collaboration with Comity and Ministry
- Published on the official website of the Ministry

Data Collection

Funded by the European Union



Quality Assurance and Quality Control

Funded by the European Union

- According to Art. 7. Regulation on the Monitoring of Greenhouse Gas Emissions, Policies nad Mitigation measures in the Republic of Croatia Institute for environment and nature in the Ministry is responsible for:

  - Development of QA/QC Plan
  - Implementation activities QA/QC
  - Archiving of all documents which used for Inventory planning

- Procedure starts with QA/QC Plan

- This is main document
- Is made for each Inventory year, (eg. QA/QC Plan NIR 2021)
- It contains activities, responsibilities, time frame

QA/QC Plan

- Main document
- It contain activities, responsibilities, time fame

REPUBLIKA HRVATSKA
Ministarstvo gospodarstva i održivog razvoja
Ministry of Economy and Sustainable Development

Zavod za zaštitu okoliša i prirode
Institute for Environment and Nature

PLAN OSIGURANJA I KONTROLE KVALITETE INVENTARA STAKLENIČKIH PLINOVA (QA,QC PLAN)

Izdanje	Primjena od:	Razlog i sažeti opis promjene
01	03.11.2020.	
02		

	Potpis	Datum
Odobrio: dr.sc. Aljoša Duplić, p.o. ravnatelj Zavoda		
Pregledao: Branimir Pavlinec, načelnik Sektora za okoliš		
Pregledala: Hana Mesić, voditeljica Službe za zaštitu zraka i klimatske aktivnosti		
Izradila: Tatjana Obučina, QA,QC koordinator za izradu NIR-a, voditeljica Odjela za klimatske aktivnosti		

Red. broj			AKTIVNOST	ODGOVORNA OSOBA, INSTITUCIJA	ROK, DATUM PROVEDBE	NAPOMENA
I	**GODIŠNJI PROGRAM PRIKUPLJANJA PODATAKA (GPPP) ZA NIR (N) (prijedlog, izrada, korekcija i usvajanje)**					
1.			**Izrada prijedloga GPPP za NIR (N) po Sektorima**	Ovlaštenik Sektorski stručnjaci	15.11. (N-2).	
2.			**Pregled prijedloga GPPP za NIR (N) od strane sektorskih stručnjaka Zavoda i davanje mišljenja**	Zavod Sektorski stručnjaci		
2.	1.		GPPP NIR (N) Energetika (CRF 1.)	Tatjana Obučina, QA,QC koordinator, Odjel za klimatske aktivnosti, Zavod Martina Beuk, Odjel za vode, kemikalije, industrijska i integrirana onečišćenja i ostale pritiske, Zavod	20.11. (N-2).	
2.	2.		GPPP NIR (N) IPPU (CRF 2.)	Tatjana Obučina, QA,QC koordinator, Odjel za klimatske aktivnosti, Zavod	20.11. (N-2).	
2.	3.	i	GPPP NIR (N) Poljoprivreda - CRF 3. A - CRF 3. B - CRF 3. C - CRF 3. D	Tatjana Obučina, QA,QC koordinator, Odjel za klimatske aktivnosti, Zavod Hana Mesić, Služba za zaštitu zraka i klimatske aktivnosti, Zavod	20.11. (N-2).	
2.	3.	ii	GPPP NIR (N) Poljoprivreda - Mulj iz uređaja za pročišćavanje (CRF 3. D. 1)	Jasna Kufrin, Odjel za praćenje sprječavanje nastanka otpada, gospodarenje komunalnim otpadom i odlaganje otpada, Zavod	20.11. (N-2).	
2.	3.	iii	GPPP NIR (N) Poljoprivreda - Korištenje vapna (CRF 3.G)	Tatjana Obučina, QA,QC koordinator, Odjel za klimatske aktivnosti, Zavod Hana Mesić, Služba za zaštitu zraka i klimatske aktivnosti, Zavod	20.11. (N-2).	
2.	4.	i	GPPP NIR (N) LULUCF - Šume i šumsko zemljište (CRF 4.A) - Drvni proizvodi (CRF 4. G)	Iva Prgomet, Odjel za klimatske aktivnosti, Zavod	20.11. (N-2).	

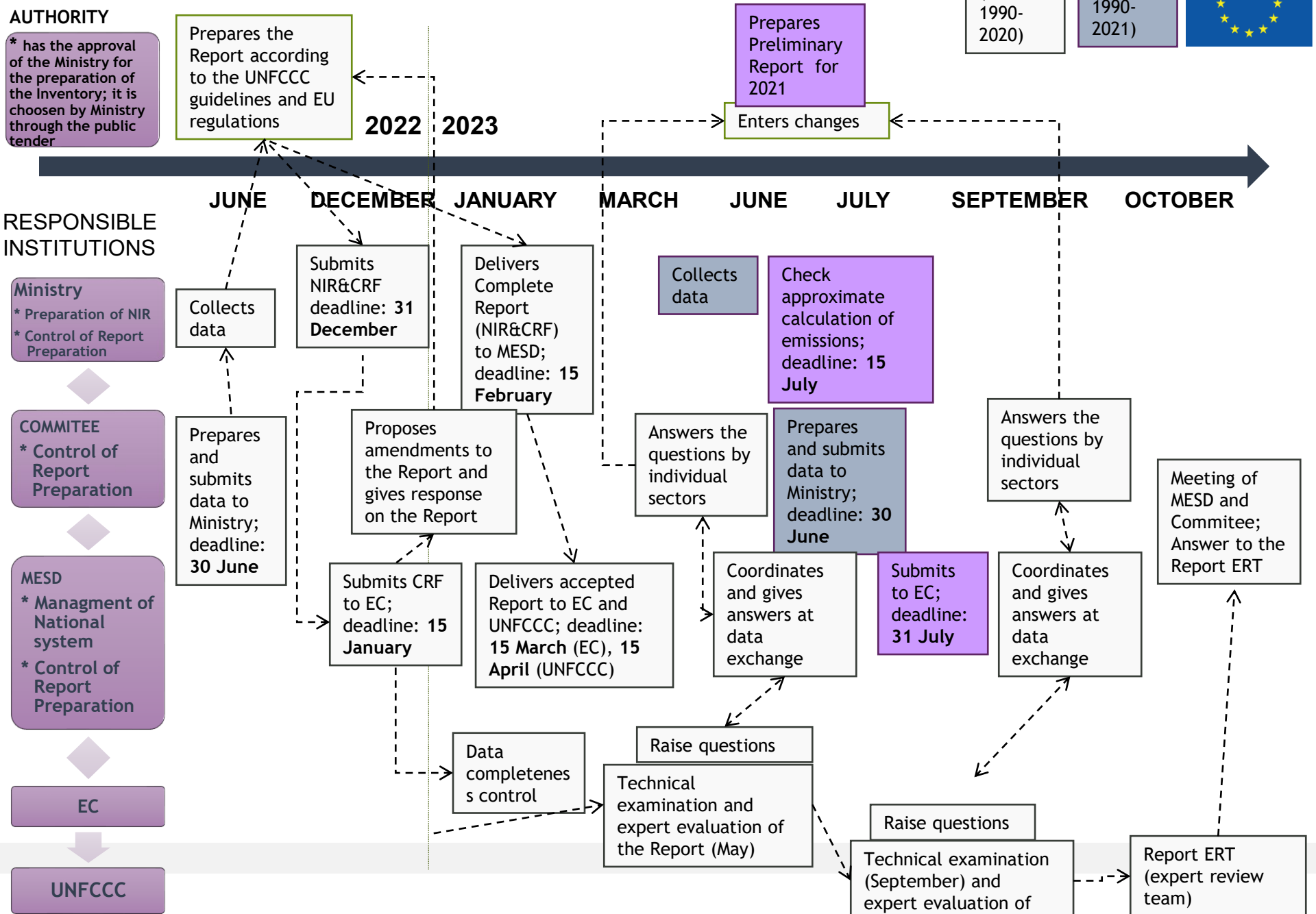
Red. broj			AKTIVNOST	ODGOVORNA OSOBA, INSTITUCIJA	ROK, DATUM PROVEDBE	NAPOMENA
2.	4.	ii	GPPP NIR (N) LULUCF - Zemljište pod usjevima (CRF 4.B) - Travnjaci (CRF 4.C) - Močvarna zemljišta (CRF 4.D) - Naseljena područja (CRF 4. E) - Ostala zemljišta (CRF 4. F)	Tatjana Obučina, QA,QC koordinator, Odjel za klimatske aktivnosti, Zavod Hana Mesić, Služba za zaštitu zraka i klimatske aktivnosti, Zavod	20.11. (N-2).	
2.	5.	i	GPPP NIR (N) Otpad - Odlaganje otpada (CRF 5.A) - Biološka obrada otpada (CRF 5.B)	Jasna Kufrin, Odjel za praćenje sprječavanje nastanka otpada, gospodarenje komunalnim otpadom i odlaganje otpada, Zavod	20.11. (N-2).	
2.	5.	ii	GPPP NIR (N) Otpad - Spaljivanje otpada (CRF 5.C)	Željka Korica, Odjel za vode, kemikalije, industrijska i integrirana onečišćenja i ostale pritiske, Zavod	20.11. (N-2).	
2.	5.	iii	GPPP NIR (N) Otpad - Upravljanje otpadnim vodama (CRF 5.D)	Tatjana Obučina, QA,QC koordinator, Odjel za klimatske aktivnosti, Zavod Zrinka Vranar, Odjel za vode, kemikalije, industrijska i integrirana onečišćenja i ostale priiske, Zavod	20.11. (N-2).	
3.			**Pregled prijedloga GPPP NIR (N) od strane Uprave za klimatske aktivnosti, MINGOR i Povjerenstva**	Uprava, MINGOR, Povjerenstvo	po pozivu prije 15.12. (N-2).	
4.			**Objava GPPP NIR (N) na stranicama Ministarstva**	Uprava, MINGOR, QA,QC koordinator Zavod	15. 12. (N-2).	
II	**PRIKUPLJANJE PODATAKA O AKTIVNOSTIMA ZA IZRAČUN EMISIJA STAKLENIČKIH PLINOVA PO SEKTORIMA (sukladno GPPP NIR (N).)**					
1.			**Dostava podataka o aktivnostima po sektorima sukladno čl. 25. Zakona o klimatskim promjenama i zaštiti ozonskog sloja (NN 127/2019) u Zavod (osim energetske bilance)**	Tijela državne uprave, Javne institucije, Trgovačka društva i dr. gospodarski subjekti	30. 09. (N-1).	
2.			**Dostava energetske bilance i Analize industrije za godinu N-2 godinu u Zavod**	MINGOR, Uprava za energetiku	01.12. (N-1).	

Time flow of the preparation of NIR

NIR 2022 (Data: 1990-2020)

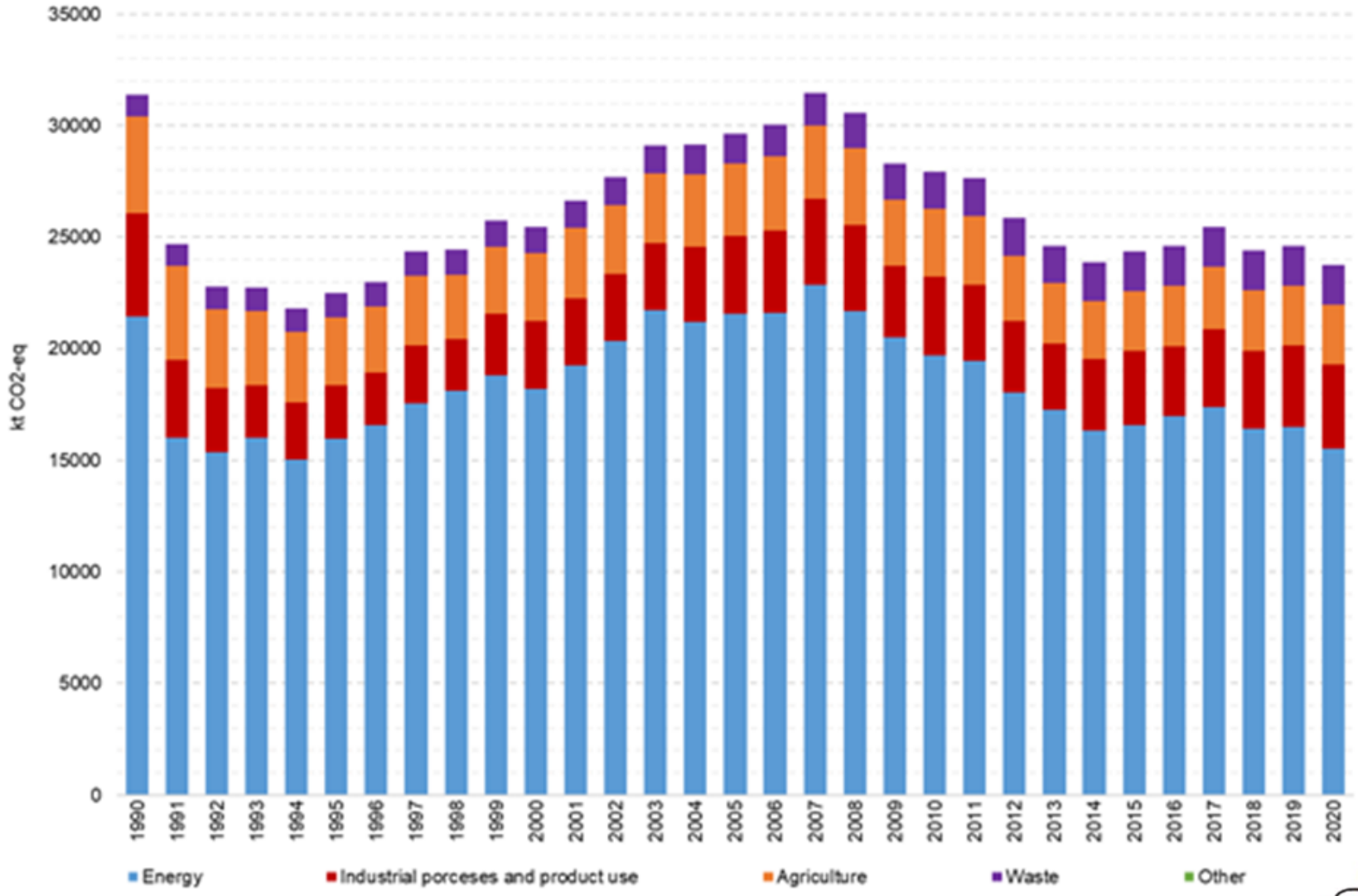
NIR 2023 (Data: 1990-2021)

Funded by the European Union



GHG emissions

Total GHG emissions in 2020:
23.758,4 kt CO2 eq
- 24,33 % below
- emissions in 1990 (without LULUCF)



Review of GHG Inventory

Funded by the European Union

- Croatia has undergone seventeen reviews so far

- in-country review in 2004, 2008, 2012 and 2018
- centralized reviews in 2005, 2006, 2009, 2010, 2011, 2012, 2013, 2014, 2015 2016, 2017, 2019 and 2021.

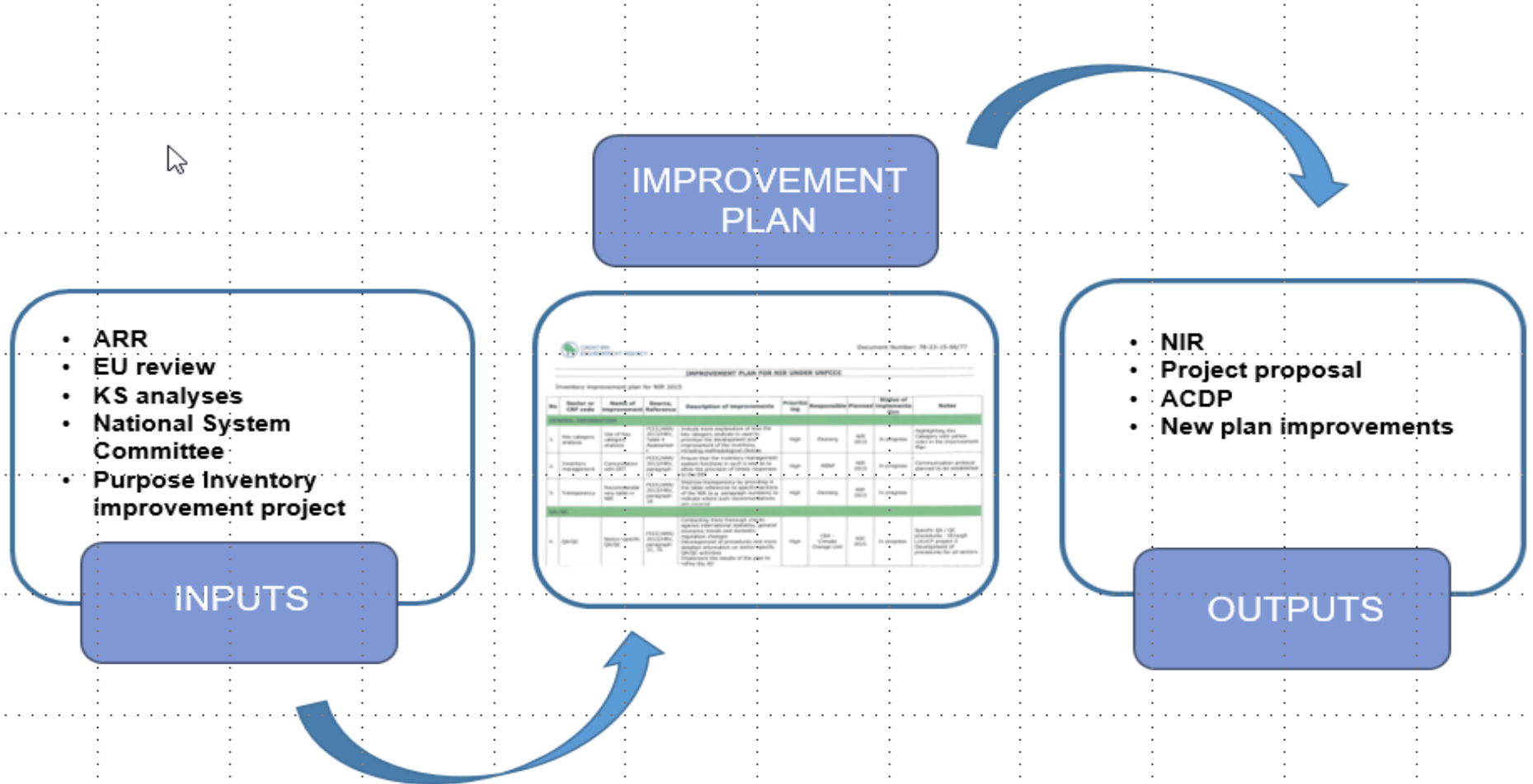
- Issues recommended by the ERT have been included in next inventory report as far as possible.

- Inventory development is never-ending process - improving is imperative

SAČUVAJMO KLIMU

Inventory Improvement

- Inventory development is never-ending process - improving is imperative
- Improvement plan is a tool for controlling development process and optimization of resources



Improvement Plan

No	Sector or CRF code	Name of improvement/ Type of issues /TACCC	Source, Reference	Description of improvements	Responsible	Planned	Notes
ENERGY							
1.	CRF 1.A.1.a Public electricity and heat production – qaseous, liquide and solid fuels – CO_2	Country-specifics CO_2 EFs Accuaracy	In country review document 2018., E.1	Take steps to optain and use plant-specific CO_2 emission factors to improve accuracy of emission estimates Apply country-specific factors to estimate emissions for the main fuel types EFs should be aviable from information collected under the EU ETS	CAEN – Climate Change Unit	NIR 2019	Project: „Izrada nacionalnih faktora emisije CO_2 iz podsektora 1A1a Proizvodnja električne energije i topline za potrebe izrade Inventara emisija stakleničkih plinova za razdoblje 1990.-2017." UGOVOR broj: 70/18"
2.	CRF 1.A.2. Manufacturing Industries and Construction – Gaseous, liquid and solid fuels CO_2, CH_4, N_2O	Time-series consistency of the AD Consistency	In country review document 2018., E.2	Take steps to ensure consistency of the AD for fuel use in manufacturing industries and construction, and of the type of AD used for the estimation of CO_2 emissions from gas transmission pipelines Improve on the consistency of the NIR, time-series consistency is necessary from the base year until the latest year	MEE	2020	

No	Sector or CRF code	Name of improvement/ Type of issues /TACCC	Source, Reference	Description of improvements	Responsible	Planned	Notes
3.	CRF 1.A.2.	Industry analysis balance for the period from 1990 to 2000	In country review document 2018., E.3	Development of Industry analysis balance for the period from 1990 to 2000	MEE	NIR 2021	
4.	1.A.2.q Other	Emissions from construction Allocation of 1A2gv emissions to 1A2f sector	In country review document 2018., E.5	Emissions from cement and should therefore be reported under 1A2f (non-metallic minerals)	Authorised institution	NIR 2021	
5.	1.A. Fuel combustion – sectoral approach – Gaseous, liquid and solid fuels CO_2,	Accuracy	In country review document 2018., E. 8, E. 9	1A1a category and synchronizing them with EU ETS data	MEE	NIR 2019	

LULUCF sector improvement

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- Croatia has strong support for research on improving LULULCF sector - decrease uncertainty, finding PAMs for enhancement of sinks and to improve projections

- CROLIS – Croatia Land Use Information System (LIFE project)
- Project on enhancing sinks by removals in LULUCF sectors
- Capacity building projects for LULUCF projection
- CROWOOD project- Harvested wood product modelling
- Deadwood research and modelling

Strengths and weaknesses

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- **STRENGHTS**
- - established national system with all legal and institutional
- arrangements
- - established Committee for national system
- - financial means for necessary researches are available from
- auctioning revenues
- - Authorized Institution elected for three year period by public tender
- - good cooperation established with research institutions
- **WEAKNESSES**
- - insufficient number of experts in public institutions
- - frequent changes of expert in public institutions
- - long period needed for obtaining of necessary knowledge to be inventory experts

Thank you for your attention

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PERSPEKTIVEN FÜR UMWELT & GESELLSCHAFT umweltbundesamt

UNDP

EU4Climate

Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, Ukraine

Roadmap for the development of a functional National Greenhouse Gas Emissions Inventory System and MRV System for Georgia

Draft Final Report

November 2021

Produced by **Maria Purzner**
Expert on Emissions Inventories and MRV
Environment Agency Austria

Based on Cooperation Agreement between the United Nations Development Programme (UNDP) and the Environment Agency Austria (EAA) within the Eastern Partnership (EaP) regional project EU4Climate, financed by the European Union (EU)

Project number: EU4Climate 00115652

Table of Contents

*The author would like to thank **Ms Olga Gassan-zade** for her valuable contributions and support during the compilation of the document.*

1. Context:

1.1. MRV

Monitoring, Reporting and Verification of GHG emissions is an important tool in combating climate change. MRV is a term used to describe all measures that countries take to collect data on emissions, mitigation action, and support. In order to be able to see progress of a country's struggle to lower emissions, and to compare its efforts with that of the global community, it is necessary to have an MRV system in place that adheres to the same principles as that of other countries.

The three letters stand for the following principles:

- Measure or monitor (M) data and information on emissions, mitigation actions and support. This can entail measured GHG emissions, estimating emissions or emissions reductions utilizing activity data and emission factors, calculating changes relevant to sustainable development, and collecting information about support for climate change mitigation
- Report (R) by compiling this information in inventories and other standardized formats to make it accessible to a range of users and facilitate public disclosure of information
- Verify (V) by periodically subjecting the reported information to some form of review or independent assessment to establish completeness and reliability. Verification helps to ensure accuracy and conformance with any established procedures, and can provide meaningful feedback for future improvement.

MRV can be applied to emissions of GHG, on a national, organizational and/or facility level, and can be reported in the form of an emissions inventory. However, MRV can also be applied to mitigation actions (e.g. policies or projects) in order to assess their effects on emissions, but also on sustainable development or the implementation of projects, without estimating emissions. This can also be applied to support tools, like climate finance, technology transfer and capacity building, in order to track provisions and receipt of climate support and in order to assess the impact of this funding.

This gap analysis focuses on the MRV of GHG emissions on a national level.

The basis for an MRV system for the development of GHG emissions in the National Inventory Report (NIR). In the NIR, a country provides information about the development of GHG emissions from the different source and sink categories, based on the methods outlined in the guidelines provided by the IPCC. As this is an international framework that's binding to all parties to the UNFCCC that have to report their emissions (with different reporting obligations for developed countries and those on the path of development, which will be described in the next chapter), emissions timelines are comparable between countries and allow for a global overview of emissions.

1.2. The Paris Agreement

The Paris Agreement, which was signed by Georgia in 2016 and ratified in 2017, was adopted with the objective to lower global emissions in a way that global temperatures will not rise above +2°C by 2050 (whilst aiming for a maximum of 1.5°C). It follows the Kyoto protocol, that was ratified by Georgia in 1999. The Paris Agreement aims to do so by strengthening the global response to climate change in

general, including by: committing to a long-term temperature goal; enhancing adaptive capacity and climate resilience; and making finance flows consistent with low-emission development pathways. Differing national circumstances[1] will be taken into account, which is a shift away from the differentiation between developed and developing countries, which also increases obligations of developing countries.

Each Party to the Paris Agreement is obliged to determine at the national level the actions they are able and willing to take in order to achieve the objective of the Paris Agreement. These so called "Nationally Determined Contributions" (NDCs) can contain efforts on mitigation and adaption, but also by providing the means of implementation (finance and technology transfer, as well as capacity building) to developing countries.

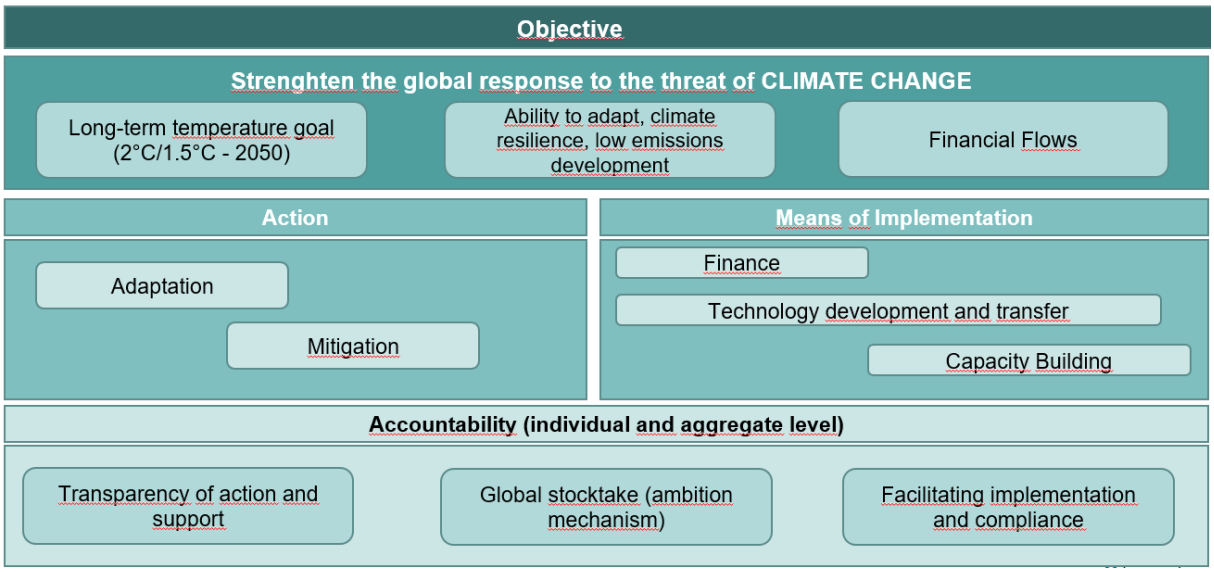

Figure 1: Paris Agreement: the bigger picture

Parties will have to report NDCs every five years and will have to put domestic mitigation measures into place in order to achieve them. Every five years, a global stocktake will take place, where the CMA[2] will take stock of the implementation of the Paris Agreement and assess the collective progress towards achieving the purpose of the PA and its long-term goals.

NDCs should be clear and transparent, in accordance with guidance from the CMA, while taking into account existing methods and guidance under the UNFCCC. NDCs will be recorded in a registry (handled by the UNFCCC Secretariat). Countries can always adjust their existing NDCs in order to enhance their level of ambition over time, but have to meet the minimum as described in their NDCs, that were put forward by the parties when joining the Paris Agreement (as Intended National Contributions, or INDCs). Depending on the timeframe of the INDC, parties will have to report new NDCs or updates of their NDCs every 5 years to cover the period of 10 years onwards.

In order for the CMA to be able to follow track on the implementation of NDCs, Parties to the PA will have to report on their progress in a transparent manner. This is why the *Enhanced Transparency* Framework was decided upon, its *Modalities, Procedures and Guidelines (MPGs) for the Transparency*

[1] It should be noted that there is no definition of „national circumstances"
[2] the Conference of the Parties serving as the meeting of the parties to the Paris Agreement, so all states that are Parties to the Paris Agreement

of Action and Support contain all necessary obligations for how, when and what parties will have to report.

A solid MRV system will help the country to be able to report on the implementation of its NDCs, the changes in emissions and also to report projections of emissions with measures in place.

1.3. Reporting Obligations now and then

The UN Framework Convention on Climate Change, ratified by Georgia in 1994, split Parties into two groups: Annex-I countries, i.e. industrialized countries that were members of the OECD in 1992 plus countries with economies in transition, like the Russian Federation, the Baltic States, and several Central and Eastern European countries.[3] Non-Annex I Parties were mostly developing countries, but also countries that rely heavily on income from fossil fuel production and commerce, and might thus feel more vulnerable to the potential economic impacts of climate change response measures.

This meant that Georgia, as a non-Annex I country, so far had the following reporting obligations:

1. National Communications (NC): which should be submitted every four years, and contain chapters on national circumstances and institutional arrangements; a National GHG inventory; a description of steps taken or envisaged to implement the Convention; other information considered relevant to the achievement of the objective to the Convention, constraints and gaps, and related financial, technical, and capacity-building needs; and an optional technical annex. Georgia submitted four National Communications in 1999, 2009, 2016, and 2021.
2. A Biennial Update Report (BUR): which should be submitted every two years, with chapters on national circumstances and institutional arrangements relevant to the preparation of the national communications on a continuous basis; a National inventory of all GHG (except F-Gases), including a National Inventory Report (NIR) as a stand-alone document or part of the BUR); Mitigation actions and their effects, including associated methodologies and assumptions, objectives, progress of the implementation and estimated outcomes, international market mechanisms and their measurement, reporting and verification; constraints and gaps, and related financial, technical and capacity needs, including a description of support needed and received; description of support needed and received, also information on support received for the preparation of the BUR; information on domestic MRV, any other information that the Party considers relevant to the achievement of the objective to the Convention; and an optional technical Annex. Georgia has so far submitted two BURs; in 2016 and 2019.
3. The BUR is then subjected to the International Consultation and Analysis (ICA), which is conducted in a manner that is non-intrusive, non-punitive and respectful of national sovereignty that aims to increase transparency of mitigation actions and their effects. It consists of two steps, namely a technical analysis by a team of technical experts in consultation with the Party, resulting in a summary report, and a facilitative sharing of views. Georgia underwent two ICA cycles in 2017 and 2020.

The ICA, i.e. the review process, is an important part of reporting, when reports are subjected to a peer review. This should not be seen as an embarrassing test a country needs to pass, or a way of unveiling incompetence of inventory compilers, but as a chance to being able to improve the quality of

[3] A list of all parties to the Kyoto Protocol can be found here: https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states

inventories. In this process, reviewers, who themselves are inventory compilers of other countries, take a critical look at inventory reports of other countries and compare them to the reporting guidelines and rate them according to the TACCC principles (see next chapter for a description of inventory principles). Review findings always help an inventory team to increase transparency and the overall quality of their work. Becoming reviewers themselves help inventory compilers to understand their own work better, and to also tackle their own inventory report from the point of view of a reviewer, thus again increasing the quality of their own work.

Reporting under the ETF will mean that current non-Annex I Parties will have the same reporting obligations as Annex I Parties, with a few flexibilities to those developing country parties that will need them in light of their capacities, and with longer intervals between reports.

From 2024 onwards, developing Parties will have to submit:

1. National Communications every 4 years, as a stand-alone report, or as an annex to the BTR in those years a BTR is published. Differences between NCs under the Kyoto Protocol and the Paris Agreement are not yet finalized, but can be considered minor.
2. Biennial Transparency Reports (BTR): will contain chapters on GHG emissions and removals (with the NIR as a stand-alone report, or part of the BRT); the NDC tracking progress; Adaption, Support needed and received; and on areas of improvement: where parties can improve their reporting.
3. National Inventories (incl. National Inventory Reports) every two years (see Section 2.2.1).
4. Undergo a Technical Expert Review every two years, which is a facilitative, multilateral consideration of progress.
5. Review of the National Inventory every two years.

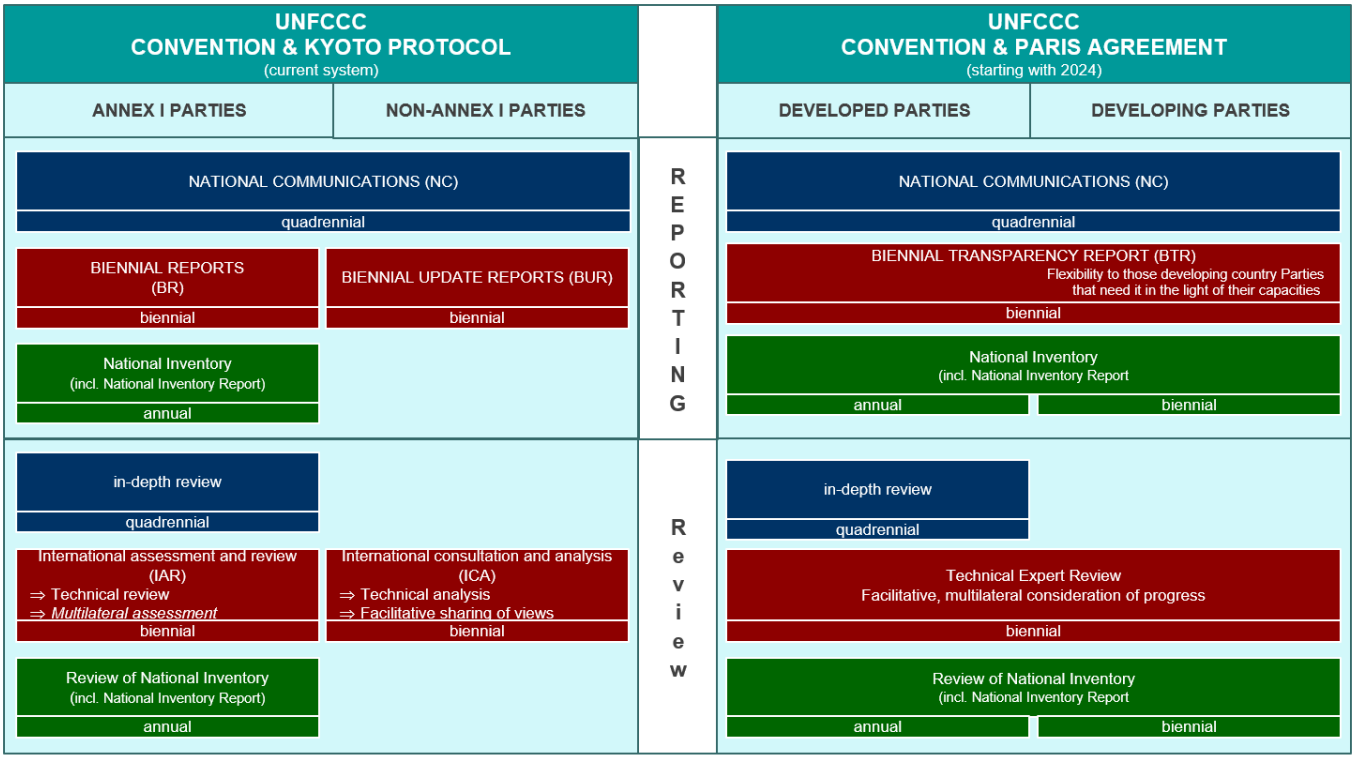

Figure 2: Reporting Requirements for developed and developing countries under the UNCCC Convention&Kyoto Protocol, and changes under the Paris Agreement, source: WRI (2017) Designing the Enhanced Transparency Framewrok, Part 2: Review under the Paris agreement, modified Source

1.4. Modalities, procedures and guidelines for the transparency framework

In order to make sure that all Parties to the PA report in a comparable and transparent manner, the CoP decided on modalities, procedures and guidelines for the transparency framework[4]. In it, all basic rules are put forward for all Parties on how to report from 2024 onwards. The MPGs provide a framework for the reporting obligations. In chapter II, necessary information on national inventory reports of anthopogenic emissions by sources and removals by sinks of greenhouse gases are laid out.

During the 2021 CoP in Glasgow further provisions for most elements of the MPGs were decided upon. This includes an outline and common reporting tables for the National Inventory Document (which will replace the National Inventory Report), but also information that will be necessary to track progress and information on support, i.e. the common tabular formats. It was also decided on an outline of the technical expert review, and for future reviewers, outlines of a training programme. The Biennial Transparency Report was also outlined, it will contain all elements of action and support.[5]

1.4.1. GHG inventory principles

The GHG inventory principles as laid out in volume 1, section 1.4 of the IPCC 2006 Guidelines for National Greenhouse Gas Inventories are still applicable. They provide the basis for transparent, accurate, complete, consistent and comparable inventory reporting, i.e. a high quality of reporting.

Transparency: information on the compilation of inventories is available in a report, in such a way, that individuals or groups other than the inventory compilers can understand how the inventory was compiled, and that documentation and reporting is done according to the guidance in chapter 8 of volume 1, and that emissions were calculated using methods laid out in the IPCCC guidelines, volumes 2-6.

Accuracy: Emissions are estimated in a correct manner, with neither over- or underestimates, so far as can be judged.

Completeness: Estimates are reported for all relevant categories of sources and sinks, and gases, as well as for all relevant years. Where data is not available, the absence of this estimate should be clearly documented, together with justification for exclusion.

Consistency: Estimates for different inventory years, gases and categories are made in such a way that differences in the results between years and categories reflect real differences in emissions. Inventory annual trends, as far as possible, should be calculated using the same method and data sources in all years and should aim to reflect the annual fluctuations in emissions or removals and not be subject to changes resulting from methodological differences.[6]

[4] 18/CMA.1 Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement; Report on the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on the third part of its first session held in Katowice from 2 to 15 December 2018; Addendum, p. 18ff

[5] For a concise summary on the decisions of COP 26 in relation to transparency, and information on transparency under the Paris Agreement, please refer to Understanding Tranparency Guidance

[6] The IPCC guidelines provide guidance on data collection in chapter 2, methodological choice and identification of key categories in chapter 4, and time series consistency in chapter 5 of volume 1 of the 2006 guidelines

Comparability: the inventory is reported in a way so that it can be compared with other national greenhouse gas inventories of other countries. This is the case, as long key categories are chosen appropriately[7] and emissions are calculated using the IPCC reporting guidance.

1.4.2. National circumstances and institutional arrangements

According to the MPGs, each Party should[8] implement and maintain national inventory arrangements, including institutional, legal and procedural arrangements for the continued estimation, compilation and timely reporting of national inventory reports in accordance with these MPGs. National inventory arrangements can vary by Party depending on their national circumstances and preferences, and change over time. Each Party shall report on the following functions related to inventory planning, preparation and management:

(a) Its national entity or national focal point with overall responsibilities for the national inventory;
(b) Its inventory preparation process, including division of specific responsibilities of institutions participating in the inventory preparation to ensure that sufficient activity data collection, choice and development of methods, emission factors and other parameters are in accordance with the IPCC guidelines referred to in the MPGs (§20)
(c) Its archiving of all information for the reported time series, including all disaggregated emission factors and activity data, all documentation about generating and aggregating data, including quality assurance/quality control (QA/QC) review results and planned inventory improvements
(d) Its processes for the official consideration and approval of the inventory.

1.4.3. Documentation and archiving, Quality Assessment

The MPGs in Chapter C point 6 refer to a QA/QC system, in which basic specifications are provided. Even though developing country Parties are given flexibility and are encouraged only to establish such a system, it should be noted that a QA/QC system with good documentation and archiving is not an unnecessary addition to a National System, but a foundation: the better a QA/QC system, the easier it becomes to enhance the quality of reports, to find references and to make sure that information does not get lost with changes in staff.

Also the MPGs state that a QA/QC system is a requirement for all parties, when it comes to key categories and those categories where significant methodological changes and or data revisions have been applied. The IPCC guidelines provide information for a basic QA/QC system.

2. Roadmap for Georgia

[7] According to Volume 1, Chapter 4 of the 2006 guidelines
[8] Please note: „should“, in the context of climate negotiations, means that an action is not required, but advised. “shall”, on the other hand, means that an action is required. More information on the terminology of climate negotiations can be found here: 10148IIED.pdf

2.1. Aim

A strong National System with defined roles, functioning data flow, good quality data, a strong QA/QC system is paramount for TACCC. The aim of the proposed roadmap is to facilitate development of a strong, competent and sustainable National System with defined roles, and experts that are able to provide the necessary reporting at a high standard. A well-established National System will assure long lasting quality, with increasing competence from experts. Depending on financial and legal backing of the country, this should be a team with clearly defined roles and rights, which would also aid data collection. A thorough QA/QC system that includes documentation and archiving is necessary as a foundation for continuous improvement, ensuring that the system survives changes in staff, as well as making quick and concise responses during a review process possible.

It should be noted that this analysis deals with the MRV of national emissions only, i.e. the national GHG inventories and reporting of national emissions under the Transparency Framework. It specifically focuses on identifying and addressing missing gaps and avoiding redundancy between existing structures, as pointed out in Recommendation 1 of the EU Acquis Roadmap.[9]

2.2. Specific situation in Georgia - Legislative Context

The "Gap analysis of the current legislation in Georgia and development of a roadmap outlining EU4Climate support to Georgia in alignment with EU acquis included in Bilateral Agreements on Climate Action and/or Energy Community Treaty" produced by Irakli Samkharadze for the Energy Community Secretariat offers one of the most recent independent insights into the existing legal framework concerning GHG reporting in Georgia. Abridged findings of this study are presented here for easier reference.

Development and sharing of GHG emission data in Georgia, needed for implementation of the UNFCCC transparency requirements, is regulated by:

- ✓ Commitments under the UNFCCC, in particular articles 4.1 and 12.1, which provide the legal basis for developing the GHG inventory.
- ✓ Commitments under the Paris Agreement, particular article 13.

Interagency cooperation is regulated by Resolution 454 of the Government of Georgia, dated January 23, 2020, on the establishment of the Climate Change Council (CCC). The CCC, among other, is called upon to facilitate the national MRV system under the Paris Agreement Enhanced Transparency Framework and approves the relevant submissions and reports, including national communications and biennial update reports.

Extensive work has been undertaken to elaborate enhanced reporting arrangements, which are presented in detail in the second BUR. However, at this moment, the anticipated MRV system remains at the proposal stage.

[9] Gap analysis of the current legislation in Georgia and development of a roadmap outlining EU4Climate support to Georgia in alignment with EU acquis included in Bilateral Agreements on Climate Action and/or Energy Community Treaty (Lot1), Part III: Roadmap for the EU4Climate support to Georgia in the alignment with EU acquis (deliverable 3), by Irakli Samkharadze, p. 20

2.3. Specific situation in Georgia – The existing National System

The Ministry of Environmental Protection and Agriculture (MEPA) is responsible for GHG inventory development coordination, as well as in charge of the elaboration and implementation of climate change policies. The Climate Change Division, a subunit of the Department of Environment and Climate change, is responsible for the coordination of the inventory report, and its submission to the UNFCCC. The LEPL (Environmental Protection and Education Centre), an independent non-commercial legal entity under public law of Georgia, prepared the most recent the inventory report with the assistance of independent international and local expert. The inventory-related activities so far have mostly relied on the programme or project-based support, particularly the GEF of National Communications and BURs, with UNDP acting as the implementing agency.

On the operational level, a Memorandum of Understanding between MEPA and GeoStat has been in place since 2014 and there is a good understanding between the statistical agency and the inventory team. There is also reportedly a strong collaboration between the National Statistics office of Georgia, which acts as the main data provider, and other public and private entities. Data provided by the statistical agency is mostly related to the energy balance as well as the energy sector, there seem to be gaps in the IPPU, agriculture and waste sector (see Annex II for more information). The assessment performed under the EU Acquis analysis did not deem the Memorandum a stable and obligatory legal basis for fully operating national MRV system due to lack of explicit references to data provision and sharing.

There is also an internal cooperation between experts working on air pollutants under the CLRTAP convention and those on greenhouse gases. However, data used for reporting under CLRTAP often does not match that of reporting under the UNFCCC, which could lead to questions during the reviews for the respective reporting obligation.

At the same time, there is no legal instrument that could act as a basis for a national inventory system or that provides the inventory compilation team with a mandate to collect data. There are no specific legal obligations for data providers (including industrial companies and/or GeoStat) to transfer any information to the responsible bodies. All submissions of data from private companies are based on voluntary agreements and are provided on ad hoc basis, with no sustainable reporting system in place.

The continuity is ensured by back-to-back UNDP-GEF funded projects and engagement of experts that participated in the preparation of previous inventories and are familiar with 2006 IPCC Guidelines and software. Similar approach applied to ensuring quality of the inventory process. There is no QA/QC plan, even though there are several checks in place, performed by the inventory compilers and data managers, but there is no overall QA/QC plan.

The 2nd BUR identifies the lack of resources and lack of supporting legal framework as the two major constraining factors affecting the national inventory system. The lack of resources primarily affects the training in inventory principles required in order to provide each sector expert with a deputy, sector specific problems connected to lack of data, as well as a the time period between inventory cycles, which will become more and more important under the PA with reviews and the necessity of improvement plans. The lack of legal framework is identified as the second main constraint, which affects primarily data collection. Providing more power to the inventory team for data collection would significantly improve the quality of the inventories.

The MRV implementation plan in Georgia's 2nd BUR elaborates plans for the establishment of a legal framework that would cover the necessary institutional arrangements of the MRV System. The MEPA

and the Office of the Prime Minister of Georgia are expected to facilitate consultations with relevant government entities to operationalise the proposed framework. The MRV system plans primarily cover institutional setup for future reporting, but also touch on MRV of mitigation action and finance that are not covered in this document. The BUR suggests a focal point per ministry responsible for providing data for the inventory and recommended changes to the charter of GEOSTAT that would be necessary for it to provide additional data.

2.4. Gaps and Barriers

A strong National System with defined roles, functioning data flow, good quality data, a strong QA/QC system is paramount for TACCC. This section of the report describes in detail each of the main gaps and barriers that have been identified in the general overview. The subsections cover different aspects of building a sustainable national system with a clear chain of command, where experts are nominated, trained, and can provide continuous work throughout the inventory cycle.

Figure 3: Inventory cycle: under the PA, Georgia will have to report every 2 years. This graph demonstrates the additional steps that will be required of the inventory team beyond the compilation of the inventory and the related report. These steps include implementation of the review findings, trainings of experts, and improvement of the processes before the next cycle.

2.4.1. Gaps in Legal Mandate and Delegated Responsibilities:

The Ministry of Environmental Protection and Agriculture of Georgia (MEPA) is nominated as the entity with the overall responsibility for the compilation of the national GHG inventory by a government decree. As described in section 2.3 above, the inventory team, however, is based at the LEPL and consists of experts from other entities that are recruited for each inventory cycle with funds from the GEF/UNDP.

The legal mandate delegates the MEPA the overall responsibility for the inventory, but provides no legal leverage to collect the data. This makes it difficult for the inventory team to collect some of the

data, especially data not otherwise available through central statistical services. Further issues arise with potential confidentiality of the data and procedures for their handover.

This analysis shows that the current MRV system is not built upon a clear structure. MEPA has the overall responsibility for the inventory, established by the government degree, however, the decree does not set out any personnel requirements or provisions, hence there are no arrangements for a long-term structured team, no clearly defined roles, or a chain of command. A project manager is appointed for each GEF activity financing the inventory cycle and there is a national GED/UNDP project director who must be a public servant from MEPA. Universities and international as well as national experts work on the inventory.

There is no QA/QC plan available, even though one is currently being developed, and, consequently, QA/QC responsibilities and roles are approached in the same project-based manner as the rest of the inventory preparation process.

At the end of the inventory cycle, experts submit information to the project manager for storage. If there are questions to review, the experts usually offer their expertise on a voluntary basis. This is due to the fact that experts are currently hired on project-basis for each inventory compilation and when the actual submission of the inventory is completed, any remaining tasks have to be performed on a voluntary basis. This means that recommendations or encouragements from the review cycle cannot be taken into account, and the time between the different inventories cannot be used for improvements, such as looking for new and better sets of data, contracting studies to acquire better data and improve emission factors, training experts, etc.

The Roadmap of the 2nd BUR specifically recommends to increase capacity of the inventory team, as currently there is only a very small number of experts working on the MRV system, and to provide sufficient legal and financial means to support it.

2.4.2. Issues related to data collection:

Quality of inventory data depends on the availability robust and accurate data. GEOSTAT is the main data provider, and the cooperation between the inventory team and the statistical agency is close and functional. However, there are still some obstacles to applying higher tier methodologies, which will become more important in reporting of key categories under the PA. Georgian experts underlined the following aspects:

- *Lack of data on land use change and forestry in the LULUCF sector.* The new forest inventory starts with 2019, and even though currently data on land use change are being tracked, there is a gap in data between 1990 and 2019. For some subcategories, such as soils and deforestation, the same data as in 2003 is used, which increases uncertainty. Land use change and forestry data are important to estimate carbon pools. This lack of data makes it difficult to calculate sources as well as sinks of CO_2 in this category. Carbon sinks are especially important for countries with vast forests.
- *Lack of disaggregated data in the transport sector.* Data in a certain state of disaggregation is not available, making it impossible to apply higher tier methodologies. This issue is currently under discussion with GEOSTAT, it might be necessary to commission studies on this important sector.
- *Need to improve data in the IPPU sector.* This in particular concerns data for metallurgy and ferroalloys, as well as the F-gases sector, where data is inaccessible. When it comes to F-gases,

statistical data often are of no use, as they only cover bulk imports, and are not split into the different blends of refrigerants.

- *Lack of data on landfills and wastewater.* Efforts are currently being undertaken to improve information on that sector.
- *Agriculture data need improvement.* Efforts are being undertaken to improve available data.
- *Lack of country-specific emission factors.* Country-specific emission factors are necessary for higher tier methodologies. In order to address this, studies need to be commissioned and supervised to ensure that necessary information becomes available in a structure that can be used for inventory compilation.

An exhaustive table of subsector specific data providers and lack of data can be found in Annex II.

2.4.3. QA/QC System:

Currently, no fixed QA/QC system is in place. GIZ as an external consultant did some checks at the end of the last inventory cycle. At the same time, universities, where some of the background calculations were performed, had no QA/QC tasks to follow. A QA/QC system is currently being established, the recommendations it should tackle are provided in Section 3 below.

3. Roadmap for the MRV System:

3.1. Overview:

The first step necessary as a foundation for all future developments is the decision on the structure of the MRV system. On an operational basis, depending on the structure, experts will have to be nominated, and a team structure and chain of commands will have to be decided on. This provides a basis for the QA/QC system, where all decisions will be collected. This QA/QC system will serve as a basis for data processing, archiving, and avoidance of mistakes, but also as a basis for a training plan for experts. On a legal basis, institutional procedures that were decided upon, will be set in a legal text, which can first provide the inventory team with a mandate, either via a bylaw of decree, which can – in the future – be changed into a law. This should contain clear definitions of who does what, and provide institutions involved in the MRV system with a legal mandate that helps to obtain data, even if it is sensitive.

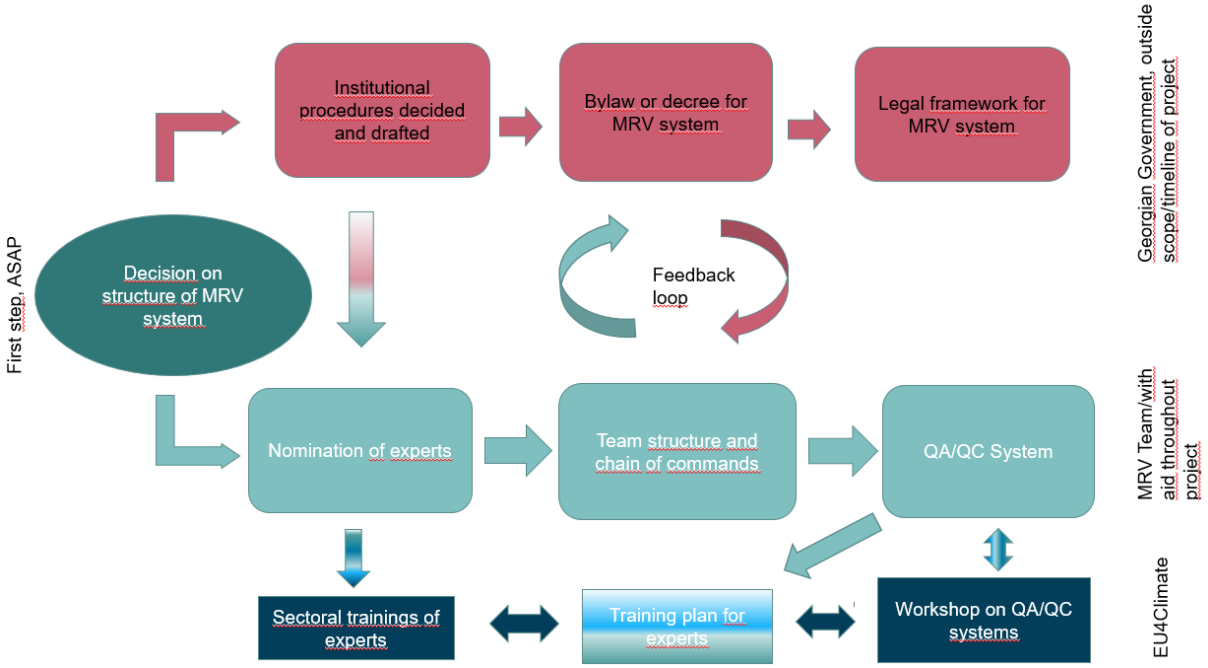

Figure 4: Overview of the different aspects of the Roadmap, as well as their interactions.

3.2. Structure and Legal Mandate

In the second BUR, the suggested outline of a law foresaw a focal point per ministry. Such a focal point to support inventory compilers, could ease data collection. It was also suggested that the analysis by GIZ for the institutional setup should be reworked, taking into account changes that have taken place since that survey took place. Independently, a general decision should be taken of how the inventory system should work in future, by either extending contracts of existing inventory compilers, or by setting up a fixed team inside MEPA or LEPL that focus on inventory compilation. Their work should continue after publication of the inventory report, by improving methods used. This would include searching for country specific, or plant specific data between inventory cycles, as well as commissioning and overseeing studies on country specific emission factors.

The institutional setup in Georgia seems to work well, and there are no procedures restraining the compilation of an NIR. However, considering the fact that experts are hired on project basis only, and there is no archiving of data in place, the following points should be taken into account regarding for reporting under the PA:

The inventory cycle currently established in Georgia does not allow for long-term improvements (either based on review recommendations or simply because inventory compilers were made aware of new data sources), which usually take place between inventory cycles. This poses no problem during the current reporting and reviewing system but could become apparent during reporting under the Paris Agreement. Trainings of sector experts can also be seen as an improvement, and would also take place between inventory cycles. These

trainings could provide sector experts with additional ideas on how to tackle problems and where to look for additional data, which improves inventory quality.

➔ The improvement process should be taken into account when planning the inventory process, and additional funds should be requested for sectoral experts to continue their work between inventory cycles. This would also benefit their availability during the review process.

Under the PA, Georgia will also undergo reviews on a biennial basis. These reviews will go more into depth regarding the quality of the inventory, and recommendations will eventually include aspects that higher tier methodology will have to be applied for key categories etc. In any case, information on the methodology used should be available, and stored, because details can be forgotten. Therefore, in addition to the points raised above, each sector expert should have a deputy that can provide information and answers to questions, if the main sectoral expert is not available, for whatever reason. Information on methodologies used should be available to everyone involved in the review process, in order to be able to trace information and reasoning of applied methodologies, literature used, emails from companies etc. that might contain necessary information that happened to not be included in the NIR.

➔ Each sector expert should have a deputy that is trained in the basics of the respective sector, and a QA/QC system needs to be in place that allows for central storage of information (see chapter on QA/QC system below)

If focal points are provided per ministry, and if GEOSTAT's charter is changed to aid the Georgian MRV system, experts within ministries should be trained in inventory compilation in order to understand what is needed. It would be possible to have a hybrid system of hired experts, and experts from ministries, but in any case, there should be a strong collaboration between those experts.

Given the importance of MRV in the future, and in order to make sure that a team of well-trained experts exists, trainings in the basics of each inventory sector could be provided. Training could be targeted for inventory compilers, future deputies, but also for those people identified as focal points (as suggested in the roadmap of the 2nd BUR) in different ministries, so that they can understand the logic behind inventory compilation and what kind of data is needed. A list of trainings is provided in the next chapter, proposed workshops.

➔ A law or an amendment to an existing law is required to allow the inventory team to access sensitive data from companies, enterprises etc., as well as data reported under other laws. An emphasis should be made on LULUCF data, possibly with external help, to get data, to find surrogate data to close gaps, and to work on establishment of data collection on those sources and sinks that are not available yet.

➔ Legal support by focal points in different ministries and amendment of GEOSTAT's charter as suggested in the 2nd BUR would definitely improve access to more robust data and thus increase the overall quality of the inventory.

➔ Should data collection be performed by a different entity, it is important to train data collectors in inventory preparation and the principles of good practice, so that good quality data is collected together with necessary information for the sectoral experts.

3.3. Data collection

Data should be collected by trained experts, who know what to look for. For the sector specific issues described in chapter 3.3.2. resources should be made available that allow for closing the identified gaps. This can be done by contracting studies, as well as help from the outside. Sectoral experts should be able to provide their input in what is needed. In the cases where data is not provided due to data sensitivity, bilateral talks between data provider, MEPA, the head of the MRV team, and sectoral experts should take place, where handling of confidential data is discussed (security of data storage, options in reporting sensitive data etc.). Where this does not work, the ministry should have a mandate (see chapter 4.2) in obtaining data.

In order to obtain the best available data, all experts involved in data collection need to be trained in inventory compilation and understand the sector at hand. All experts involved in a sector should work closely together, which would allow for quick responses to questions during the review process, and take recommendations and encouragements of a review as an incentive to improve the quality of their respective sectoral chapters.

In any case, synergies should be used and CLRTAP and UNFCCC reporting should be coupled in order to avoid differing sets of activity data, and to avoid double work, in those sectors where calculation is based on the same activity data. Studies should be commissioned to improve data situation for those sources where it is necessary.

3.4. QA/QC System:

A QA/QC system which assures a higher quality of inventories needs to be put into place. Even though procedures should be written down and the compliance with those rules should be checked on a regular basis, it is not necessarily resource intensive or expensive, only a secure server needs to be available for the storage of data. This QA/QC system, as a minimum, needs to take into account the following issues:

1. *Safe data storage and handling:* in order to calculate a robust inventory, often sensitive data is necessary that provides information on production processes, and the amount of product produced, as well as other information. Often, data provider do not feel at ease to hand over such data to the inventory compilers. There are ways of reporting for sensitive data, that are described in the IPCC guidelines, however, in order to be able to work with sensitive data, the data storage needs to be secure and in a centralized place. This concerns not just sensitive data, but all data that goes into the inventory: reviews take place years after the compilation of the NIR, and even though something seems to be clear at the time of inventory compilation, this memory tends to get lost quickly. Thus, all data that goes into the inventory, plus the calculation sheets, need to be stored in an orderly manner, while the calculation sheets should be set to read-only at the end of an inventory cycle.
2. *Documentation:* thorough documentation makes it easier to follow-up calculation processes after the end of the inventory cycle. This documentation should contain information on where data was obtained, additional information from the data providers, e.g. on unusual

fluctuations, and information on recalculations. It should also contain information on EFs used, the rationale behind applying this particular EF, or information on the emission data used. Anything that could be of use for future years, even thoughts on improvement of calculation methodologies, should be written down and stored centrally. This documentation can also help facilitate providing responses to questions during a review.

3. *Checks and improvements:* there should always be a four-eye principle involved in order to avoid mistakes, either in calculation or in reporting. Thus, sector experts should always have a counterpart, either a deputy or another expert from another sector, who basically does an internal audit of the calculations or report chapters. This is to avoid petty mistakes that lead to a multitude of recommendations or encouragements. The better the report, the more constructive review recommendations will be, because they will address a higher level of reporting. Report recommendations should then be collected in an improvement list, which allows sector experts to work on improvements of methodologies, data or approaches used between the different reporting cycle, thus improving the overall quality of the reports.
4. *Data transfer:* inventories consist of a huge amount of different data. A way should be found of compiling and storing data, and transferring it into the CRF reporter or its replacement, the common tabular format (CTF). This should be done in an organised and structured manner, in order to avoid mistakes during the transfer of data.
5. *Organisation of the team:* the team for inventory compilation should be structured, roles should be clear, and communication to the data providers should be bundled and concise. This means that the team should have a good understanding of processes, and their continuing training in issues close to the inventory should be ensured. Each sector expert needs a deputy, in case one is unavailable for either inventories or reviews. QA/QC plans should be established, and performed during each and every inventory cycle, to ensure that all data is kept and can be accessed in the future.
6. *Reporting:* roles should be established for the compilation of reports, and it should be clear how responsibilities are shared, down to the layout of the report. Sectoral chapters should be cross checked by deputies or other sector experts, in order to make sure that information in the chapters is correct and concise. As reports are the basis for reviews, this approach ensures that the minimum on information gets lost, which will then make future reviews easier.
7. *Capacity:* The capacity for MRV described in the 2nd BUR is low, due to the very small number of MRV experts. This number should be increased, in order to allow for at least 2 experts per sector, and to assure that there is a clear chain of command and clearly defined roles. It is also necessary to make sure that at least one expert per sector is available during the review process, and that sufficient means are available to allow for improvement work between inventory cycles.

No additional software is necessary in order to implement a QA/QC system. Rather, it is based on team structure, certain rules that should be laid down in a manual, and a clear chain of command. This includes two sectoral experts (one with the main responsibility, and a deputy) per sector to allow for cross checking of calculations and as a fall-back option in case one is not available. The Energy Sector, which usually accounts for the biggest share of emissions, might need to be split into subsectors, with several experts working on it. The LULUCF sector, which in the case of Georgia is also of great importance, similarly might need to be split into subsectors, or on external data providers. All correspondence related to the collection of activity data, the applied EF, and emission data need to be stored systematically, with one document per (sub)sector, containing hyperlinks to stored data sources

(emails, reports, studies etc.). Calculation files need to be collected centrally, and stored on a secure, central server, with access only by the people working on the inventory. Clear guidelines need to be applied on how to deal with confidential data. The team working on the LRTAP convention should be in close exchange with people working on the GHG emissions inventory, and should adhere to the same QA/QC plan. Synergies should be used where possible, and in the case of the same data provider, requests should be bundled. Every person with access to the data needs to understand the importance and the reason of the QA/QC system.

Data that will be published needs to be stored centrally and in a single format for all sectors, and a data manager needs to be appointed, who will transfer all information to the CTF tables, and then submit data to the UNFCCC. Sector experts need to be involved in the whole inventory process, including reviews and must be allocated time to enhance inventories afterwards, taking into account improvements suggested by the review team.

Anyone involved in inventory and report compilation should be trained in the QA/QC system's structure, their roles should be clear and concise, and the chains of command defined. Experts working on reports and the inventory need to understand the importance of such a system. Each sector expert works with at least one deputy, who is involved in inventory preparation and report compilation, either as a backup, or as an equal sector expert, each dealing with their respective sub-sectors. In any case, a four eye principle for calculations as well as chapter writing needs to be performed for the work of the other.

➔ The establishment of a QA/QC plan would allow for data to be stored and help secure information on how the inventory was compiled and the rationale behind it. It would improve the overall quality of the inventory and the related reports. The QA/QC system should ensure archiving, providing minimum requirements for information stored in calculation files, an archive for relevant correspondence with data providers, clear roles and chain of commands, training plans for sector experts (e.g. becoming reviewers themselves), a structured and robust system of ensuring timely and concise response to review questions (by making sure that sector experts or deputies are available, and necessary information can be accessed, even years later). This last point is also necessary for ensuring time series consistency of calculations.

4. Proposed workshops

The following workshops are based on the needs taken out of the questionnaire (see Annex), and address the problems mentioned above. They meant as suggestions, some building upon another, and some stand alone. The actual content of the workshops can change according to additional information that becomes available throughout the process. They can be done on a national level or combining several countries with similar issues that are involved in the EU4Climate project.

1. Training Workshop on QA/QC, with a follow up

The aim of this online workshop in 2022 – with guidance by Environment Agency Austria under its current assignment for the EU4Climate project - is to present the Austrian QA/QC system and the experiences of over 20 years of inventory work. Lessons learnt might help with the undergoing

establishment of a Georgian QA/QC system, and some ideas from the Austrian way forward could help with the ongoing process.
As this workshop can be applied to all countries in this project, this would be planned as a regional workshop, with a follow-up national workshop, where ideas and problems can be discussed. This workshop should also be used to plan for sector specific workshops, wherever necessary.

The following workshops can be part of a MRV RoadMap, but might be outside the scope of the EU4Climate Project:

1. Workshop topic – methods for GHG estimation (could be done with sector experts from all involved countries)

   Based on the findings of workshop 1, preparation of targeted trainings with inventory experts. This should be a modular approach per sector, starting on beginners level and also offering one for more advanced sector experts. Aim: inventory compilers are able to compile future inventories, and also be able to apply higher tier methodologies, should better data become available

   - Sectoral workshops on GHG estimation
   - Available data, data gaps, and reaching out to data providers
   - Time series consistency and splicing techniques
   - Writing of NIR chapter
   - Review of NIR chapter of another sector and vice versa, in order to start understanding review processes and necessary contend.
   - Working with the Common reporting tables (CTR) and the CRF reporter
   - Review suggestions: discussion of a way forward.

   Workshops on data availability (on a national level, however, the IPPU – Ozone Unit discussion could be done for all countries at the same time) and synergies with other reporting systems: whatever issue of synergies between CLRTAP and UNFCCC could not be discussed in the first workshop, this should be discussed here, on a sectoral basis, in case problems persist. Otherwise, this should aim at Ozone Units and IPPU experts, in order to define gaps and assess the availability of data on the use of F-gases, as those are usually difficult for sector experts to get access to.
   Synergies in activity data – what is there, what is needed, who gets what?

   - Definition on gaps, decision on moving forward in getting data that is necessary.
   - Are there country specific emission factors and parameters available? If yes, additional information for the others could be available
   - Is information on underlying technologies available? In both conventions, this information can be used for applying tier 2 EFs.
   - Additional workshops depending on sectors, depending on necessity
   - Special workshop with Ozone Unit and IPPU sector experts, in order to define gaps, and assess availability of data.

2. Elements of a QA/QC and verification System (international):

   The outcome should be a centralised QA/QC system, where data is securely and safely stored, and all information is available. This can be done in workshops for all interested countries, with

a final workshop on a national basis, in order to allow for an adaption of necessary tools to the national circumstances.
For the following processes, methodologies will have to be worked out, and put together in a QA/QC handbook that is the basis for a QA/QC system:

- Collection of activity data, selection of emission factors and methods, determination of emission data;
- identification of key categories;
- recalculation of emission data;
- quality management (quality objectives, quality control, quality assurance);
- (internal and external) verification of emission data;
- handling of confidential data
- data storage and management

(1) Necessity of a QA/QC system
Establishment of a basic QA/QC system with all involved experts, also for those working on the LRTAP convention, definition of necessary tools and internal auditing processes. This will have to go hand in hand with preconceived definitions of roles and responsibilities, and the preconceived structure of the QA/QC system. This also includes a training manual for new staff and handover procedures in case of experts leaving.

(2) Tools of a QA/QC system: this needs to involve data storage, documentation of work steps, conservation of calculation files, etc.

(3) Workshop topic - Preparation of "country specific" checklists –general quality control procedures after the trainings on sector specific calculation methods
- Preparation of country specific (tailor-made) checklists category specific quality control procedures
- tailor-made for each sector / category

ANNEX I: Georgia - Questionnaire on National Inventory System as a basis for gap analysis

National System	
Is a single national entity with overall responsibility for the national inventory designated? If yes, what is the name of the institution and what is the legal basis? If not, please explain how the national system works in your country.	The Climate Change Service structured under the Integrated Management Department of MEPA is proposed to be designated as the coordinating entity for the MRV system. [Role includes:] Develop and oversee the implementation of a QA/QC system Currently, there is a proposal that is being discussed in Georgia to establish a Climate Change Agency. If the proposal is adopted by the Government of Georgia, the proposed units under the Climate Change Service can also be established under the new structure to be developed for the new Climate Change Agency. (GIZ Institutional Arrangements P9)
Is the single national entity also responsible for QA/QC and reporting?	
Are roles and responsibilities in the inventory preparation, QA/QC and reporting process defined? This definition shall specify the roles of, and cooperation between, government agencies and other entities involved in the preparation of the inventory, as well as the institutional, legal and procedural arrangements made to prepare the inventory.	• There is no legal instrument in place to mandate different entities to report to the MEPA. • Existing legal framework provides limited environment for coordination on MRV issues across the key line entities. • A legal instrument is needed for the implementation of the proposed institutional structure of the MRV system. (GIZ Concept Note T1) By law, all ministries are obliged to submit annual data to GeoStat, which qualifies this institution perfectly for being the data hub for inventory preparation. Existing data collection forms can be modified or amended to additionally include data needed for GHG inventory preparation from different ministries/sectors. Capacity building for personnel responsible for data collection from relevant sectors is essential to understand the type of data required and why such data is important. (GIZ Institutional Arrangements P15) Currently in Georgia there is a lack of normative framework that will act as a basis for a binding MRV system in the national legislation. (Background Paper P7)

~ Does an inventory compilation team exist? Or are new consultants contracted for each reporting year? Please describe the set-up, whichever is the case.	
~ Are emission inventories for GHG estimated within the same team or project as the emission inventory for air pollutant?	
~ Who is currently in charge of the Inventory Management? Is this the same person for subsequent years, or is someone new nominated for each inventory round?	It is proposed to appoint a GHG inventory coordinator from the existing staff members of CCS (GIZ Institutional Arrangements P10)
~ Are the legal and contractual arrangements in place sufficient to collect data and information needed for inventory preparation? In other words: does obtaining data work in your country, or do you have problems in getting data? Please identify those sectors where this is working well, and those, where problems are occurring.	• There are no formal methods to regularly obtain data from relevant Ministries (data is obtained on ad-hoc basis when needed). • Weak involvement of several Ministries in MRV activities. • Limited coordination across key line stakeholders • Lack of data collection system for some sectors (specifically the waste sector). (GIZ Concept Note T1) • MEPA is clearly seen by all other entities as the coordinating and responsible agency for MRV. • GeoStat is the main source of information and has comprehensive data management procedures. • Several Ministries and Organizations have comprehensive sets of data applicable for GHG inventory. • Willingness to cooperate to enhance the MRV system. (GIZ Institutional Arrangements P11) There is no legally binding obligation of data providers to provide any information to the Climate Change Unit. If the information needs to be collected or created data providers are reluctant to assist. (Background Paper P11) We have problems with data gathering, with identifying adaptation activities and with assessing mitigation actions. The challenge is that every sector needs a different approach in the MRV sector, and this unified common framework does not work for all sectors.

	[Minutes EU4Climate WS 2020]
~ Does the inventory agency (single national entity) have a good understanding with the national agency for statistics? Does the inventory team obtain data from them? Is the statistical agency ready to provide data in a way the inventory team can use them?	GeoStat is the main source of information and has comprehensive data management procedures. Law exists which mandates reporting of some data to Geostat and to Atmospheric Air Protection Service (MEPA). (GIZ Institutional Arrangements P11)
~ Which institution/department is responsible for the preparation of your BUR, NC (and NIR, if stand alone report).	The coordinating entity is responsible for all coordination activities for the MRV system in addition to the compilation of all reports required under the UNFCCC e.g. BUR, NCs, or future reporting requirements under the Paris Agreement. (GIZ Institutional Arrangements P9)
~ Is there a plan on how any national system will transition into the Enhanced Transparency Framework from 2024 onwards? If yes, please provide information on this plan.	
~ In case of an encountered problem, what is the chain of command, and who is responsible for whom in order to find a solution for that problem?	
~ What is, in your view, the most crucial improvements needed to establish a functioning national inventory system?	GIZ Concept Note T3 and T4: Identified Priority Capacity Gaps range from very basic technical aspects as GHG emission estimation over institutional aspects like defining roles and responsibilities up to legal aspects to operationalize the institutional setup.
ELEMENTS OF A QA/QC AND VERIFICATION SYSTEM	
Is a person responsible for coordinating QA/QC activities designated?	Lack of QA/QC system (GIZ Concept Note T1) We would also need QC checklists for all sectors.
Is there a QA/QC plan?	

Are general quality control procedures that apply to all inventory categories and the national total estimates in place?	[Minutes EU4Climate WS 2020]
Are category specific quality control procedures in place and documented (performed by the inventory experts during inventory preparation)?	
Are quality assurance and review procedures, e.g. a peer review prior submission, in place and documented?	
Are verification activities planned/undertaken and documented?	
Is there a procedure for official approvement before submission?	
Are reporting, documentation and archiving procedures defined?	There is no database for archiving of data. (GIZ Concept Note T1) So, we would like to learn about documentation and archiving, MRV for adaptation and also finance. [Minutes EU4Climate WS 2020]
Is a list of terms, definitions and abbreviations available?	Lack of QA/QC system (GIZ Concept Note T1)
Is the QA/QC system following or in line with international standards or comparable requirements?	
Is the QA/QC system audited in any way, and if yes, following which procedures?	
How well are your inventory estimations documented? If one expert leaves, and another one takes over, would expert no.2 be able to understand methods and data sources of his or her predecessor?	GIZ Concept Note T2: Energy Sector well documented, other sectors partly documented.
Is any feedback on the national GHG inventory such as complaints and appeals from national players or issues raised during the review process documented? Are procedures for this inventory improvement process defined and is the outcome documented?	

Do these issues - if justified - trigger improvements of the GHG inventory? Who has the responsibility to define, implement and document the measures?	
Please provide information on any potential improvement that you think are especially important.	GIZ Concept Note T3 and T4: Identified Priority Capacity Gaps range from very basic technical aspects as GHG emission estimation over institutional aspects like defining roles and responsibilities up to legal aspects to operationalize the institutional setup.
Resources (Personnel and facilities and equipment) and resource planning	
Are sufficient resources (personal / time) available/allocated for the (a) preparation of the emission inventory, (b) performing/conducting QA/QC activities and implementing appropriate measure and (c) the preparation of reports?	Understaffing of the climate change service of the MEPA. / Awareness on MRV system and on GHG reporting is limited among several institutions. (GIZ Concept Note T1) There is a lack of resources in CCU to perform Treaty obligations and the current structure hinders CCU's ability to benefit from international financing available from GEF or GCF (Background Paper P12) We, at the Ministry of Environmental Protection, are aware of the MRV framework, but it is not fully implemented yet, due to a lack of human resources. Regarding the capacity, the lack of human resources with climate knowledge is also a problem in other ministries. [Minutes EU4 Climate WS2020]
Are roles within the inventory team defined (e.g. quality manager, inventory expert, data manager)? Can you provide an organisational chart to describe the hierarchical structure within the inventory team?	
Are duties, responsibilities and authorizes of the different roles defined? Can you provide a responsibility matrix for the different steps in inventory preparation?	

Has the personnel involved in inventory preparation adequate education, training, skills and experience and where is this documented (e.g. personal file, CV)?	CCU does not participate in the selection of experts for the preparation of NCs or BURs, while the result of expert's work has to be used by CCU. There is no structure to retain the knowledge brought by experts (Background Paper P11)
Is a fallback option defined in the case of sudden and unexpected absence of personnel, e.g. such as designation of deputies?	
How is it ensured that the personnel / inventory team is informed about the latest updates / versions of the guidelines, reporting requirements etc.?	
Is it ensured that the personnel responsible for inventory preparation, QA/QC and reporting is free from any commercial, financial and other pressures that might influence their technical judgment?	
In order to ensure the planning, preparation and management of the emission inventory in a timely and professional manner are all technical resources necessary (personal computers and supporting IT infrastructure (providing data security and a backup system) provided and maintained?	
What kind of data integrity and security measures are taken by the National Inventory Compiler and each member of the inventory team?	
Is there an annual process for resource planning, e.g. in the process of an annual management review?	
Subcontracting	
Are parts of the inventory contracted out/prepared by someone not within the inventory team?	
If yes, are quality procedures describing the process for contracting out studies in place?	

If yes, how is ensured that the quality objectives and the requirements for the preparation of emission inventories are followed by the subcontractor?		
If yes, is there a procedure regarding the handling with confidential data?		See T4 GIZ Concept Note: „Legal instrument to ensure confidentiality for data obtained from industrial establishments" is a Priority Capacity Building Need.
If yes, is a procedure defined regarding the handling of results and reports (ownership/publication)?		
Contacts for further questions:		
All questions are necessary for tier 1 of our gap analysis. Depending on your answers, we might have to ask further questions. Could you please provide names and contact detail of the following roles, and information, whether we can contact them directly for an interview, or if those questions should be sent to the UNDP coordinator?		
Head of Inventory Team	Please insert contact data	
QA/QC responsible	Please insert contact data	
Responsible for reporting	Please insert contact data	

Annex II: Overview of Data Providers and Sources – empty cells indicate a lack of data:

Information Needed to Develop a National GHG Inventory

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
Energy Sector					
1.	Natural gas consumed in the energy system according to thermal power plants.	mln.m^3	GEOSTAT		Upon the official request from the ministry
2.	Average annual physical and chemical indicators of natural gas transmitted by gas transmission and distribution systems.	mol. % kg/m^3 kcal/m^3	GGTC	Published https://e-platform.ggtc.ge/gasanalisis.aspx	
3.	The main indicators of the gas supply system: Imported natural gas; Taken from gas pipelines and Gas Underground Storage Facility (GUSF); Gas for own needs in the transmission system; Gas losses in the transmission system; Injected into gas pipelines and GUSF; The volume of gas transmitted; Gas for own needs in the distribution system; Gas losses in the distribution system; Gas disposed in the distribution system by sectors.	mln.m^3	GEOSTAT	Published ენერგეტიკა საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	Part of the data is requested (ex. gas losses)
4.	Fuel consumed in the sub-sectors of the industry and construction category [natural gas, coal, diesel (for energy purposes and transport), gasoline, Liquefied Petroleum Gas (LPG), fuelwood, manure and other biofuel, etc.]. 1.A.2.a - Iron and Steel 1.A.2.b - Non-Ferrous Metals 1.A.2.c - Chemicals	mln.m^3, thousand liters, tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის	

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
	1.A.2.d - Pulp, Paper and Print 1.A.2.e - Food Processing, Beverages and Tobacco 1.A.2.f - Non-Metallic Minerals 1.A.2.g - Transport Equipment 1.A.2.h - Machinery 1.A.2.i - Mining (excluding fuels) and Quarrying 1.A.2.j - Wood and wood products 1.A.2.k - Construction 1.A.2.l - Textile and Leather 1.A.2.m - Non-specified Industry			ეროვნული სამსახური (geostat.ge)	
5.	Aviation fuel imported, consumed, stored in the country.	tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	
6.	Fuel consumed by road transportation (compressed natural gas, diesel fuel, gasoline, LPG), total and according to the subcategory of vehicles: • Trucks (including pickups, scooters); • Buses (including minibuses); • Light passenger cars (taxis and official cars), • Special cars.	mln.m^3, thousand liters, tonnes	Currently we do not have disaggregated data of fuel consumption by type of vehicle		
7.	Average annual physicochemical indicators and density of road transport fuel imported to the country (diesel fuel, gasoline, LPG).	kg/m^3	Not available such average annual indicator. Importing		

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
			companies have some certificates and might also measuring the quality in the Samkharauli or other laboratories but it is confidential and not accessible for us.		
8.	Fuel consumed in the commercial / institutional sphere [natural gas, coal, diesel fuel (for transport and energy purposes), gasoline, LPG, fuelwood, manure, and and other biofuel, etc].	mln.m^3, thousand liters, tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	
9.	Fuel consumed by the population [natural gas, coal, diesel fuel] (for transport and energy purposes) gasoline, LPG, biofuel (except for fuelwood and manure)].	mln.m^3, thousand liters, tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
10.	Fuelwood consumed by the population (procured fuelwood and illegal logging).	mln.m^3	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	
11.	Manure used by the population (manure excretion per cow).	tonnes	GEOSTAT	Aggregated consumption data of manure by the residential sector for energy purposes is Published in the Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
12.	Fuel consumed in the field of agriculture / forestry / fishing [natural gas, coal, diesel fuel (for transport and energy purposes), gasoline, LPG, fuelwood, manure and other biofuel].	mln.m^3, thousand liters, tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	
Industrial Processes and Product Use Sector					
1.	Cement production • List of main raw materials for cement production, their chemical composition • Annual use of basic raw materials • Annual cement production • Annual clinker production • Efficiency of the oven dust extraction system • Dust captured and stored, (tonnes / year) • Dust returned to the stove	weight percentage tonnes / year tonnes / year tonnes / year % tonnes / year tonnes / year			
2.	Lime production • Annual lime production	tonnes / year			

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
3.	Glass production • Annual glass production • Average Annual Cullet Ratio (Fraction)	tonnes / year %			
4.	Copper production (SO_2 emissions) • Annual use of copper concentrate • Chemical composition of copper concentrate • Chemical composition of the product / copper • Annual amount of copper produced	tonnes / year %			
5.	Ferroalloys production (SO_2 emissions) • Annual production of Ferroalloys	tonnes / year %			
6.	Bitumen/Asphalt Production and Use (NMVOC emissions) • Annual amount of bitumen used (assuming that practically all imported bitumen is used in asphalt production)	tonnes / year %			
1.	Lubricants and Paraffin Wax consumed/used for non-energy purposes (CO2 emissions)	tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული	

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
				ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	
2.	Solvents, produced, exported and imported to the country (NMVOC emissions)	tonnes			
3.	Bitumen imported	tonnes	GEOSTAT	Published Energy Balance of Georgia საქართველოს ენერგეტიკული ბალანსი - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	
4.	Foods and beverages produced	tonnes, liters			
5.	Population	thousand/people	GEOSTAT	Published მოსახლეობა და დემოგრაფია - საქართველოს სტატისტიკის ეროვნული სამსახური (geostat.ge)	

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
1.	Import / Export of Ozone Depleting Substances and products containing substitutes according to the developed modality. 2.F.1 - Refrigeration and Air Conditioning 2.F.1.a - Refrigeration and Stationary Air Conditioning 2.F.1.b - Mobile Air Conditioning 2.F.2 - Foam Blowing Agents 2.F.3 - Fire Protection 2.F.4 - Aerosols	kg/unit			
1.	Electrical Equipment Containing SF6 in the energy system according to the developed modality.	tonnes			
Agriculture, Forestry, and Other Land Use					
Agriculture					
1.	**Livestock Annual Average Population** • Cows • Bulls	heads			
2.	Sheep • Ewes • Other sheep	heads			
3.	Goats	heads			
4.	Asses	heads			
5.	Mules	heads			
6.	Horses	heads			
7.	Buffaloes	heads			
8.	Poultry • Laying hens • Broiler	heads			
9.	Swine • Sows	heads			

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
10.	Rabbits	heads			
11.	Fur bearing animals	heads			
12.	Slaughtered cattle population (monthly) • Cows • Bulls	heads			
13.	The number of lost animals (monthly)	heads			
14.	Lost sheep (monthly)	heads			
15.	Lost swine (monthly)	heads			
16.	Cows average live weight	kg			
17.	Bulls average live weight	kg			
18.	Growing cattle average live weight (up to one year old)	kg			
19.	Heifers and bulls average live weight	kg			
20.	Growing cattle daily average growth of weight	grams			
21.	Cows digestion energy	%			
22.	Bulls digestion energy	%			
23.	Growing cattle digestion energy	%			
24.	Milk fatness	%			
25.	Livestock regime • Nursery • Grazing	days			
26.	Exertion for 1 cow	kg/year			
27.	Manure left in the pasture	%			
28.	Import of mineral fertilizer	tonnes			
29.	Production of mineral fertilizer	tonnes			

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
1.	Agricultural lands	ha			
2.	Cereal crops sown area	ha			
3.	Leguminous crops sown area	ha			
4.	Vegetable crops sown area	ha			
5.	Garden crops sown area	ha			
6.	Industrial crops sown area	ha			
7.	Potatoes sown area	ha			
8.	Forage crops sown area	ha			
9.	Forage crops Gross harvest	tonnes			
10.	**Perennial plans** Orchards	ha			
11.	Berries	ha			
12.	Grape vines				
13.	Hay-land, of which:	ha			
13.1	Managed (used) hay-land	ha			
14.	Pastures, of which:	ha			
14.1	Managed (used) pastures	ha			
15.	Separation and wind protection forest area	ha			
16.	Burned grassland area	ha			
17.	Wetlands, of which	ha			
17.1	Peat soils used for turf extraction	ha			
18.	The volume of extracted turf	tonnes			
19.	The area of artificial reservoirs	ha			
20.	Artificial ponds area used for fish farming (soil-based artificial ponds)	ha			
1.	Total forest land	ha			
2.	Wood resources in forest covered areas	m^3			

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
3.	Data on changes in forest covered areas	ha			
4.	The area of forest crops by tree species transferred to forest area	ha			
5.	Volumes of stored timber by fuelwood, construction wood and timber	m^3			
6.	Volumes and quantities of illegal logging recorded	m^3			
7.	Data on damage caused by recorded fires	ha, m^3			
1.	DOCf (fraction of degraded organic carbon) from Municipal Solid Waste (MSW)	Gg C/Gg			
2.	CH4 gas capture	Gg			
3.	Coefficient of MSW generation per capita in the capital	tonne/per capita/year			
4.	Coefficient of MSW generation per capita, waste proportion transferred to other cities and landfills	tonne/per capita/year			
1.	The total rural and urban population at the beginning of the year	mln.			
2.	For the calculation of methane emissions from industrial wastewater	kg, tonnes, liters			
3.	Annual protein intake per person	g/person/day			

No	Category name	Unit of Measurement	Data Provider	Data Source	
				Published	Obtained through Survey
4.	Official information on the current condition of wastewater treatment plants (planned)				

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Презентация системы обеспечения и контроля качества – опыт Австрии

Мария Пурцнер, 12 мая 2022 года

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ОБЗОР

- Пример системы обеспечения и контроля качества – опыт Австрии
- Аккредитация – даже если она не является предварительным условием.
- Описание файлов
- Справочник по обеспечению и контролю за качеством:

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СИСТЕМА УПРАВЛЕНИЯ КАЧЕСТВОМ В АВСТРИЙСКОМ КАДАСТРЕ

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АГЕНТСТВО АВСТРИИ ПО ОКРУЖАЮЩЕЙ СРЕДЕ

- Агентство находится в **Вене**
- **Основано в 1985** (при министерстве здравоохранения и защиты окружающей среды)
- С **1999** года, имеет статус **Компании с ограниченной ответственностью**
  - Все еще принадлежит Австрийской Республике
  - Все обязательные задачи определены в «Акте о Контроле за окружающей средой»
  - Касательно этих задач, основное финансирование обеспечивается правительством Австрии
- Агентство имеет более **500 сотрудников** (которые занимаются не только вопросами предотвращения изменения климата и адаптацией к ним)

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ОРГАНИЗАЦИОННАЯ СХЕМА UMWELTBUNDESAMT

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НЕЗАВИСИМЫЕ РАБОЧИЕ ОТДЕЛЫ

- Эти отделы (и конечно же, их персонал) беспристрастны и независимы в своей деятельности

  → Касательно их работы, никакие технические инструкции или же приказы могут быть даны

  - ни управляющим директором
  - ни каким-нибудь министерством
  - ни кем-то еще вне этих отделов

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НЕЗАВИСИМЫЕ РАБОЧИЕ ОТДЕЛЫ

- Независимые рабочие отделы свободны от всякого
  - коммерческого
  - финансового и
  - другого давления

  которое могло бы повлиять на их техническое мнение.

Тем самым, оплата персонала не основана на

- числе проведенных инспекций
- числе анализированных проб или же
- полученных результатов.

- Персоналу не разрешается заниматься любой деятельностью, которая может идти вразрез с независимостью их решения, а также честностью относительно их деятельности (то есть, мешать их рабочему контракту с промышленными компаниями)

ОРГАНИЗАЦИОННАЯ СХЕМА

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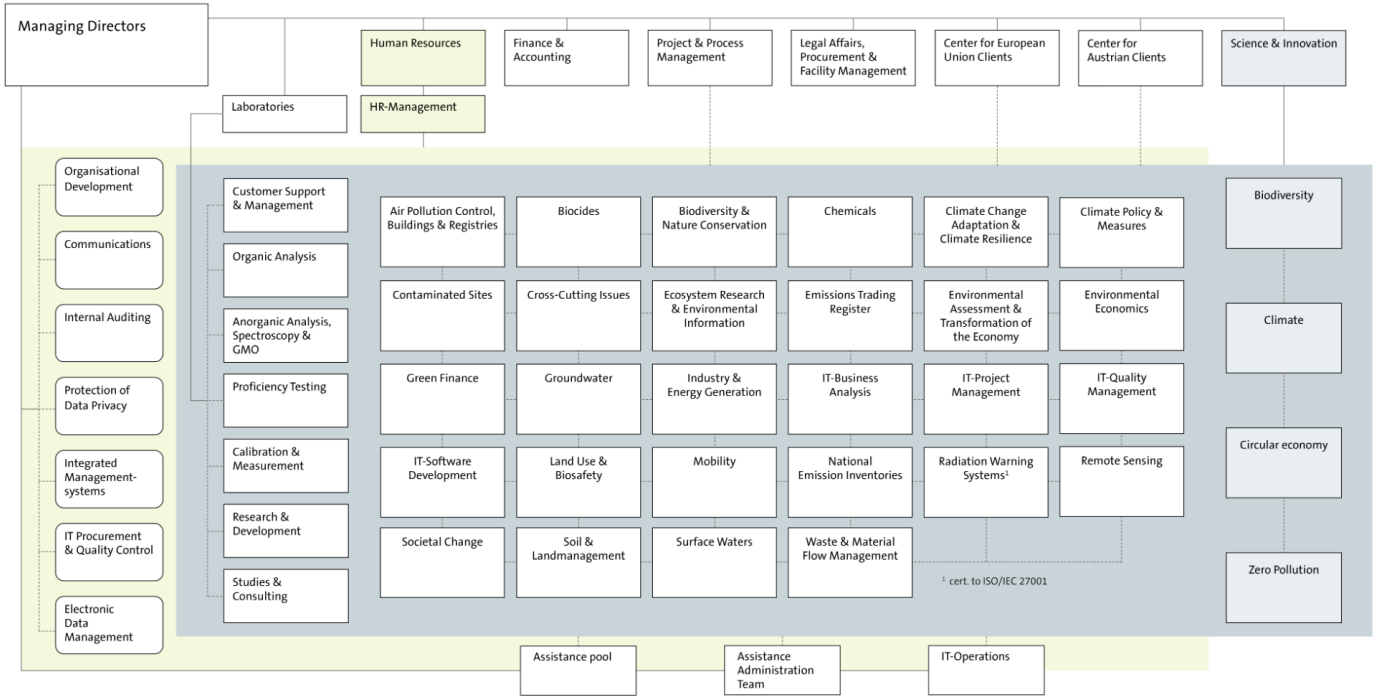

Independent organizational units under the direct responsibility of the Managing Directors

Accredited Calibration Laboratory for Air Quality	Accredited Testing Laboratory for Environmental-, GMO- and Fuel Analysis	Accredited Proficiency Testing Provider	Inspection Body
accr. to EN ISO/IEC 17025	accr. to EN ISO/IEC 17025	accr. to EN ISO/IEC 17043	accr. to EN ISO/IEC 17020

As of: 04. 04. 2022 approved by the Managing Directors

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ИНСПЕКЦИЯ ПО КАДАСТРУ ВЫБРОСОВ (ИКВ)

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ИНСПЕКЦИЯ ПО КАДАСТРУ ВЫБРОСОВ (ИКВ)

Задачой ИКВ является подготовка кадастра выбросов в соответствии с

- Рамочной Конвенцией ООН об изменении климата (РКИК) и особенно, Киотским протоколом;
- Конвенцией о Трансграничном Загрязнении Воздуха на Большие Расстояния (КТЗВБР) и ее протоколами;
- Европейскими обязательствами по отчетности;

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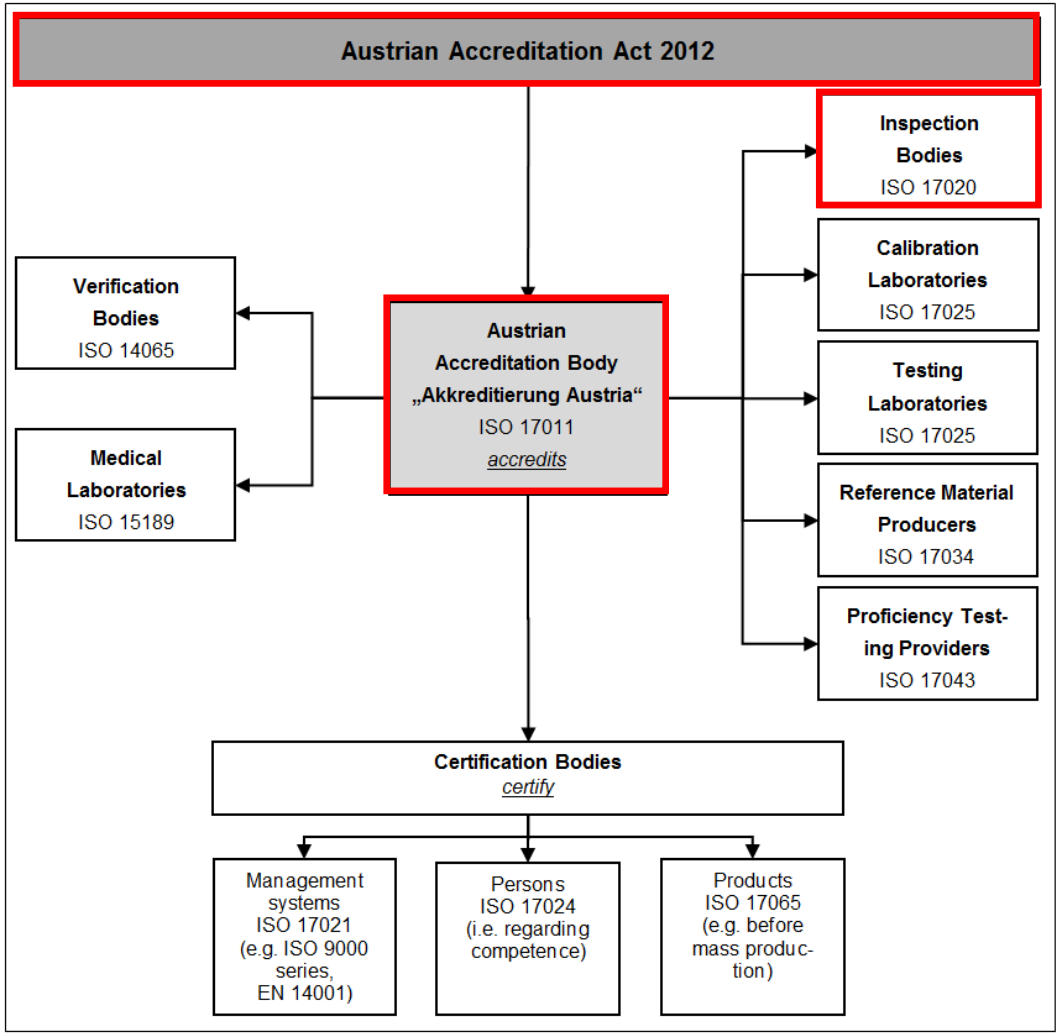
ИНСПЕКЦИЯ ПО КАДАСТРУ ВЫБРОСОВ

- ИКВ аккредитирована в соответствии с международным стандартом EN ISO/IEC 17020 с 2005 года.

  Аккредитация означает, что *национальный аккредитационный орган засвидетельствовал формальные компитенции для выполнения специфических задач оценки соответствия (в нашем случае, подсчет национальных выбросов).*
- Международный стандарт ISO 17020 определяет все требования системы управления качеством на высоком уровне.
- Данная система управления качеством соответствует
  - Инструкциям МГЭИК (по отчетности выбросов парниковых газов перед РКИК ООН и Европейской Комиссией);
  - Справочнику Европейской Программы Мониторинга и Оценки Европейского Агентства по Окружающей Среде (по отчетности загрязнителей воздуха перед ЕЭК ООН и Европейской Комиссией);
  - другим международным стандарты, например ISO 9001.

Правовой основой аккредитации в Австрии является Австрийский Аккредитационный Акт.

- Согласно этому акту, Аккредитационный Орган Австрии («Akkreditierung Austria») несет ответственность за аккредитацию всех органов и лабораторий согласно международным стандартам, вкл. ISO 17020.
- Аккредитационный Орган Австрии проверяет соответствие требованиям EN/ISO 17020, включая систему управления качеством.
  - Однодневные аудиты каждые 20 месяцев;
  - Двухдневные аудиты каждые 60 месяцев;



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Система обеспечения и контроля качества в австрийском кадастре

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СИСТЕМА ОБЕСПЕЧЕНИЯ И КОНТРОЛЯ ЗА КАЧЕСТВОМ

Система обеспечения и контроля за качеством применяется в подсчете и отчетности по парниковым газам и загрязнителям воздуха, так как они подсчитываются теми же экспертами и даже, в определенных случаях, основываются на тех же данных деятельности.

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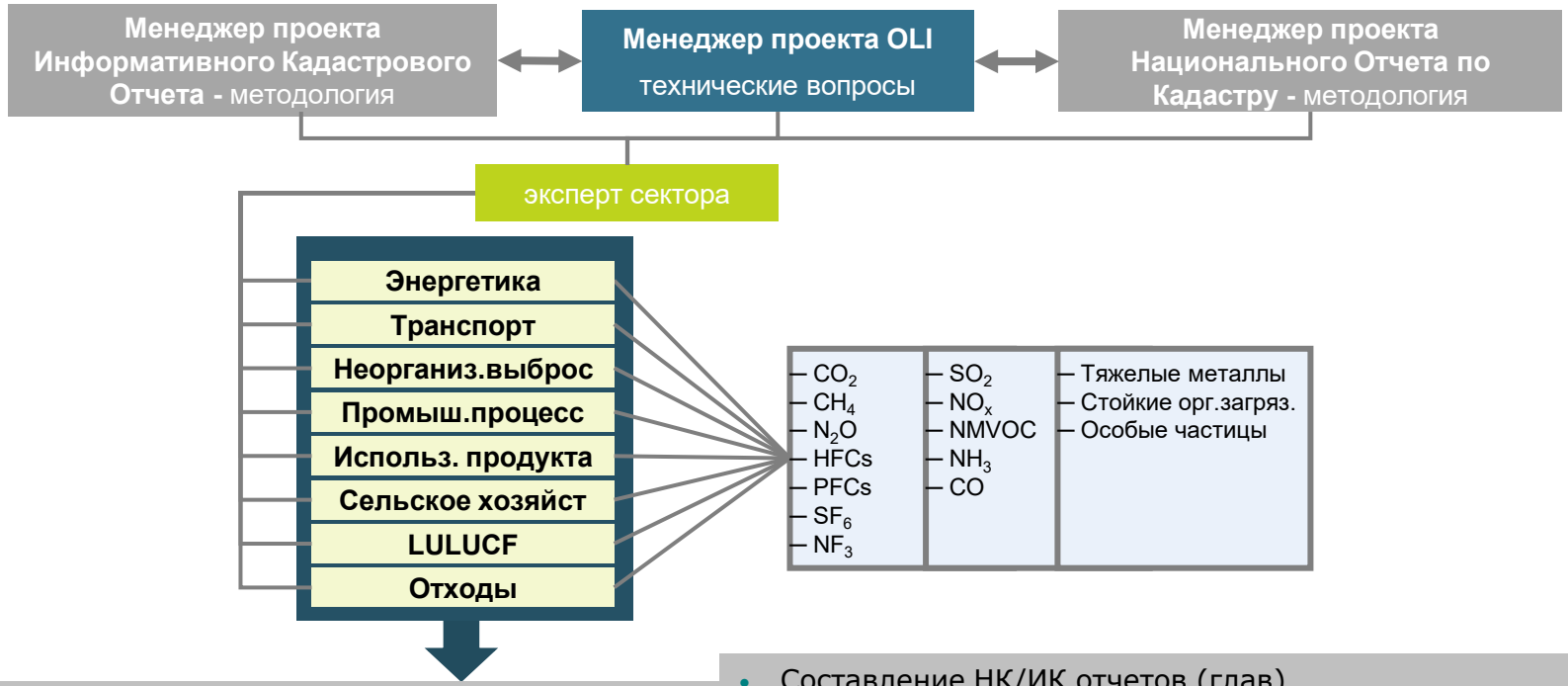
АВСТРИЙСКАЯ КОМАНДА ПО КАДАСТРУ (ИКВ)



- Сбор данных деятельности, факторы выбросов и другая необходимая информация
- Оценка выбросов

- Составление НК/ИК отчетов (глав)
- Предоставление данных для таблиц общей отчетности или номенклатуры отчетности
- Процедуры обеспечения и контроля качества

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Общие риски

ОБЩИЕ РИСКИ

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1. Недостаток персонала
   - Может привести к серьезным проблемам в случае отсутствия одного члена команды (например, из-за болезни);
   - Повышает вероятность ошибок (в особенности, во время напряженных периодов);

   → На данный момент, 22 сотрудника занимаются составлением кадастра и процессом его представления (из них, 6 являются работниками управлений, не занимающихся национальным кадастром выбросов);

   → Каждая функция минимум обеспечивается двумя сотрудниками для
   - избегания проблем в случае отсутствия одного члена команды, и
   - предотвращения конфликта интересов, как например
     - Менеджер по качеству не должен проводить аудит в том секторе, где он или она напрямую участвуют в составлении кадастра по данному сектору.
     - Глава Инспекционного органа не должен формально одобрять секторальные главы национального кадастрового отчета, если эти главы написаны им самим.

ОБЩИЕ РИСКИ

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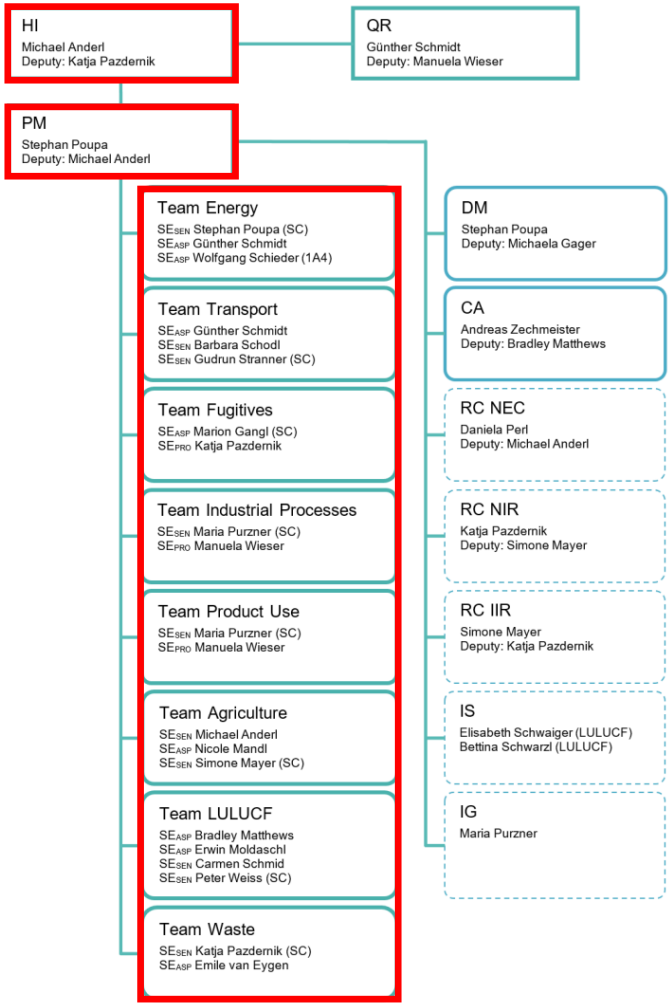
2. Нечеткие обязанности

→ Каждый сотрудник имеет специфические функции в кадастре.

→ Каждое **высокопоставленное лицо** должен соблюдать систему обеспечения и контроля качества и не отходить от инструкций Руководства МГЭИК и Руководящих указаний по эффективной практике!



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ФУНКЦИИ И ОСНОВНЫЕ ОБЯЗАННОСТИ

- ГО («глава инспекционного органа»):
  - Технический менеджер инспекционного органа
  - Несет общую ответственность за техническое применение и продолжительное совершенствование системы управления качеством.
- МП («менеджер проекта»):
  - Планирование и контроль за проектом (время, масштаб и бюджет)
  - Финальный контроль качества для представления отчета
- СЭ («секторальный эксперт»):
  - Общая ответственность за подсчет выбросов (включая сбор данных и документирование)

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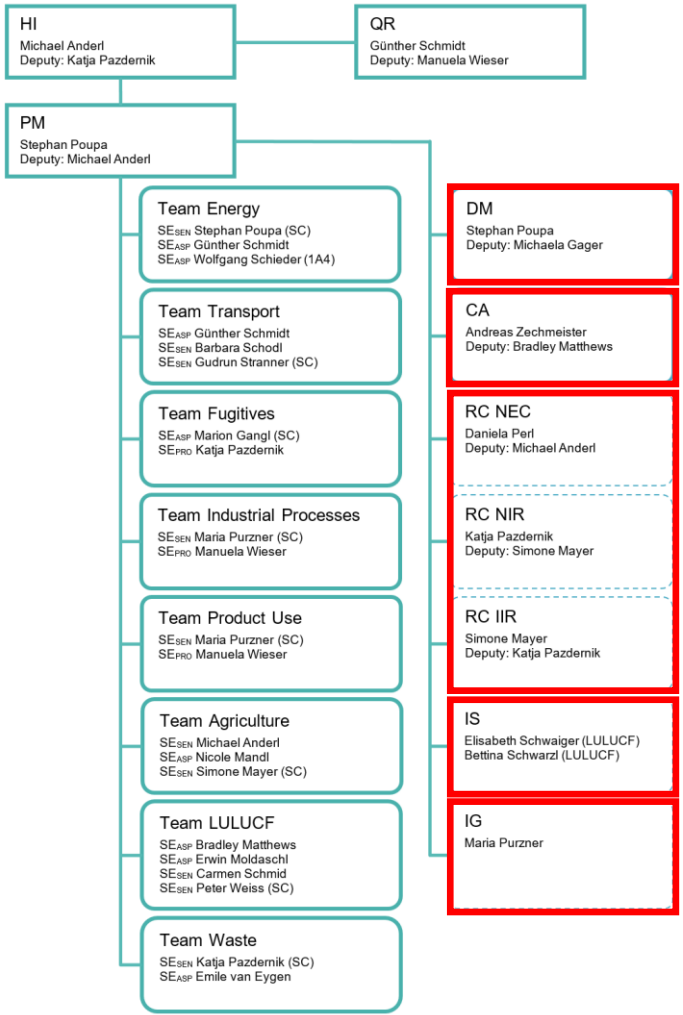

ФУНКЦИИ И ОСНОВНЫЕ ОБЯЗАННОСТИ

- МД («менеджер данных»)
- МСА («межсекторальный аналитик»)
- КО («координатор отчета»)
- ГК («генералист кадастра»)
- ПК («поддержка кадастру»)

ТРЕБОВАНИЯ К СЕКТОРАЛЬНОМУ ЭКСПЕРТУ

- Университетская степень или же квалификация, а также более семи лет технического опыта в области, близкой к данному сектору;
- Понимание основ инвентаризации, включая выбранный сектор;
- Понимание технических требований в инструкциях;
- Понимание политической и регуляторных требований;
- Знание основ и требований систем управления качеством;
- Способность работы в команде;
- Самоорганизация, способность работы с цифровыми данными и навыки логического анализа;
- Когнитивная гибкость и способность решать проблемы.
- Знание английского языка;
- Знание ИТ (MS office) и готовность к продолжительному обучению;
- Чувство ответственности и заслужение доверия;
- Открытость к сотрудничеству и общению;
- Стойкость к стрессам;
- Понимание важности соблюдения правил;
- Заинтересованность в теме;

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ОБЩИЕ РИСКИ

3. Недостаточная компетентность или знания

→ Новые сотрудники («аспиранты») должны пройти несколько курсов в течение первого года

- Курсы по управлению системой качества → для ознакомления со всеми документами и правилами управления качеством;
- Общий курс по управлению данными → для понимания технической части процесса составления кадастра;
- Технические курсы → нацеленные на регуляторные требования (например, инструкции РКИК ООН, справочник ЕПМО ЕАОС, надлежащие европейские законы, …)
- Аспиранты должны работать под руководством опытного секторального эксперта («ментора») в течении первого года в выбранном секторе;
- Обычно, год спустя, аспирант проходит проверку представителя, отвечающего за качество;
- После завершения всех курсов, получения позитивных отзывов от инструкторов и наставника и технического обсуждения с главой инспекции, последний наконец выдает разрешению работнику работать в качестве секторального эксперта.

ОБЩИЕ РИСКИ

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→ Естественно, после первого года, компетентность должна быть сохранена и расширена продолжительным образом.

- Кадастр должен быть подсчитан одним секторальным экспертом и проверен другим (на следующий год, они меняются местами);
- Общая проблема заключается в том, что нет курсов повышения квалификации по составлению кадастра.

  Следовательно,

  → мы участвуем

  - в международных рабочих группах (например, Рабочая группа I Европейской Комиссии и так далее),
  - на конференциях и
  - в международных проверках в качестве проверяющего (рассмотрение на основе РКИК ООН, решения ЕС о разделении усилий, Национальных Потолков Выбросов и Конвенции о трансграничном загрязнении воздуха на большие расстояния)

  → проводим регулярные внутренние заседания для

  - обмена информацией между экспертами и
  - курс по управлению качеством.

  → мы ведем сотрудничество с другими международными организациями и странами.

  Общая цель всей данной деятельности – обмен знаниями!

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ОБЩИЕ РИСКИ

4. Недостаточное качество данных

→ Мы стараемся тесно сотрудничать с нашими источниками данных для оценки качества и полноты данных;

Целью является улучшение качества данных.

5. Стабильность кадастра

→ Мы описали все шаги составления отчета в стандартных операционных процедурах (СОП)

→ все страницы в формате «excel», использованные для подсчетов, заранее готовятся и проверяются на предмет ошибок («подтверждение»).

6. Потеря данных

→ Для всех данных регулярно создаются резервные копии отделом ИТ.

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Процесс составления кадастра и контроль качества

Основные характеристики контроля качества следующие:

- Контроль за качеством осуществляется **персоналом, составляющим кадастр**
- **Во время составления** кадастра.

СОСТАВЛЕНИЕ КАДАСТРА И КОНТРОЛЬ КАЧЕСТВА

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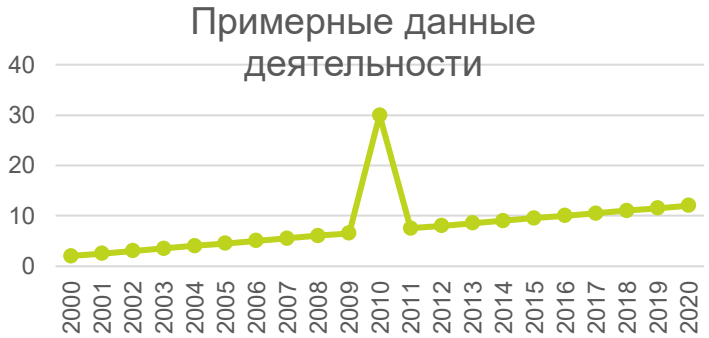
Секторальные эксперты

- Собирают и проверяют данные о деятельности на достоверность, т.е.
  - Проверяют порядок величин (верны ли единицы измерения?)
  - Проверяют последовательность временных отрезков на предмет резких отклонений
- Подсчитывают выбросы в формате «excel»



- Проверяют данные по выбросам на достоверность
  - Проверяют порядок величин
  - Проверяют последовательность временных отрезков
  - Проверяют перерасчеты (= разность между предыдущими и текущими данными), анализируют разницы и определяют причины разницы;
  - Далее, причины документируются.

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СОСТАВЛЕНИЕ КАДАСТРА И КОНТРОЛЬ КАЧЕСТВА

Администратор данных

- выполняет разные автоматизированные проверки - например
  - Проверяет, полноту данных за все годы и по всем все загрязнителям

    Если каких-нибудь данных нет, соответствующую ячейку нельзя оставить пустой или вписать «0» ноль в таблицу CRF;

    → Необходимо указать проставить соответствующий условный ключ (NE, NO, NA, …)
- Внесение данных в базу данных
- Для парниковых газов
  - Создает файлы внесения данных в общие таблицы отчетности РКИК ООН
  - Импортирует файлы с данными, регистрировать процесс импортирования данных;
  - Сравнивает обзорные таблицы с первоначальными данными в базе данных ИВК
- Для загрязнителей воздуха
  - Создает таблицы NFR.

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СОСТАВЛЕНИЕ КАДАСТРА И КОНТРОЛЬ КАЧЕСТВА

Секторальные эксперты

- выполняют окончательную проверку данных в таблицах CRF и NFR;
- составляют соответствующие секторальные главы отчетов (NIR, IIR, и так далее).

Координатор отчета завершает отчеты.

Секторальные эксперты проверяются отчеты на предмет соответствия таблицам CRF и NFR.

Координатор отчета

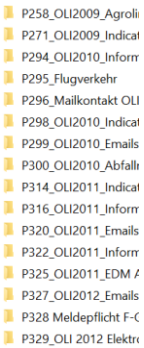
- Выборочно проверяет единичные показатели для соответствия таблицам CRF и NFR.
- Проверяет соответствие требованиям EN/ISO 17020, инструкциям МГЭИК или же справочнику Европейской Программы Мониторинга и Оценки Европейского Агентства по Окружающей Среде.

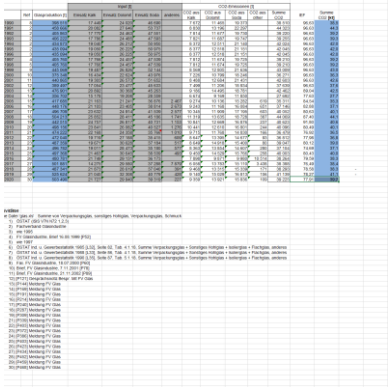
Глава Агентства одобряет окончательные отчеты.

Официально документ представляется в РКИК ООН Министерством по климатической деятельности, энергетике, мобильности, инновациям и технологиями (= то есть, национальным координатором).

ТРУДОВОЙ ПРОЦЕСС

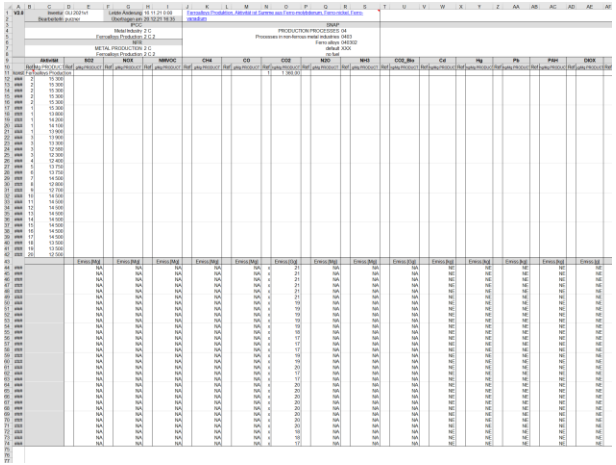
Секторальный эксперт собирает данные через электронную почту, из литературы и т.д. (за период с июля по сентябрь) и все данные хранятся централизованно.





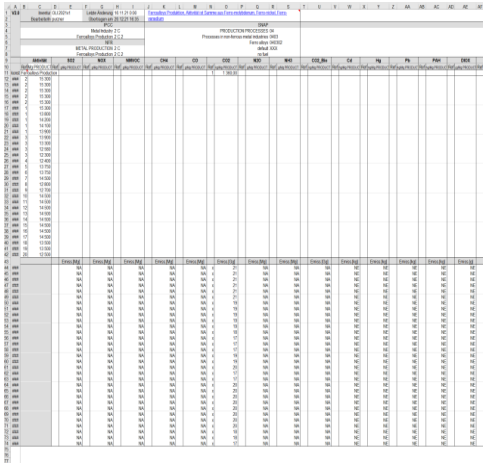
Секторальный эксперт проводит подсчет (лист «Excel»)

Лист подсчета одобряется (заместителем)



Данные вносятся в формуляр

АДМИНИСТРАТОР ДАННЫХ



- CRF
- Monmech_Annexe
- NFR
- Recalculations Arbeitsordner
- Versions
- Änderung_OLI_2021_THG_Nach_KSG_Sektor
- OLI_2021_clrtap
- OLI_2021_clrtap_recalc
- OLI_2021_CO2eq
- OLI_2021_NEC_OhneTT
- OLI_2021_SNAP
- OLI_2021_SNAP_recalc
- OLI_2021_THG_Nach_KSG_Sektoren
- OLI_2021_unfccc
- OLI_2021_unfccc_recalc

Проверяется секторальными экспертами

ПРОВЕРКА ПЕРЕСЧЕТОВ

- Администратор данных представляет информацию о разнице между показателями последнего года кадастра предыдущего года, тогда как секторальные эксперты их проверяют.
- В кадастровом отчете пересчеты должны быть обоснованы и соответствовать действительным пересчетам.
- В случае ошибки, они должны быть найдены и внесены изменения.

150	2 C 6	Zinc Production	kt	=	NO	NO	=	NO	NO	=
151	2 C 7	Other (please specify)	kt	=	NA	NA	=	NA	NA	=
152	2 C 7 1	Non ferrous metals	kt	=	NA	NA	=	NA	NA	=
153	2 D	Non-Energy Products from Fu	kt	=	348,94	348,94	0,0%	174,34	174,34	0,1%
154	2 D 1	Lubricant Use	kt	=	89,51	89,51	=	43,39	43,39	=
155	2 D 2	Paraffin Wax Use	kt	=	7,68	7,68	=	13,11	13,11	=
156	2 D 3	Other (please specify)	kt	=	251,75	251,75	0,0%	117,85	117,85	0,1%
157	2 D 3 1	Solvent use	kt	=	251,75	251,75	=	117,46	117,46	=
158	2 D 3 2	Road paving with asphalt	kt	=	NA	NA	=	NA	NA	=

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Обеспечение качества

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ОБЕСПЕЧЕНИЕ КАЧЕСТВА

Ввиду временных ограничений, в Австрии, обеспечение качества реализуется после представления отчетов.

К мерам обеспечения качества относятся:

До представления отчета: принцип четырех глаз, проверка и рассмотрение внесенных данных.

- Представитель по вопросам качества проводит внутренний аудит;
- Отчеты (NIR, IIR, и другие) публикуют на нашей домашней странице интернета (для их рассмотрения внешними национальными экспертами).

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Процесс внедрения улучшений

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ПРОЦЕСС ВНЕДРЕНИЯ УСОВЕРШЕНСТВОВАНИЙ

Основой для совершенствования может служить следующее:

- Контроль качества (то есть случаи выявления ошибок, публикация нового коэффициента выбросов в научном исследовании, …)
- Анализ ключевых источников (то есть, когда категория становится ключевой категорией → должны быть использованы методы высокого уровня (2-ых и 3-их уровней));
- Обеспечение качества (то есть, согласно мнению внешних экспертов, изменения рекомендуются или же даже необходимы);
- Заключения международной проверки отчетов:
  - Рамочной конвенция ООН об изменении климата (РКИК ООН)
  - Выполнение Решения по разделению усилий (РРУ) в рамках ЕС
  - Директива по национальным потолкам выбросов (НПВ)
  - Конвенция о трансграничном загрязнении воздуха на большие расстония (КТЗВБР)

  -> заключения проверок ВСЕГДА задокументированы.
- Проверка главой инспекционного органа.

ПРОЦЕСС ВНЕДРЕНИЯ УСОВЕРШЕНСТВОВАНИЙ

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Определяется вопрос, требующий усовершенствований

Случай 1:
Вопрос сразу находит решение

Случай 2:
Вопрос сразу не решен
→ и
документируется в списке необходимых усовершенствований

Вопрос оценивается с точки зрения:

- срочности
- времени
- масштаба
- бюджета

- Составляется временной график имплементации, запрашивается/выделяется бюджет для него.

Если изменения НЕ РЕАЛИЗУЮТСЯ в определенный срок → вопрос снова оценивается (на срочность, время, …)

Если изменения реализуются в рамках определенного срока → вопрос обозначается как «решенным» в списке усовершенствований

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СПИСОК УСОВЕРШЕНСТВОВАНИЙ

- Источник: источник усовершенствования (то есть, заключение проверки → год проведения проверки, порядковый номер замечания в отчете о проведении проверки и т.д.);
- Цитата: первоначальное описание вопроса (например, из отчета о проведении проверки);
- Вопрос: внутреннее описание мер, которые должны быть приняты;
- Причина: причина возникновения данной ошибки или данного вопроса;
- Срочность: описание приоритетности внедрения;
- Временные рамки: запланированная дата внедрения;
- Завершение: реальная дата внедрения;
- Проверка со стороны главы органа: подтверждение главы инспекционного органа относительно решения вопроса;
- Выполненное усовершенствование: описание внедренных изменений.

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НОВАЯ МЕТОДОЛОГИЯ

Если в следующем году используемая методология будет значительно изменена, тогда секторальные эксперты

- подсчитывают выбросы на основе новой методологии летом и осенью (на основе данных о деятельности последнего представленного отчета, поскольку самые последние данные еще будут не известны);
- пользуются проверочными методами (то есть, сравнивают результаты прежней и новой методологий);
- представляют методологию, допущения, тенденции и результаты расчетов национальным экспертам (рецензия другими экспертами).

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Архивирование данных

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АРХИВИРОВАНИЕ ДАННЫХ

Для целей отслеживаемости и прозрачности

- Все шаги по составлению кадастра документируются
- Все внесенные данные хранятся под порядковым номером
- Все рассчеты хранятся в формате файлов «excel»
- Все окончательные файлы NFR и CRF хранятся с указанием номера версии.

В конце подготовки кадастра, все файлы переводятся в защищенный формат.

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Документирование

- Формуляры содержат номера, которые показывают источник предоставления информации.
- Пример: Doc File – Формуляр (ферросплавы).

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ВРЕМЕННОЙ ГРАФИК ПОДГОТОВКИ КАДАСТРА

Сбор данных

- Регистрация и нумерование всех поступающих данных
- Проверка данных относительно предыдущих лет

Составление таблицы данных

- Использование данных МЭА
- Проверка единиц измерения, Согласованность временных рядов
- Сообщение несоответствий в органы статистики
- Трансформация таблиц Nace-CRF/NFR
- ***Документ обеспечения и контроля качества***
- Методология – онлайн руководство

Управление базой данных

CRF/NFR таблицы

- Согласованность временных рядов
- ***Проверка секторальным экспертом или экспертом по загрязнителям***
- Общая проверка
- Обоснование перерасчетов
- База данных агрегированных топлив в сравнении с национальной статистикой
- База данных в защищенном формате
- Общяя проверка баланса

Подготовка NIR / IIR

- ***Проверка таблиц и чисел***
- ***Проверка вторым лицом***

- Проверка результатов базы данных CRF/NFR;
- Общие результаты CRF/NFR
- ***Проверка больших изменений сравнительно прошлого года (перерасчет)***

Архивирование

- Файлы базы данных
- Файлы в формате таблицы
- Исходные данные
- руководства
- отчеты

Текущая или годовая деятельность
рассмотрение коэффициентов выбросов

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ГОДОВАЯ ПРОЦЕДУРА ПОДГОТОВКИ И ОБНОВЛЕНИЯ КАДАСТРА ПАРНИКОВЫХ ГАЗОВ (ИВК)

Рассмотрение руководством (Авг)	Отчет и оценка системы управления качеством. Выполнение и и планирование для системы управления качеством и улучшения кадастра.
Начало (сен)	Встреча секторальных экспертов и руководителей, а также менеджеров проекта, качества и администраторов данных кадастра. Определение рабочего плана.
15 января	Представление кадастра парниковых газов (CRF и краткий NIR) в Европейскую Комиссию
15 янв – 28 фев	Проверка данных Европейским Тематическим Центром по Изменению Воздуха и Климата
15 март	Представление кадастра парниковых газов (NIR) в Европейскую Комиссию
15 апреля	**Представление кадастра парниковых газов (CRF и NIR) в РКИК ООН**
Июнь - март	Проверка данных со стороны РКИК ООН: – 1-ый этап (первоначальная проверка), – 2-ой этап (синтез и оценка), – 3-ий этап (**индивидуальное рассмотрение)**
15 января	Подготовка и обновление кадастра парниковых газов на основе рекомендаций ЕК и РКИК ООН

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Контактная информация

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Системы обеспечения и контроля качества по кадастру выбросов

Онлайн, 12 май 2022

Резервированные слайды

Рамка 6.1

Определения обеспечения качества и контроля качества (ОК/КК), и верификация

Контроль качества (КК) представляет собой систему рутинной технической деятельности, направленной на оценивание и поддержание качества кадастра, во время его составления. Качество поддерживается персоналом, составляющим данный кадастр. Система контроля качества разработана для следующих целей:

(i) осуществление рутинных и последовательных проверок для обеспечения целостности, достоверности и полноты данных;

(ii) определение и исправление ошибок и погрешностей;

(iii) документирование и архивирование кадастрового материала и регистрирование всей деятельности контроля качества.

Работа по контролю за качеством включает такие общие методы, как точность проверок при получении данных и подсчетах, а также применение подтвержденных стандартных процедур по выбросам и при подсчете выведенных газов, измерении, прогнозировании погрешностей, архивировании информации и отчетности. Деятельность по контролю за качеством также предполагает техническое рассмотрение категорий, данных о деятельности, факторов выброса, других параметров прогнозирования, а также применение методов.

Обеспечение качества (ОК) является запланированной системой, состоящей из процедур рассмотрения, реализуемые персоналом, не учавствующим напрямую в составлении кадастра или же в процессе его разработки. Работа по рассмотрению, которая, в-основном, ведется независимой третьей стороной, выполняется на основе составленного кадастра после реализации процедур контроля за качеством. Работа по рассмотрению позволяет проверить, достигаются ли измеряемые цели (насчет цели качества данных смотри часть 6.5 Плана обеспечения и контроля качества), представляет ли кадастр самые лучшие возможные прогнозы выбросов и их выведения, ссылаясь на нынешний уровень научных знаний и существования данных. Данная работа также поддерживает эффективность программы контроля за качеством.

Верификация основывается на совокупность деятельности и процедур, реализуемых во время планирования и разработки кадастра, или же после его завершения, который может способствовать обеспечению надежности в деле его предназначаемого применения. В целях данных инструкций, верификация специфически ссылается на те методы, которые не присущи кадастру и основываются на независимые данные, включая сравнение с кадастровыми прогнозами, выданными другими органами или же полученными альтернативными методами. Верификационная деятельность может быть частью работы как обеспечения качества, так и его контроля, в зависимости от примененных методов и этапа, в котором независимая информация используется.