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TOWARDS DEVELOPMENT/ STRENGTHENING OF THE NATIONAL GHG INVENTORY SYSTEM —

CONCEPTUAL FRAMEWORK FOR MONITORING, REPORTING AND VERIFICATION OF LAND USE, LAND-USE CHANGE AND FORESTRY (LULUCF) SECTOR IN GEORGIA

MRV LULUCF GEORGIA

ASSESSMENT REPORT

EU4Climate
Better Climate Policies for Eastern Partner Countries

November 2022

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Conceptual Framework for Monitoring, Reporting and Verification of Land Use, Land-Use Change and Forestry (LULUCF) Sector in Georgia

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ASSESSMENT REPORT

COMPREHENSIVE REPORT ON ASSESSMENT OF CURRENT NATIONAL MRV SYSTEM, NATIONAL POLICY AND REGULATORY FRAMEWORKS IN THE CLIMATE CHANGE FIELD WITH REFERENCE TO LULUCF SECTOR

November 2022

WRITING

Contributors	Name	Organization
	Etienne MATHIAS	Citepa
	Colas ROBERT	Citepa
	Matthieu WEMAERE	Avocat à la cour

VERIFICATION

	Name	Date
Checkings	Etienne MATHIAS	20/11/2022
Validation	Jérôme BOUTANG	20/11/2022

Outline

1. EU4CLIMATE PROJECT

The EU4Climate Project helps governments in the six EU Eastern Partner countries - Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine - to take action against climate change. It supports countries in implementing the Paris Climate Agreement and improving climate policies and legislation. Its ambition is to limit climate change impact on citizens lives and make them more resilient to it. EU4Climate is funded by the European Union (EU) and implemented by the United Nations Development Programme (UNDP).

The objective of the project is to support the development and implementation of climate-related policies by the Eastern Partnership countries that contribute to their low emission and climate resilient development and their commitments to the Paris Agreement on Climate Change. It identifies key actions and results in line with the Paris Agreement, the "20 Deliverables for 2020", and the key global policy goals set by the UN 2030 Agenda for Sustainable Development. The project will also translate into action priorities outlined in the Eastern Partnership Ministerial Declaration on Environment and Climate Change of October 2016.

The goal of the project is to contribute to climate change mitigation and adaptation and the development of a low-emissions and climate-resilient economy in line with the Paris Agreement.

2. OBJECTIVES OF THE ASSIGNMENT FOR LULUCF

The goal of this assignment is to design the most appropriate country-specific conceptual framework for monitoring, reporting and verification (MRV) of LULUCF sector-related actions in Georgia.

It will challenge the existing national GHG inventory system, taking into consideration relevant international requirements like the methodological framework for LULUCF reporting as defined by the related IPCC Guidelines, international obligations of Georgia for LULUCF GHG reporting as laid down by the UNFCCC, Paris Agreement and related decisions, existing national legal and institutional systems and capacities for required LULUCF activity data and emission factors as-well-as future needs related to the monitoring of these input data and the national system for LULUCF reporting.

The overall goal of the assignment is to assist UNDP and the Ministry of Environmental Protection and Agriculture of Georgia (MEPA) in developing a robust Monitoring Verification and Reporting system in all sectors, consistent with the UNFCCC and Paris Agreement requirements.

3. GENERIC KEY MRV ELEMENTS FOR NATIONAL AND LULUCF MRV SYSTEMS

3.1. KEY MRV ELEMENTS UNDER THE UNFCCC

The existing framework for MRV under the UNFCCC (*United Nations Framework Convention on Climate Change, hereafter "the Convention"*) for developing country Parties consists of several elements, which have been put in place gradually through a set of decisions by the COP over the period 2004-2013.

At COP 13, through the Bali Action Plan, Parties agreed on the principle of applying measurement, reporting and verification (MRV) for developing country Parties, which laid the foundation for the subsequent elaboration of the existing comprehensive MRV framework for developing country Parties (see figure below).

FIGURE 1: KEY ELEMENTS OF THE MRV FRAMEWORK (*Source: 2014 UNFCCC.*)

International MRV

National communications
- Measurement of GHG emissions and sinks (GHG inventory)
- Steps to implement Convention

Decision 17/CP.8

BURs
- GHG inventory report
- Measurement of mitigation actions and their effects
- Reporting on domestic MRV system
- Needs and support received

Annex III to decision 2/CP.17

ICA
- Technical analysis of the BURS
- Facilitative sharing of views

Decisions 2/CP.17 and 20/CP.19

Domestic MRV

Determine arrangements for domestic MRV of domestically supported NAMAS (voluntary)

Decision 21/CP.19

Report on domestic MRV in the BUR

Decision 21/CP.19

MRV for REDD - plus (voluntary)

Report REDD-plus results in a technical annex to the BUR
- Applies to Parties seeking to obtain and receive payments for results-based actions

Decision 14/CP.19

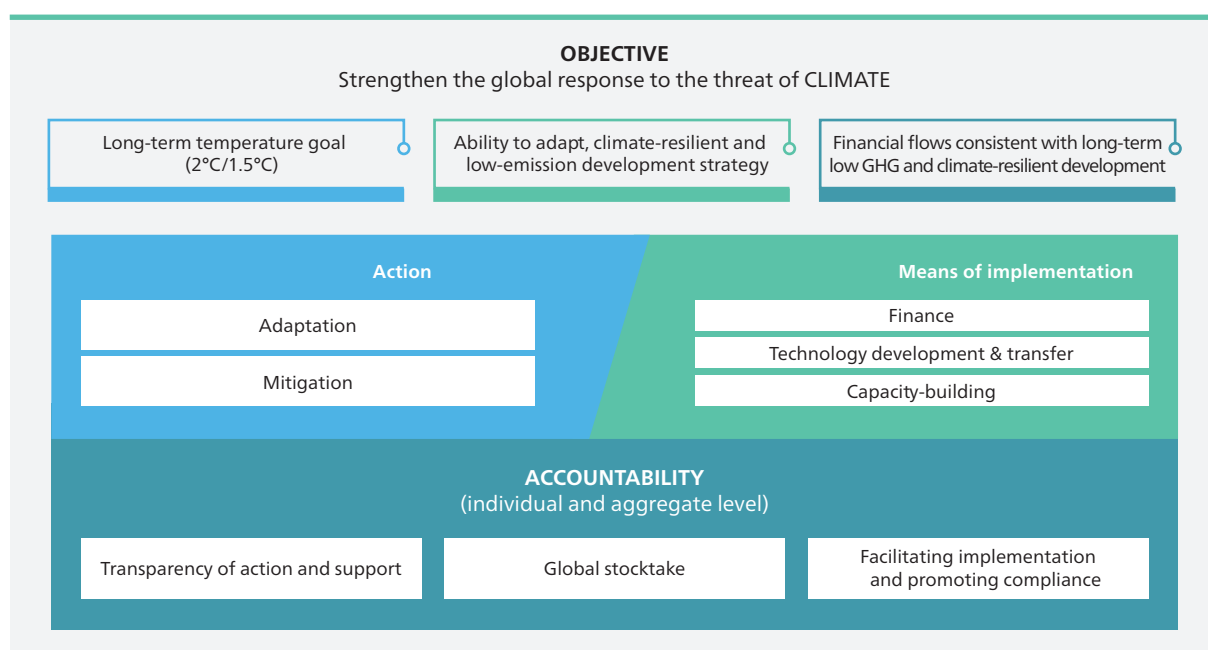MRV occurs at the international level but can also be voluntary at the national level:

- **Measurement (M)** for non-Annex I Parties applies both to efforts to address climate change and to the impacts of these efforts, including the level of GHG emissions by sources and removals by sinks, emission reductions and other co-benefits. Such measurement occurs at the national level. Initially, it referred to the measurement of GHG emissions by sources and removals by sinks through the national GHG inventories, which are reported in national communications. Based on the decisions adopted at COP 16 and 17, non-Annex I Parties need to measure also the specific effects of national mitigation actions as well as the support needed and received, and to provide this information, including a national inventory report, as part of their BURs;

- **Reporting (R)** for non-Annex I Parties is implemented through the national communications and BURs (see sections below).

- **Verification (V)** is addressed at the international level through the international consultation and analysis (**ICA**) of BURs (see section BURs below). National communications are not subject to ICA.

3.2. KEY MRV ELEMENTS UNDER THE PARIS AGREEMENT

Aiming to strengthen the global response to the threat of climate change, Parties adopted the Paris Agreement in 2015. In aiming to enhance the implementation of the Convention, one of the primary goals of the Paris Agreement, as set out in its Article 2, is to hold the global average temperature increase to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels in order to significantly reduce the risks of climate change.

FIGURE 2:   KEY ELEMENTS OF THE INTERNATIONAL CONSULTATION AND ANALYSIS PROCESS
(Source: 2020-2 UNFCCC)

OBJECTIVE
Strengthen the global response to the threat of CLIMATE

Long-term temperature goal (2°C/1.5°C)

Ability to adapt, climate-resilient and low-emission development strategy

Financial flows consistent with long-term low GHG and climate-resilient development

Action

Adaptation

Mitigation

Means of implementation

Finance

Technology development & transfer

Capacity-building

ACCOUNTABILITY
(individual and aggregate level)

Transparency of action and support

Global stocktake

Facilitating implementation and promoting compliance

The goals embedded in the Paris Agreement also aim to increase countries' abilities to adapt to the adverse impacts of climate change and foster low GHG emission development pathways, making financial flows consistent with such pathways.

To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.

Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a 5- year cycle of increasingly ambitious climate action carried out by countries. With this in view, the Paris Agreement establishes a binding commitment for all Parties to prepare, communicate and maintain a **Nationally Determined Contribution (NDC)** and to pursue domestic mitigation measures to achieve the objectives of their NDCs. It is also required that Parties communicate their NDCs every five years and present the information necessary for clarity, transparency and understanding.

To better frame the efforts towards the long-term goal, the Paris Agreement also invites countries to formulate and submit by 2020 long-**term low greenhouse gas emission development strategies (LT-LEDS)**. LT-LEDS provide the long-term horizon to the NDCs. Unlike NDCs, they are not mandatory. Nevertheless, they place the NDCs into the context of countries' long-term planning and development priorities, providing a vision and direction for future development

Furthermore, the Paris Agreement establishes, through its Article 13, **an enhanced transparency framework (ETF)** for action and support designed to build trust and confidence and to promote effective implementation.

The information gathered through the ETF will feed into the **G**lobal stocktake which will assess the collective progress towards the long-term climate goals. This will lead to recommendations for countries to set more ambitious plans in the next round.
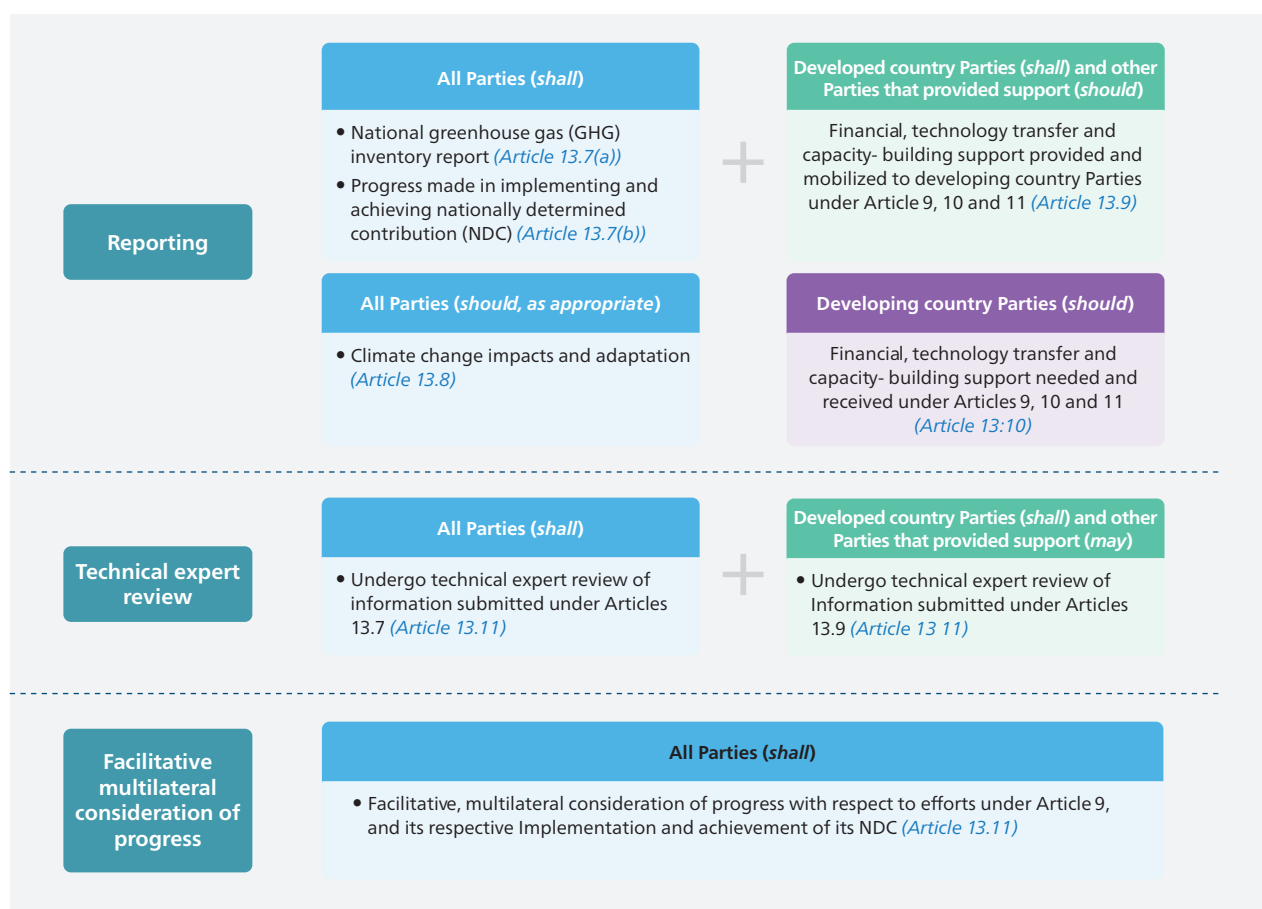
The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects.

Decision 18/CMA.1 clearly defines the rules to be applied in terms of GHG emissions inventory.

All Parties shall report their estimates of anthropogenic GHG emissions by sources and removals by sinks in the form of a national inventory report, consisting of a national inventory document (NID) and common reporting tables (CRT).

A Party can submit its national GHG inventory report as a stand-alone report, or as part of the BTR. If it is published as a standalone report, a summary of its GHG emissions and removals must still be provided in the BTR as part of the information necessary to track progress made in implementing and achieving its NDC.

FIGURE 3: ENHANCED TRANSPARENCY FRAMEWORK FOR ACTION AND SUPPORT ESTABLISHED BY ARTICLE 13 OF THE PARIS AGREEMENT (*source: 2020-1 UNFCCC*)

Reporting

All Parties (*shall*)
- National greenhouse gas (GHG) inventory report *(Article 13.7(a))*
- Progress made in implementing and achieving nationally determined contribution (NDC) *(Article 13.7(b))*

Developed country Parties (*shall*) and other Parties that provided support (*should*)
Financial, technology transfer and capacity- building support provided and mobilized to developing country Parties under Article 9, 10 and 11 *(Article 13.9)*

All Parties (*should, as appropriate*)
- Climate change impacts and adaptation *(Article 13.8)*

Developing country Parties (*should*)
Financial, technology transfer and capacity- building support needed and received under Articles 9, 10 and 11 *(Article 13:10)*

Technical expert review

All Parties (*shall*)
- Undergo technical expert review of information submitted under Articles 13.7 *(Article 13.11)*

Developed country Parties (*shall*) and other Parties that provided support (*may*)
- Undergo technical expert review of Information submitted under Articles 13.9 *(Article 13 11)*

Facilitative multilateral consideration of progress

All Parties (*shall*)
- Facilitative, multilateral consideration of progress with respect to efforts under Article 9, and its respective Implementation and achievement of its NDC *(Article 13.11)*

* The transparency framework shall provide flexibility in the implementation of the provisions of this Article to those developing country Parties that need it in the light of their capacities (Article 13.2);

* The transparency framework shall recognize the special circumstances of the least developed countries and small island developing States (Article 13.3).

3.3. KEY MRV ELEMENTS UNDER THE KYOTO PROTOCOL

Contrary to the UNFCCC, the Kyoto Protocol had defined mitigation objectives that had more legally binding effects. The Kyoto Protocol had a lot of additional expectations, in particular for LULUCF where accounting was made by activities. Considering that the Kyoto Protocol commitment periods (2008-2012 and 2013-2020) are now done, these requirements are not considered anymore and not presented in this report. However, these requirements had set a series of key concepts and approaches to consider the assessment of a Party's climate efforts regarding its LULUCF sector, which variations can be explained not only by policies and management but also by natural events and legacy effects. In particular, LULUCF reporting under the Kyoto Protocol, as defined in articles 3.3 and 3.4 used the following principles:

- Activity-based accounting (instead of land-use based accounting);
- A focus on crucial activities such as Afforestation and Deforestation, and Forest Management;

- Differentiation between the absolute results of estimation and the accounting with objectives defined with net-net, gross-net historical or projected reference approaches;

- In particular, for the forest sink, a historical or projected reference used to define the scenario upon which assessing the actual forest net result: the Forest Management Reference Level or FMRL – and the definition of his level is subject to expert review;

- The possibility to exclude emissions due to Natural Disturbances.

- The optional choice to include activities for which estimates are not as precise as for forest monitoring: Cropland and grassland management, rewetting, etc.

A large part of these requirements is still present under the EU LULUCF regulation.

3.4. KEY MRV ELEMENTS UNDER THE EU LULUCF REGULATION

In order to continue a more legally binding system after the end of the Kyoto Protocol commitment period, i.e. after 2020, the European Union has set up a new system for its member states to enhance their LULUCF mitigation policy. This system was mostly a continuation of the spirit of the rules of the Kyoto Protocol regarding LULUCF. This system also defined a EU-level objective of net neutrality for the LULUCF sector. This new reporting framework is described in the LULUCF regulation 2018/841. Compared to the Kyoto Protocol:

- Some changes of approaches had been made, such as the return to a land-use based accounting while keeping similar "activities";

- The principle of a reference level has been kept for the forest, the Forest Reference Level (FRL) with specific new rules and periods;

- The cropland and grassland management activities are now mandatory.

In July of 2021, within the "fit for 55" new climate package, the European Commission has proposed an update for this regulation, in order to increase its requirements and ambition. In particular, this proposal includes the obligation for all Parties to adopt a "spatially-explicit" (or "geographically-explicit") approach for land-use monitoring, corresponding to the IPCC approach 3 with, typically, wall to wall maps to track land use changes over time. This proposal also leads to the definition of a net neutrality objective not only for the LULUCF sector but for the AFOLU sector as a whole. The EU approach towards AFOLU's contribution to achieving carbon neutrality and related accounting requirements seems definitely relevant for Georgia, and consistent with the provisions of EU-Georgia association agreements.

4. DESCRIPTION AND ASSESSMENT OF NATIONAL MRV SYSTEM AND LULUCF MRV SYSTEM

4.1. DESCRIPTION OF CURRENT LEGAL AND INSTITUTIONAL FRAMEWORK

As a preliminary remark, it must be noted that climate change is addressed as an environmental issue in Georgia.

According to the Constitution of Georgia (article 29.2), the protection and rational use of natural resources shall be ensured by law. Therefore, it is it is the duty of the State to take appropriate measures to ensure that everyone can live in a healthy environment and receive full information about the state of the environment in a timely manner in accordance with article 29.1 of the Constitution.

Article 51.3 of the amended Law on Environment Protection of 1996 provides a legal basis for the adoption of specific rules for the protection of the Earth's climate, including the setting of GHG emission standards and/or limits as part the approach of integrated prevention and control of the pollution (article 51.1 and 51.2 of the amended Law on Environment Protection of 1996).

Within the Government, the supreme body of the States' executive power (article 54.1 of the Constitution), the Ministry of Environmental Protection and Agriculture (MEPA) is responsible for the development and implementation of climate change policies and measures in Georgia.

MEPA is the key ministry for the establishment and implementation of measurement, reporting and verification (MRV) requirements on the environment and about climate change, including for the MRV of actions and GHG emissions in the LULUCF sector. But there are a number of other institutions that can be involved in the MRV of climate action and GHG emissions in Georgia.

4.1.1. Ministry of Environmental Protection and Agriculture (MEPA)

Within MEPA, it is the Department of Environment and Climate Change (DECC) that is designated as the responsible service to deal with climate change policy.

According to the Decree of Government of Georgia n°112 of 6 March 2018 on approval of the Regulations on the MEPA, the DECC shall perform a number of tasks including the following that are relevant for the MRV of GHG emissions and climate action in all sectors:

- Participate in the development and implementation of state policy in the field of climate change;

- Participate in the organization of the state system of environmental monitoring;

- Defines and coordinates the mechanisms of protection of the air, ozone layer and water resources from the impact of natural or anthropogenic factors;

- Coordinate the implementation of multilateral environmental agreements (conventions, their protocols and agreements) and processes, including on climate change;

- Coordinate and organize the preparation of the national report on the state of the environment.

Within the DECC, it is the Climate Change Division that is tasked to coordinate the preparation of Georgia's official documents and reports to be submitted to the UNFCCC (National Communications -NatComs- and Biennial Update Reports -BUR- from non-Annex I Parties) and the Paris Agreement (Biennial transparency reports BTR), including the GHG emission national inventory report (NIR).

However, at the time of writing this report, there is no legal framework in Georgia specifying the rules, modalities and procedures for the implementation of COP/CMA Decisions on MRV and/or enhanced transparency that were adopted by under the UNFCCC or the Paris Agreement, notably its Rulebook for implementation.

Actually, the most recent NIR of GHG emissions (1990-2017) to the UNFCCC was carried out through an international cooperation project and published in 2021. It was developed by the MEPA with the funding of the Global Environmental Facility (GEF) and support of the UNDP Georgia operating as an implementing agency within the framework of the project "Development of Georgia's Second Biennial Update Report and Fourth National Communication to the UNFCCC". The Climate Change Division of the MEPA led and coordinated the NIR, that was developed.by the Environmental Information and Education Centre (EIEC) with the assistance of independent international and local experts. According to the NIR (section 1.1.2) an executive council was formed by the project partners to follow its development (review and submission of the workplan and budget) and control its quality.

Besides the DECC, it is important to note the important prerogatives given to the Department of Environment Supervision (DES), a State sub-agency within the MEPA, to exercise the State control in the field of environment protection and rational use of natural resources, mainly through inspections and examinations (article 57 of the amended Law on Environment Protection of 1996). With regard to State control over forest management, the DES is supported by specialized agencies under the authority of the MEPA, namely the National Forestry Agency and the Agency of Protected Areas (articles 7 and 8 of the Decree of Government of Georgia n°112 of 6 March 2018), the respective functions of which are discussed below in section 4.

Finally, the National Environment Agency (NEA) (http://nea.gov.ge/), a Legal Entity of Public Law (LEPL) within the system of the MEPA set up in 2008, is mandated to carry out the monitoring of the environment, including atmospheric air pollution and the impacts of climate change. The scope of the agency's activities, among oth-

ers, includes the development and maintenance of environmental monitoring systems, the dissemination of environmental monitoring data and information, and the provision of meteorological services. Within its competence, the NEA produces short-, medium- and long-range forecasts and issue warnings on expected extreme natural events and provide this information to central and local authorities and mass media. It also monitors negative hydrometeorological and geological phenomena (snow avalanches, hail, fog, deficiency in precipitation, erosive/abrasive processes, landslide, debris flow, rock fall and others) and study physical processes of climate change. With this knowledge and expertise, the NEA participates in the elaboration of mitigation and adaptation policies and measures. However, it seems that the NEA is not directly involved in the GHG MRV system in Georgia.

FIGURE 4:   INSTITUTIONAL FRAMEWORK AS PRESENTED IN LAST NIR
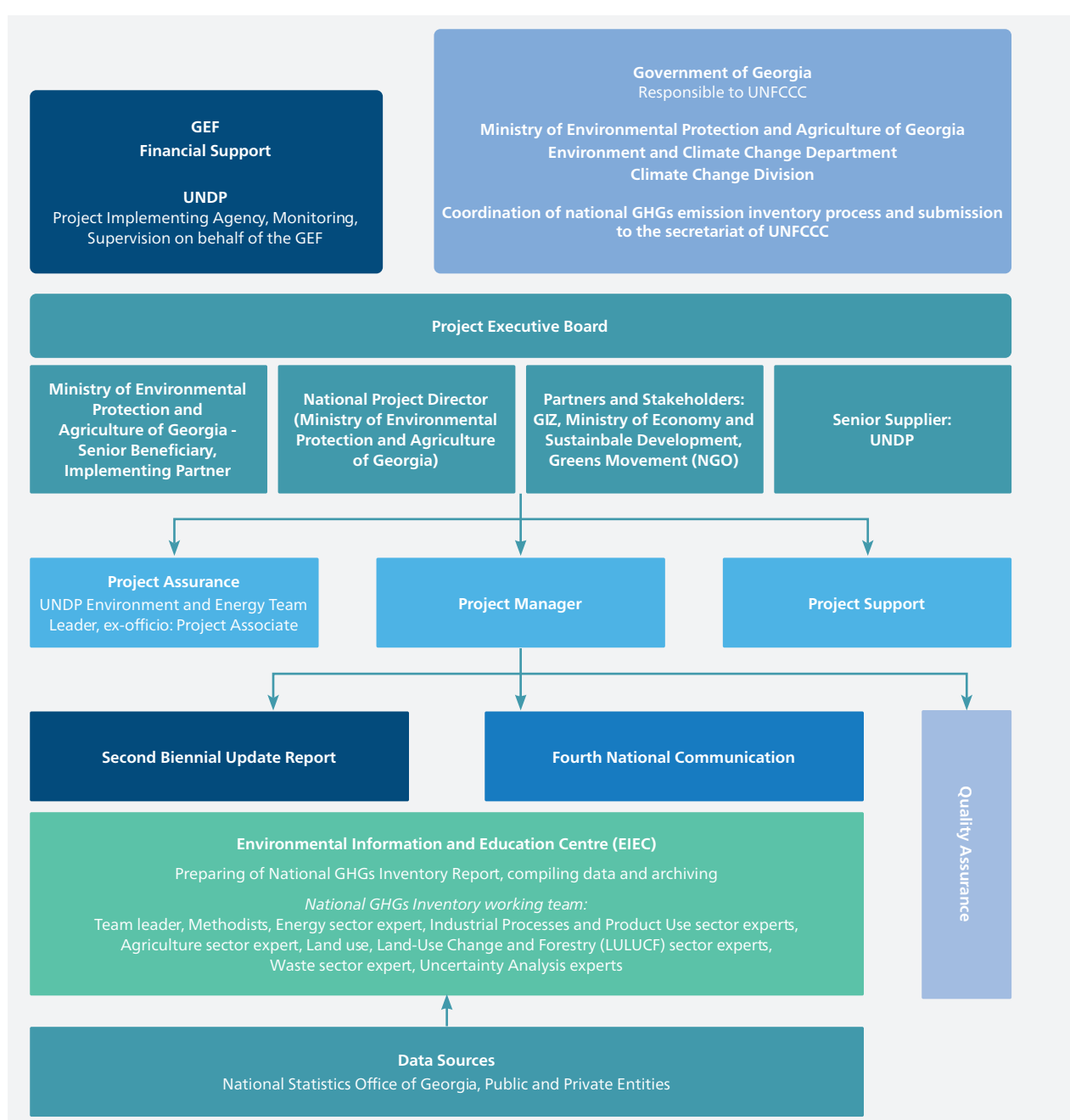
4.1.2. The Environmental Information and Education Centre (EIEC)

EIEC (http://eiec.gov.ge/) is a Legal Entity of Public Law (LEPL) within the system of the MEPA. Initially, EIEC was created in 2006 as a joint initiative of the OSCE and, at that time, the Ministry of Environment Protection and Natural Resources to establish the Aarhus Centre Georgia to facilitate implementation the UNECE Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. In an effort to institutionalize the Aarhus Centre, it was transformed into a LEPL in 2013. Still nowadays, EIEC's daily work is guided by the principles of the Aarhus Convention.

EIEC's main tasks that are relevant for the establishment of a GHG MRV system are the following:

- Promote environmental and agricultural education and raise public awareness;
- Support public participation in decision-making process;
- Ensure access to the environmental and agricultural information;
- Introduce and implement integrated information technology policy of MEPA.

Supporting the MEPA in implementing the amended Law on Environment Protection of 1996 (notably its article 27 on environmental information), one of the functions of the EIEC is to create a unified database of environmental information.

As noted above, the EIEC has coordinated the elaboration the most recent NIR with the support of independent experts in the framework of the GEF/UNDP Project "Development of Georgia's Second Biennial Update Report and Fourth National Communication to the UNFCCC". Further to some exchanges with its Director, it seems that the EIEC should continue to play a central role in the coordination of institutions and stakeholders for the elaboration and submission of the first BRT of Georgia by end 2024.

4.1.3. The Climate Change Council (CCC)

The Executive Decree n°54/2020 2021 established the CCC and defined its composition and mission. Its core mission is to ensure the efficient implementation of the Paris Agreement. In that respect, the CCC is responsible for, among other tasks, discussing the national system for measurement, reporting and verification (MRV) within the Enhanced Transparency Framework (ETF), to implement the Paris Agreement in Georgia, and, in case it is approved, shall initiate the decision-making process by the Government. The CCC should also review the NatComs and BUR of Georgia and the reports on the fulfilment of the NDCs, and, if those are approved, shall initiate the decision-making process by the Government.

At the time of writing this report, it seems that the CCC has not initiated yet any decision-making process for the adoption by the Government of rules, modalities and procedures establishing a national MRV system within the ETF of the Paris Agreement.

In addition, the CCC should review the projects to be submitted to the Green Climate Fund (GCF), Convention Adaptation Fund (AF), Climate Technologies Centre and Network (CTCN) and other financial institutions working on the climate change issues, and, in case the project is approved, shall address the MEPA with the recommendation to support the projects. Given that the CCC was installed in 2021, it could not review the first GCF funded project called "ECO.Georgia" (implemented by the German Cooperation Agency GIZ and the Government of Georgia) that aims to mitigate GHG through improved nature-based and sustainable management of the country's forests but energy efficiency by reducing the demand for fuelwood. Noteworthy that the ECO.Georgia project should help facilitate the collection of data that are useful for the establishment of the National Forest Inventory (NFI), which could be relevant for the MRV of climate mitigation actions in the LULUCF sector.

Interestingly, the CCC can also establish and approve some task forces for relevant economic sectors. Eventually, this could facilitate the coordination of MRV efforts in those sectors concerned by LULUCF.

4.1.4. For land monitoring

The basis for a good LULUCF inventory is an effective monitoring of land use and land use changes. This is a key and difficult point and the organization most likely to implement this work is not clearly defined. Currently this monitoring is carried out from scattered data.

It appears that no institute currently has the skills and resources to respond to this challenge nevertheless, there is an agency dedicated to monitoring the territory in Georgia that could certainly be involved and participate in this work: Agency for Sustainable Land Management and Land Use Monitoring (https://land.gov.ge/En).

Yet it must be reminded that a land use monitoring consistent with IPCC expectation implies some constraints, it is thus not obvious that this agency should oversee such a work, other organizations in charge of agriculture or forest lands can also be indicated.

During the project, the role of this agency has been further explained by Mr. Giorgi Zakaidze[1]. It is a new agency with the mission to centralize all data on land management. It mostly focuses on data from cadastre. All areas of the country are not under the responsibility of the agency, but it should compile this information. It is assumed that this agency should be the relevant organisation for data provision on land uses. Yet it also appeared that this agency was not designed to be deeply involved in GHG inventories and it seems that it should only be proposed as inventory data provider and not as inventory compiler.

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[1] Meeting on the 20/10/2022 with Mr. Giorgi Zakaidze, Head of Strategic Development Department in the Land Agency.

4.1.5. For LULUCF forest category

Since 2013 and the approval of its National Forest Concept (NFC), Georgia has developed a new legal and institutional framework for the forest sector reflecting upon the objectives of the so-called Forest Sector Reform Strategy (FSRS) that aimed at responding to the main challenges of forest management in the country (inadequate legal framework, lack of regulation for the provision of fuelwood and timber, illegal logging, lack of planning and monitoring of forest management, weak forest management institutions…etc.).

On the legal side, a new Forest Code has been developed to recognize the sustainable forest management (SFM) principles enunciated in the National Forest Concept (see article 4 of the new Forest Code).

Notably, sustainable forest management is now defined notably in relation to the forests' ecological functions at the local, national and global levels, both at present and in the future (article 2 v) of the Forest Code).

Assessment and reporting of SFM shall be carried out on the basis of criteria and indicators to be adopted through MEPA regulations. It is important to note that the granting of the status of a forest is made by a Governmental decision further to a proposal prepared by the MEPA (article 12.1 of the new Forest Code).

With regard to land use rights, article 5 of the new Forest Code affirms that the right of ownership of forest is inseparable from the right of ownership of a plot of land, while recognizing that forest can be owned by public (State, autonomous republic, municipalities) or private (natural or legal) entities.

Forests can be categorized differently depending on their assignment, notably in order to facilitate "*the preservation and restoration of soil protecting and (…) climate regulating functions of forests*" (article 6, b) of the new Forest Code). Taking account of that particular function, forests can be classified as "protected forest" according to article 7 of the new Forest Code. In that case, it is to be managed in accordance with the provisions of Article 8, which distinguishes between two categories of protected forests, including one that is granted the status of protected area, which is supervised by the Agency of Protected Areas (see below).

With respect to MRV of LULUCF, it must be noted that the Forest Code has given competence to the MEPA to organize a forest registration system, which consists in the national registration of forests but also forest planning and the information and monitoring system (article 18.1 d) and 24.1 of the new Forest Code). The Ministry is also competent to take measures allowing the fulfilment of obligations determined by international agreements ratified by Georgie in the field of forest management (article 18 of the new Forest Code). This competence covers the matters addressed by Paris Agreement, notably its articles 5 and 13.

For the development of a robust national MRV system, the most relevant provisions are laid down by article 27 (information and monitoring system of the forests, to be managed by the Ministry on the basis of information provided by forest management bodies and agencies) and article 28 (forest monitoring to determine the eco-

logical function of forests, which necessarily includes the measurement of carbon sources and sinks). Beyond the on-going development of the 1st National Forestry Inventory (NFI) on the basis of these provisions, they offer a legal basis to MEPA for the adoption of rules, modalities, procedures and guidelines for the MRV of climate action and GHG emissions in the forest sector. To do so, it would be interesting to discuss the possibility to link or integrate such rules, modalities, procedures and guidelines in the "*Procedures for the System of Registration, Categorization and Monitoring of the Forests of Georgia*" (see article 28.3 of the new Forest Code).

To conclude on the relevant legal aspects, it must be noted that the National Forest Concept expressed an interest in supporting the development of sustainable forest certification such as by FSC and/or PEFC. This is reflected in the Forest Code, which gives competence to the Ministry to facilitate the introduction of a process of voluntary and independent certification scheme (article 18.2). However, it seems that there has been no Georgian forestry standard for certification and no forest management unit has been certified, either by PEFC or FSC at the time of writing this report.

Regarding the institutional framework, the new Forest Code has separated more clearly the functions of policy making (=> the Biodiversity and Forest Policy Department of MEPA), supervision (=> the DES of MEPA) and management (the so-called "Forest Management Body", see article 21, basically the National Forest Agency and the Agency of Protected Areas). All these three functional levels are relevant for putting in place a robust MRV system in Georgia.

The Department of Biodiversity and Forestry of the MEPA is responsible for the elaboration of the forest policy and strategies, as well as the drafting of the legal framework on national level, but also for the monitoring of the forest status and the reporting at national and international levels.

The DES of MEPA is responsible for the control of forest management, of harvesting operations of the transportation outside of the forests, and of trade and exports of harvested wood products.

The "Forest Management Body" is actually the National Forestry Agency (NFA) (http://forestry.gov.ge/), established in 2010 within the system of the MEPA to manage State owned forests. Under the adoption of the new Forest Code, NFA's main action was guided by the provisions of the Law of Georgia on the Management of Forest Fund n° 4419 of 11 March 2011, which defines Forest fund as "*the state forest fund except for the protected territories of the state forest fund, forests of local significance, and forest funds located in the territories of the Autonomous Republics of Abkhazia and Adjara*". Now established as a Legal Entity of Public Law (LEPL) since the approval of the Statute of the National Forestry Agency of Georgia - Order No. 50 of 26 December 2016. Further to the National Forest Reform, the NFA has been reformed to become the forest management body, working particularly on forest maintenance and reforestation and caring about the sustainable use of components of biological diversity in the forest. It remains responsible for monitoring and control in the territory of the forest fund except for setting licensing conditions. Most importantly it is in charge of developing and implementing the first National Forest Inventory (NFI) for the next ten years.

During the project, the role of the agency was further explained by Mrs. Natia Iordanishvili[2]. The NFI is one of the main projects led by the agency which confirms its role as data provider for the GHG inventory. It seems that the agency could also be further involved in the GHG inventory of Georgia, at least for the areas that are under their responsibility.

As noted above, forest can be categorized as protected forests, which may be classified as protected areas. For data relating to those protected forests, it is the Agency of Protected Areas (APA) (http://apa.gov.ge/en/) that should be responsible for monitoring and reporting. Established under the authority of MEPA in 2008, the overall objective of the APA is to "improve the management of protected areas, ensure functionality of territorial administrations, supervise the process of following legally established regulations and to plan, create and develop new protected areas" (source, APA website).

During the project, no meeting could be organized with people from APA which limits the possibilities to propose a specific role in the GHG inventory.

4.1.6. For LULUCF non forest categories

While forest carbon emissions and removals represent the main focus of the LULUCF inventory, there are other elements that need to be addressed through a robust MRV system.

Firstly, land-use and land-use change areas estimations are a critical step and it is often a challenge for country to develop a robust approach to track land-use change, since several datasets can exist, and no datasets fits well all the requirements (spatial and temporal coverage, resolution, consistency of definition, consistency with forest data such as NFI, etc.). Moreover, there is often no official framework that defines one source to estimate land-use and land-use change areas for the purposes of the inventory.

Other LULUCF categories include: Cropland, Grassland, Wetlands, Settlements and Other Land. The monitoring framework required to estimates fluxes on these categories, in addition to the land-use areas monitoring, is mostly about:
- Mineral soil carbon stocks estimates
- Organic soil carbon stock estimates
- Living biomass carbon stock estimates
- Soil carbon stock change for cropland and grassland remaining cropland or grassland

Several technical or research institutes are certainly relevant on agricultural topics. These centers can be used to refine methods and parameters for the calculation of emissions and removals. In particular, the following institutes may be named:
- Scientific research center of agriculture (https://srca.gov.ge/en)
- State laboratory of agriculture (http://sla.gov.ge/En)

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[2]   Meeting on 13/10/2022 with Mrs. Natia Iordanishvili, Deputy Head of the National Forestry Agency

During the project, no meeting could be organized with people from these organisations which limits the possibilities to propose a specific role in the GHG inventory.

In this context, institutional arrangements are helpful and even often necessary to:

a) Ensure data acquisition, surveys, collecting and disseminating etc.

b) Ensure research

c) Ensure rules and incentives to avoid emissions and encourage management practices that lead to removals i.e in the agricultural soils;

d) Ensure protection of carbon-rich land so that they are not subject to land use conversion and subsequent emissions.

In Georgia, some mitigation measures have been developed:

Example of c): *Sustainable management of pastures in Georgia to demonstrate climate change mitigation and adaptation benefits and dividends for local communities. The action aims Georgia to demonstrate climate change mitigation and adaptation benefits and dividends for local communities. Implemented (2013-2016). 4,000 ha of degraded pastures and 300 ha of sheep migratory routes have been fully rehabilitated. (BUR 2019, p.75)*

example of d) : *Establishment of Javakheti Protected area in Georgia. Area includes mostly high mountains and wetland territories (CO2 sink). Implemented (2010-2011). Javakheti protected area 16,614 ha has been established, infrastructure and legislative bases were created. (BUR 2019, p.75)*

The NC4 (2021) highlights that „*unfortunately, the current statistics do not show any land use categories or changes in them in terms of category change, however, a high rate of pasture and meadow degradation is evident.*".It seems that there is a lack of policy framework to monitor, study and protect grasslands.

However, it must be noted that the 2019 Law of Georgia on the Determination of the Designated Purpose of Land and on Sustainable Management of Agricultural Land established the National Agency for Sustainable Land Management and Land Use Monitoring, as a LEPL operating within the governance of the MEPA. The functions and powers of the Agency have been specified by the Ministerial Order n° 2-1258 of 26 December 2019 on the Approval of the Statute of the Legal Entity under Public Law called the National Agency for Sustainable Land Management and Land Use Monitoring. Noteworthy that the Agency shall register agricultural land resources and create an integrated database, and carry out state monitoring of land use and ensure the availability of relevant information. To do so, the powers of the Agency has some powers hat are relevant for MRV of non-forest LULUC activities, in particular:

- To participate in the preparation and implementation of state policy for designated use and protection of agricultural land resources, and of relevant designated state programmes;

- To participate in the preparation and implementation of state policy for the sustainable management of agricultural land;

- To participate in the planning of activities to fight against desertification and land degradation, and to restore soil fertility;

- To participate in the planning and carrying out of activities related to the management of windbreak belts (shelter belts);
- To prepare thematic maps related to land use
- To store, maintain and ensure access to documents submitted to the Agency (…)

Other pools or carbon stock change are often not estimated and are not crucial when developing a MRV system. They can be estimated at later stages when improving the estimations.

The section below presents some institutions that are relevant also for these non-forest categories.

4.1.7. Other institutions that are relevant for the development of a robust MRV system

a) The Ministry of Economy and Sustainable Development (http://www.economy.ge):

The Ministry of Economy and Sustainable Development (MESD) can be an important player to promote climate policy integration, coherence with other policies and intragovernmental coordination, including for undertaking MRV of climate action and GHG emissions.

It is important to note the role that can be played by the Technical and Constructions Supervision Agency placed under the authority of the MESD for the implementation of the procedure and modalities for conducting environmental impact assessments: this Agency is the statutory authority for the implementation of with the Environmental Assessment Code of 2018. In addition, the MESD is also involved in urban planning, which is key for deciding upon land use changes.

b) National Statistics Office (https://www.geostat.ge/en):

The National Statistics Office (NSO) is regulated by the Law on Official Statistics of 2018. (https://www.geostat.ge/media/20817/latest-Law-of-Georgia_2018.pdf). It is involved in the collection of environmental data (water, waste, energy, transport), including on fertilizer and pesticide consumption and timber production and exports.

Its environment statistics are based on information provided by the MEPA services, and they are published in the annual report of the NSO. Notably, the NFA share its monitoring data with the NSO and it seems that the two institutions have signed a memorandum of understanding to specify the modalities of their collaboration.

During the project, no meeting could be organized with people from GeoStat which limits the possibilities to propose a specific role in the GHG inventory. But their scope and knowledge in statistics of the countries indicates that they are data providers for the LULUCF GHG inventory. Moreover, it is possible to imagine a system where Geostat could have additional responsibilities in the LULUCF GHG inventory.

c) Public authorities at sub-national level:

The Local Self-Government Code (2014) defines the legal basis for exercising local self-governance, it specifies the powers of local authorities, provides for clear rules for their establishment and operation, regulates their finances and property, their relations with citizens, with public authorities and with entities under public or private law, and sets forth the rules for carrying out state supervision and direct state administration of the activities of local authorities.

In particular, municipalities ("local self-governing units") have the power to manage local natural resources, including the forest and land resources owned by the municipality (article 16.2, c) of the Local Self-Government Code of 2014). Moreover, they are in charge of preparing and approving spatial planning schemes, master and development plans, but also grant the status of a plot of land (article 16.2, e) and m) of the Local Self-Government Code of 2014). Therefore, municipalities may be requested to collect information and data on LULUCF within their boundaries.

4.2. ASSESSMENT OF CURRENT LEGAL AND INSTITUTIONAL FRAMEWORK

Institutional arrangements will vary among countries depending on the national circumstances, priorities for action and demands for informing stakeholders involved in the implementation of action and reporting. In some countries, a single organizational structure may be responsible for all themes, objectives and outputs, whereas in other countries these responsibilities may be divided among different independent organizations.

Institutional arrangements can be organized around five separate components (see figure 1). These are:

1. Organizational mandates;
2. Expertise;
3. Data flows;
4. Systems and tools;
5. Stakeholder engagement
6. Structuration of institutional arrangements?
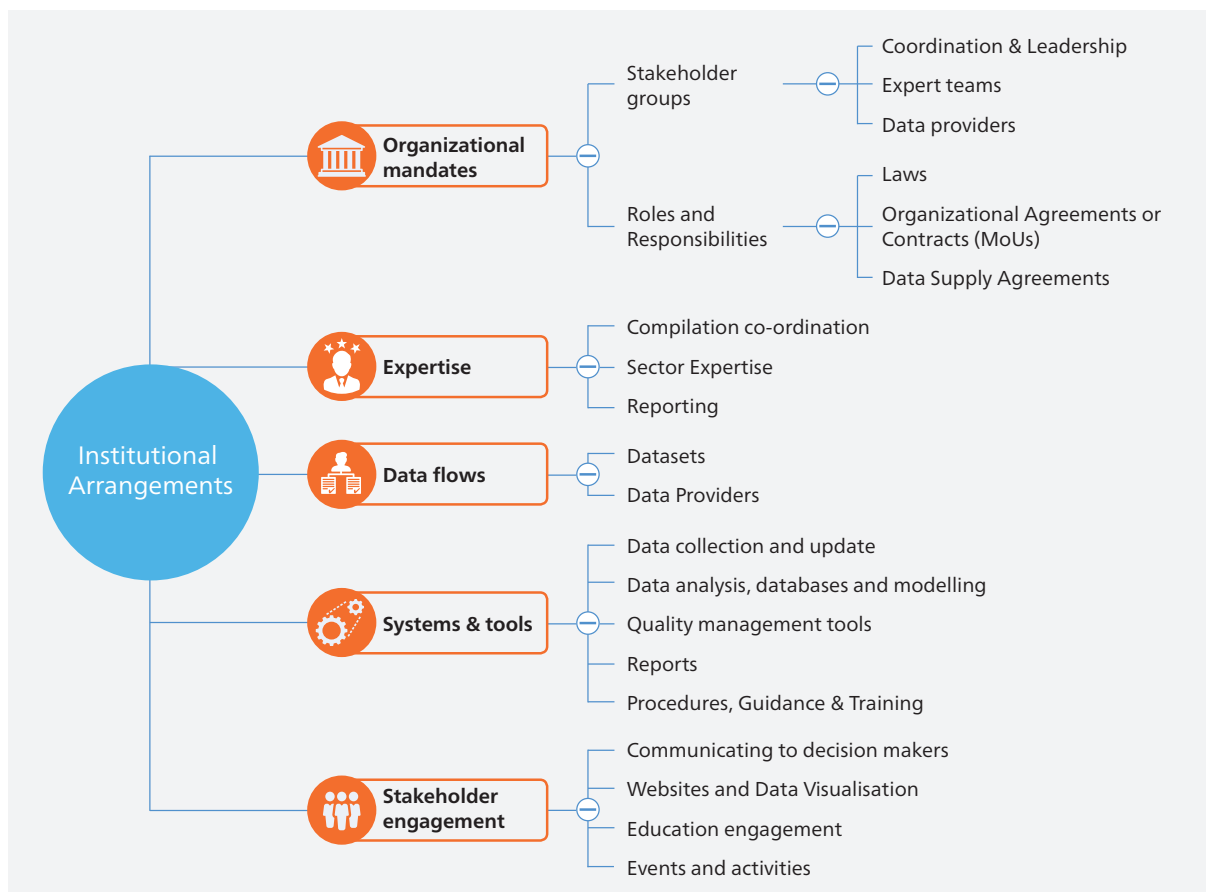
4.2.1. Organizational mandates

Organizational mandates should include terms of reference designed to guarantee that the human, financial and data resources needed are made available and to clarify the decision-making process. Critically, these organizational mandates facilitate collaboration between experts and expert organizations and are required to, for example, ensure a regular supply of new data, manage data confidentiality, guarantee access to data and engage private sector organizations to provide data or consultancy.

#Check 1: It the leading structure clearly identified?

The Ministry of Environmental Protection and Agriculture (MEPA) is clearly the leading entity.

Within MEPA, it is the Department of Environment and Climate Change (DECC) that is designated as the responsible service to deal with climate change policy.

Within the DECC, it is the Climate Change Division (CCD) that is tasked to coordinate the preparation of Georgia's official documents and reports to be submitted to the UNFCCC including the GHG emission national inventory report (NIR).

The EIEC, under State control via the MEPA, is the coordinating entity for the collection and management of data and information.

#Check 2: Are all the structures involved in the GHG inventory clearly identified?

Until now, the LEPL Environmental Information and Education Centre (EIEC) has been preparing National GHG Inventory reports with the assistance of independent international and local experts. The core of the technical teams is composed by external consultants hired project by project.

Other ministries and services are part of the system. They are mostly data providers. The complete list of data providers for LULUCF is not identified yet, it will be seen in detail in the specific assessment of current data flows for LULUCF.

The involvement of the following structures in the GHG inventory system should be considered:

- Climate Change Council (CCC)
- National Environment Agency (NEA)
- National Forestry Agency (NFA)
- Agency of Protected Areas (APA)
- Agency for Sustainable Land Management and Land Use Monitoring
- National Statistics Office (NSO)
- Land monitoring service

#Check 3: Is the system well described in NC or NIR (for instance with a clear picture)?

A clear picture shows the main entities involved in the process, it is presented in the latest national communication and inventory report (and copied in this report under paragraph 2.1.1). It mixes entities and products to better reflect the system which is based on a project basis. The picture is not exhaustive in the naming of data providers, but main ones are presented. Notably, the existing process is driven by international funded projects (GEF/UNDP), it is not regulated or described in institutional arrangements.

#Check 4: Are there terms of reference (official documents) designed to guarantee that the human, financial and data resources are made available?

No official document was identified as designed to guarantee that the human, financial and data resources are made available for GHG inventories.

- The mandate to ensure the production of GHG inventories is given to the Department of Environment and Climate Change (DECC) at MEPA by Decree (Decree of Government of Georgia n°112 of 6 March 2018).
- The implementation of GHG inventories is made thanks to financial resources from United Nations Development Programme (UNDP) and the Global Environmental Facility (GEF).
- Most of human resources are from Georgia, with internal or external experts. International consultants were also hired in the past but not for the latest NIR.
- A specific assessment on data resources is led in paragraph 2.3.

One note that, in view of the realization of the next BTR, the EIEC, in charge of the implementation of the inventory work, has begun the recruitment of the experts necessary to carry out the work.

#Check 5: Have the system been working efficiently for the latest GHG inventories?

Three editions of inventories have been led and the most recent one is published recently in 2021. Globally it seems that it responds to international expectations.

#Check 6: Does a national strategic ministerial-level steering committee exist for GHG inventories?

It was not identified as such. There was an executive project board for the latest GHG inventory. And, so far, it is not clear whether national inventories have been formally endorsed at the Governmental level before their submission to the UNFCCC.

#Check 7: Were specific difficulties or challenges identified in terms of human, financial and data resources for LULUCF in latest inventories?

No specific challenges were mentioned by EIEC in the implementation of LULUCF inventory. But, it can be noted that a few categories of the LULUCF inventory were let as non-estimated. It does not mean that the results are not good insofar as all categories are not priorities but there is place for improvement in terms of completeness.

FIGURE 6:   SCOPE OF THE LULUCF INVENTORY PRESENTED IN THE NIR

GHG Source and Sink Categories	CO_2		CH_4		N_2O		NO_x		CO	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
5.A Forest land	D,T1	D,PS	D,T1	D	D,T1	D	D,T1	D	D,T1	D
5.B Cropland	D,T1	D,PS	NE	NE	NE	NE	NE	NE	NE	NE
5.C Grassland	D,T1	D,PS	NE	NE	NE	NE	NE	NE	NE	NE
5.D Wetlands	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
5.E Settlements	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
5.F Other land	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

D: IPCC default, T1-T3: IPCC Tier 1-3, PS: plant specific.|

It appears that there are no many resource people capable to implement a LULUCF inventory in Georgia. The resources seem limited for the next exercise, and it is obvious that the sector is demanding in terms of expertise and data. the calculations were

made on Excel spreadsheets with limited disaggregation of data. Land monitoring is a bit basic. Estimates are not estimated for all pools of carbon. No estimation is made on harvested wood products. National forest inventory will soon be available but won't solve all the issues. So, there are gaps that would justify the focus on this sector. On the other hand, these challenges exist in all countries whatever their level of resource.

4.2.2. Expertise

The team of national experts should be capable of regularly gathering and processing data in order to produce the agreed outputs in a timely manner. The team should have suitable back-up expertise and access to relevant training materials.

There should also be effective recruitment, retention and succession procedures in place that motivate the long-term and active involvement of experts in the reporting process. These aspects depend on suitable organizational mandates, as described above.

National experts are responsible for collecting, processing, and arranging the data and information for reporting of transparency themes. In general, national experts should:

- Have good relationships with data providers.
- Be comfortable with data analysis and calculations, and associated science and methods, including IPCC guidelines.
- Have a good understanding of the benefits and limitations of the data sets.

#Check 8: Does the system ensure the implication of people trained for IPCC methods?

Experts involved in inventories have followed specific trainings on inventories in particular for the latest inventories that was based for the first time on 2006 IPCC guidelines.

#Check 9: How do government agencies and departments cultivate, and retain in-house experts?

Technical expertise for inventory production is currently dependent on external consultants recruited project by project. Yet the team leader of the latest inventory, Mr.Giorgi Mukhigulishvili, was involved in the 3 exercises of inventory from Georgia. There is thus a form of continuity.

In the UNFCCC advises it is noted that in the early phases of developing institutional arrangements, it may be helpful to contract external support to train and mentor the team of national experts. The team of national experts may also wish to bring in temporary additional support for new developments from time to time. Yet, in Georgia, according to the Director of EIEC, Ms. Tamar Aladashvili, it is not planned to internalize these activities in a short term.

#Check 10: How do government agencies and departments manage direct/advise consultants actively?

All the process is managed as a project with a team leader who manages the consultants implied.

#Check 11: How do experts in non-government organizations contribute to the transparency system?

No participation of NGOs was noted for the moment.

#Check 12: Are there existing knowledge management and training resources for archiving information and documenting processes to ensure work builds from existing efforts and also facilitates work of future staff?

The national inventory report is transparently published and contain most of the methodological explanations on the GHG inventory. It is the main document that is available for future teams.

No specific procedure, nor tool, was identified to facilitate the work and the training of consultants allowing effective increased skills.

4.2.3. Data flows

Reliable, regular data flows are essential for well-functioning institutional arrangements and the delivery of a national transparency framework. This includes defining the need for and uses of data, managing the delivery of the required datasets from a range of data providers on a regular basis and continuously improving data and reducing uncertainty.

The data sets include national statistics and government data, various forms of measurement data, company and trade association reports, and censuses and surveys that have already been undertaken and reported.

They also include new data specifically developed to fill gaps in knowledge where existing data does not exist, including new surveys, measurements and other statistical data collected on specific anthropogenic activities (e.g. forestry, agriculture, use of fluorinated gases), climate risks and vulnerabilities as well as on the costs, benefits and co-benefits of adaptation and mitigation actions, and information on financial, technology and capacity-building support for action. Identifying and engaging with stakeholders who hold, produce and could supply this data will be important.

#Check 13: Are key data providers clearly identified?

For LULUCF, forest sector is often prioritized and so forest stakeholders are rather well identified: the national forest division of MEPA, the National Forest Agency and the Agency of Protected Areas. Yet it is not fully clear how all these organizations work together for the GHG inventory. It seems that they are involved in the production of the national forest inventory which is one of the main data sources for LULUCF forest sector. For forest, in LULUCF, the boundary between data provider and inventory compiler is tiny.

In practice, the single national forest inventory (NFI) was led recently and could not be used for the latest GHG inventory. Field data are currently analyzed for publication.

This forest inventory is essential because it may offer the possibility to update all knowledge on health of forest in a context of climate change and anthropogenic

pressure. It may also offer the possibility to get new activity components on harvesting. Currently illegal logging creates difficulties for getting an accurate picture of forest harvesting and its impacts. Yet one must be cautious as this forest inventory is the first comprehensive one it does not offer a complete view of changes in stocks. Additional exercises will be necessary for that and the time slots between NFIs is expected to be every ten years.

For the lands that are not forest, the stakeholders and data providers are not so clear as far as estimates on these lands are not so complete. It remains that most of LULUCF expertise and data, including on agricultural lands, are certainly at MEPA (which is also in charge of agriculture).

#Check 14: Is there a clear picture showing all data flows for LULUCF?

Such picture was not found.

#Check 15: Does the system ensure free, easy, regular exchange with data providers?

National forest inventory is new in Georgia and could not be used by inventory compiler for the latest inventory. As this inventory is led by a division of MEPA there should not be any difficulty to access NFI data for the GHG inventories.

#Check 16: Are there legislative and policy instruments, as well as tools and modalities facilitating data flows between government agencies and the private sector?

No data flux between agency and private sector was identified for LULUCF. It could be raised for municipalities which are in charge in particular of forest management… At EIEC level it was indicated that existing MoU (Memorandum of Understanding) with data providers were useful to facilitate the work. For the LULUCF inventory it was not obvious, yet at which steps it was helpful. It should be further investigated.

#Check 17: What role do national statistics offices, environment and sustainability departments and environment agencies play in the provision, analysis and QA/QC of data?

According to the latest NIR (paragraph 2.3) the QC activities are carried out by a team of experts involved during the preparation of the GHG NIR and by the project coordinator during the compilation and development of the GHG NIR of Georgia. In terms of quality assurance (QA), an external review of this NIR was coordinated by the UNDP-UNEP Global Support Programme (GSP) and was conducted from 16 to 22 March 2020 by Dr. Carlos Lopez, consultant in national GHG emissions inventories.

It seems that national offices and agency mostly play a role for the provision of data but were maybe not actively involved in QA/QC process.

#Check 18: Are there any overlap between departments in data-collection activities?

Most data and expertise is at MEPA or in agencies dependent from MEP for LULUCF no clear overlap or conflict was noted.

4.2.4. Coordination, systems and tools

Coordination, systems and tools are important for the smooth functioning of the transparency system. This encompasses managing the collection, analysis, QA/QC, summarizing and archiving of data. Institutional arrangements need to provide for the development and maintenance of workplans, engagement tools, databases, data analysis, indicators and reports.

#Check 19: Are previous editions of GHG inventory (including calculation files) completely archived and available?

Official documents are available (NIR, NC, BUR). The data collected and calculation tools used for previous inventories are not centralized by MEPA nor by EIEC, they were compiled by the team leader and by consultants.

#Check 20: Are the same tools used from one to another edition of inventory?

In the last inventory calculations were made thanks to the Excel spreadsheets of the 2006 IPCC guidelines (The IPCC tool (v2.54 July 2017) was only used for the energy sector).

#Check 21: Is there a regular update of new requirements, templates, methodologies?

The latest inventory follows the 2006 IPCC guidelines which is in line with requirements. The following 2013 IPCC guidelines on wetlands and the refinement of 2019 were not used but it is consistent with international requirement which does not impose these guidelines.

In terms of global warming potentials, the values from the 2nd Assessment report from the IPCC were used which correspond to old values but there is no strong obligation in terms of reference for the moment.

#Check 22: Is there planification and team setup for report preparation?

Planification of the work of teams is linked to the projects and are managed at this level.

#Check 23: Is there an uncertainty assessment GHG estimates?

The national inventory report presents a section on uncertainties and one of the authors is presented as expert in uncertainties.

In the NIR (page 1-15 and 1-16) details are provided on how uncertainties were estimated. It is also completed by Annex C of the NIR on uncertainties.

#Check 24: Is there a follow-up of recalculations of GHG estimates?

Recalculation compared to previous inventory was done in last national inventory report and presented in chapter 8.

Yet, few information on the changes are provided ("Activity data and the emissions factors has been updated and specified"). It can be noted for these last invento-

ry IPCC2006 guidelines were used (and also 2003 good practice guidance for LU-LUCF). I may lead to large differences that are not easy to comment. Nevertheless, most data used for forest are old data that were certainly already used in the past. The new forest National inventory was not available yet.

#Check 25: Is there an improvement plan that is used and completed over the years?

No improvement plan was found in the NIR.

#Check 26: Are there automatic controls of GHG estimates?

The tools are not clearly identified and automatic controls unknown.

#Check 27: Is the system efficient to produce reporting tables?

Although the calculations are made with 2006 IPCC guidelines and sometimes with Good Practice Guidance of the IPCC, the reporting tables are those corresponding to former 1996 revised IPCC guidelines.

It is important to note that for next BTR, the reporting format will be much more detailed and similar to the format used by Annex I countries.

#Check 28: Are the official communication submitted on time?

National communications are to be submitted every four years and prepared following the guidance contained in the revised guidelines for the preparation of national communications from non-Annex I Parties contained in the annex to Decision 17/CP.8.

BURs are to be submitted every two years, providing an update of the information presented in National communications, in particular on national GHG inventories, mitigation actions, constraints and gaps, including support needed and received (Decision 2/CP.17, annex III.)

The dates of submissions from Georgia are:
- NC1: 10 Aug 1999
- NC2: 2 Oct 2009
- NC3: 24 Feb 2016
- NC4 : 3 Apr 2021
- BUR1: 18 Jul 2016
- BUR2 : 13 Jun 2019

#Check 29: Are there documents confirming quality control/assurance on inventory?

QC and QA are mentioned in the NIR but no clue of the effective controls was seen.

The report of the quality assurance conducted from 16 to 22 March 2020 by Dr. Carlos Lopez, consultant in national GHG emissions inventories was not consulted.
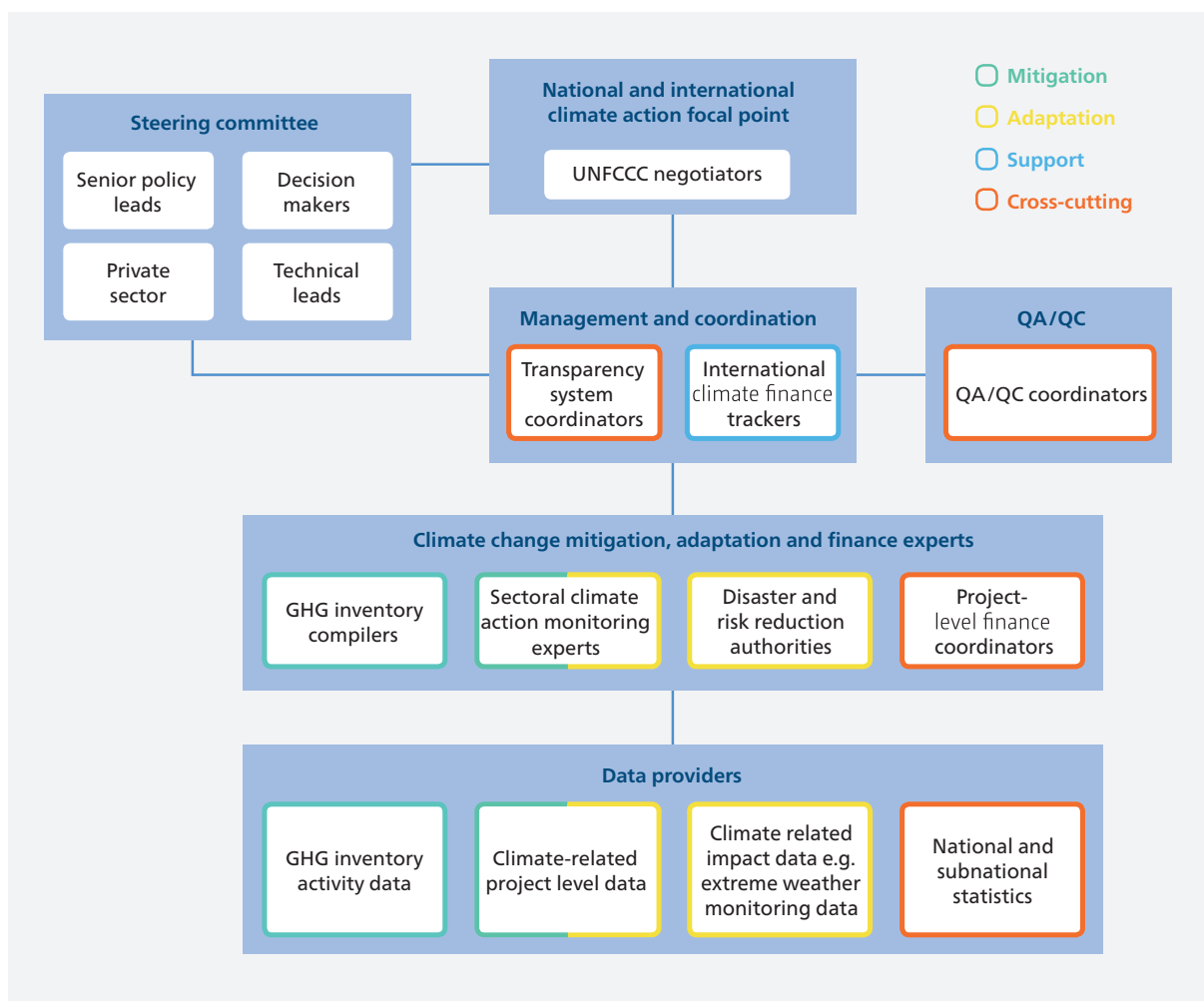
4.2.5. Stakeholder engagement

Collecting data and making use of the outputs requires stakeholder engagement, including the public, local governments and communities, businesses and other decision makers. The greater the engagement the better (and more useful) the transparency system will be for evidence-based decision-making and the production of reports. Stakeholder engagement involves seeking out key individuals and organizations and offering benefits in exchange for their involvement (e.g. providing data, insights and resources) with the transparency system.

#Check 30: Does the system ensure a multi-stakeholder and consultative process?

There is an executive board for the project, but not permanent multi-stakeholder committee was identified.

#Check 31: Does the system ensure the implication of people with knowledge of relevant existing datasets during the allowed time of an edition?

National inventory reports are cautiously produced. Recruited consultants for LU-LUCF are acknowledged resource people in Georgia.

#Check 32: Are there conflicts of interest of stakeholders in the LULUCF MRV process?

Currently, no conflict of interest was identified.

4.2.6. Structuration of institutional arrangements

Structuring institutional arrangements helps to define coherent roles and responsibilities among the involved organizations. Describing the structure of the institutional arrangements in an organization chart offers a visual summary of the organizational linkages.

#Check 33: Are there written procedures to structure the system?

Not so clear for the moment.

The MoU of 2014 to facilitate the transfer of data is known by stakeholders but it is not easy to assess whether it is efficient.

At the time of writing this report, it seems that the CCC has not initiated yet any decision-making process for the adoption by the Government of rules, modalities and procedures establishing a national MRV system within the ETF of the Paris Agreement.

4.3. SPECIFIC ASSESSMENT OF CURRENT DATA FLOWS FOR THE LULUCF GHG INVENTORY

Inventories are not limited to the question of data, but this is a recurrent issue which justifies a detailed look on it. In practice, lack of data is often pointed as the major limit to produce inventories of high quality.

4.3.1. Land monitoring

Land use monitoring is one of the main challenges of LULUCF inventories. **T**he IPCC guidelines propose 3 approaches of increasing precision and difficulty to assess land use change:

- Approach 1: representation of land without monitoring the evolution of each land category,
- Approach 2: use of land use change matrices on a sample and extrapolation to the whole territory,
- Approach 3: Use of land use change matrices with comprehensive coverage and the ability to spatially represent a map of land use change. Approach 3 is most often the result of work from satellite images but can also in theory be implemented from statistical sampling.

Nowadays land monitoring is based on satellite imagery, but remote sensing does not make all difficulties disappear. For instance it remains very difficult to compare maps made from satellite imagery.

#Check 34: Are land use and land use change data available for GHG inventories? What type of data is used?

In the NIR (p 5-62), it is written that land monitoring is mainly based on data from the National Statistics Office and the Ministry of Environmental Protection and Agriculture and is completed by FAOSTAT for missing data.

Considering the land use changes that are reported, the land use monitoring is certainly based on several datasets and not using maps of land use and land use changes. The land use change matrixes do not show any changes in settlement for instance which is unlikely.

#Check 35: Is the land use monitoring of the whole country?

In Georgia, an additional difficulty of monitoring is due to the territories of Abkhazia and South Ossetia which are not controlled By Georgia but included in the area reported by Georgia in its LULUCF inventory.

#Check 36: Is there a unified system ensuring consistency for all land use categories?

It is not so clear how the land use changes are estimated, but some elements of consistency are present like the fact that the area is kept constant over time.

#Check 37: Does the system cover accounting for of all land use categories?

All land uses are estimated, but many of them are not concerned by land use changes and consequently there are no carbon changes on it.

FIGURE 8: TABLE PRESENTED IN THE NIR SHOWING A L LOT OF NON ESTIMATED CATEGORIES

GHG Source and Sink Categories	CO_2		CH_4		N_2O		NO_x		CO	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
5.A Forest land	D,T1	D,PS	D,T1	D	D,T1	D	D,T1	D	D,T1	D
5.B Cropland	D,T1	D,PS	NE	NE	NE	NE	NE	NE	NE	NE
5.C Grassland	D,T1	D,PS	NE	NE	NE	NE	NE	NE	NE	NE
5.D Wetlands	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
5.E Settlements	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
5.F Other land	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

D: IPCC default, T1-T3: IPCC Tier 1-3, PS: plant specific.

#Check 38: Are managed and unmanaged land distinguished?

In NIR (p 5-65) It is noted that forests were carried out on an entire forest area, regardless of forest management regime (active or passive) […] Exceptions are forests in areas not controlled by Georgia (Abkhazia, South Ossetia), which are not included in the calculation due to the lack of relevant data".

It means all forest is reported under managed forest excepted those in areas not controlled by Georgia.

#Check 39: Are there stratifications with country specific land subcategories?

For cropland, arable and perennial crops are distinguished.

For forest, distinctions are made for West Georgia, East Georgia and AR of Ajara by type of forest (coniferous/deciduous) and type of climate (humid continental/dry continental/humid subtropical).

But (NIR 5.73), "unfortunately, it is impossible to carry out inventory of greenhouse gases on forest areas per separate climatic zones, due to unavailability of necessary statistical or taxation data".

FIGURE 9: SUBCATEGORIES OF FOREST KNOWN FOR THE ENTIRE PERIOD WITH THEIR AREAS

Year	Forest land (National Forestry Agency), ha											
	West Georgia					East Georgia					Total
	humid continental climate (Upper Svaneti-Mestia)		humid continental climate		Total	dry continental climate		humid continental climate (Borjomi-Bakuriani)		Total	(6+11)
	coniferous	deciduous	coniferous	deciduous		coniferous	deciduous	coniferous	deciduous		
1	2	3	4	5	6	7	8	9	10	11	12

Year	Ajara AR, ha			Abkhazia and South Ossetia, ha	Forest areas that exist on the protecterd sites	Total area of forest of Georgia (12+16+17+18). thousand ha)
	coniferous	deciduous	Total			
13	14	15	16	17	18	19

#Check 40: Does the system monitor land use and land use changes for all subcategories and all possible conversions?

In the NIR (p5-62) it is written that "changes in land use areas are minimal. It is noteworthy that the small change in the total forest area of Georgia is due to the fact that no clear cut is carried out there and the tendency to transfer forest lands to other land use categories is insignificant."

The table on land areas only shows the land areas by year and not the converted areas with initial and final use. It is not clear whether an approach 1 or an approach 2 is used for land monitoring.

#Check 41: Is there a specific tracking for deforested areas?
Not clearly.

#Check 42: Is there a specific tracking for afforested areas?
Not clearly.

#Check 43: Is there a specific tracking for urbanized areas?
Not identified.

#Check 44: Are land use change monitored for a long period, for recent years?
In the GHG inventory the entire time series was built from 1990 to 2017.

#Check 45: Are annual land use change areas monitored?
Not really.

#Check 46: Is there a verification process for land monitoring?
Not known.

#Check 47: Does the land monitoring system respect national definition of forest thresholds?
A lot of attention is paid to forest definition to delimitate the forest domain.

#Check 48: Is forest area from GHG inventories, consistent with NFI forest area?
There is no NFI yet.

4.3.2. Forest monitoring

In forest the main objective is to quantify carbon stock changes. It can be done with two different methods:

- The Gains-Losses method (for biomass, this method requires a monitoring of carbon fluxes like forest increment, mortality and wood harvest)
- The Stock change method (for biomass, this method requires to estimate the stocks of carbon at 2 different times)

#Check 49: Does the system ensure access to forest data?

GHG inventories and forestry issues are managed in the same ministry. Data is easily communicated from one to another service. It can be noted that in 1990 forest area is similar in NIR and in FRA2020, but different for more recent years. It often occurs when different data sets are used.

Experts on LULUCF (Koba Chiburdanidze and Giorgi Kavtaradze) are acknowledged as forest experts.

#Check 50: Are there easy and regular interaction with NFI and relevant organizations?

GHG inventories and NFI inventories are managed in the same ministry.

#Check 51: Are increment and mortality monitored?

In the NIR (5-75) its is written that increments are coming from Unified Forest Inventory data,2003 NIR Table 5-16).

But, mortality was not explicitly considered.

The future NFI should provide updated and more reliable data on it.

#Check 52: Is annual harvest monitored?

Roundwood and firewood are provided by the Georgian Statistical Yearbook of Forestry 1990-2017 (NIR Table 5-17).

NIR (5-71) With regard to the value of volume weight used in calculations of biomass losses, it was obtained taking into account the main species of timber produced in Georgia. Since volume of timber produced by cutting are not identified by species on a national scale in Georgia, therefore expert estimation has been used to determine percentage values of the main species, used by population as timber and firewood.

#Check 53: Does the system allow the estimate of non-legal or informal harvest?

Not fully clear, the label of the table 5-17 of the NIR is unclear: "Firewood and Timber Produced (in their number, by illegal logging) in Georgia".

#Check 54: Are natural disturbances monitored?

Forest fires are covered. Recent weather events, drought, pests are not reflected in LULUCF inventory

#Check 55: Are some key parameters country specific?

Basic wood densities are coming from national references.

The biomass expansion factors are coming from the Good practice guidance 2003 and not the 2006 which facilitates the use of specific basic wood densities.

#Check 56: is there data on forestry practices?

No quantitative information on management was identified in LULUCF

4.3.3. Wood monitoring

The category harvested wood products was not estimated in the latest inventory report. It requires a lot of data on wood products.

#Check 57: Is there data on harvested wood products?

No information on available data on wood products was found.

#Check 58: Are imports and exports of wood available?

No information on available data on wood products export was found (imports are not really useful if the reporting is following a production approach)

4.3.4. Dead organic matter monitoring

The pool of dead organic matter is often not monitored in forest because it represents low financial interest. Yet it can correspond to large stocks although the IPCC guidelines give few elements on it.

In the latest NIR, no estimate was done on dead wood, nor litter.

#Check 59: Is there data on dead wood pool, stocks or stock changes?

No country-specific data identified.

#Check 60: Is there data on litter pool, stocks or stock changes?

No country-specific data identified.

4.3.5. Soil monitoring

Soils represent large carbon stocks and are therefore crucial issues for GHG inventories. Soils are difficult to monitor, even Tier 1 is data intensive. All proposed IPCC method remain very uncertain for soils.

#Check 61: Does the system allow access to soil data?

Few data on soils seem available, the values used were obtained on the basis of the research carried out in Georgia ("Carbon stock in the region of Inner Kartli", Gizo Gogichaishvili). NIR (5-87)

For croplands, estimates are made on mineral soils, considering the balance between cultivated areas and temporary set aside of annually cropland. The methodology used is not fully clear because no explanation was found how FLU and FMG are changing over time for each type of land.

For grassland, estimates are mode on mineral soils, considering two subcategories: grasslands and hay land. By assuming degradation on some of the grassland on the covered period the parameter FMG is modified.

"Since an essential degradation of grasslands is noted in Georgia, a stock change factor corresponding to abrupt degradation has been taken for Eastern Georgia117 for the regime of areas management (FMG), and a factor envisaged for average degradation - for Western Georgia." NIR (5-87)

#Check 62: Are soil maps available?

No soil map was identified in the NIR.

But, in the NIR (5-87) it is indicated that "for calculations in croplands the reference value of carbon stock has been used (for soils), was obtained on the basis of the

research carried out in Georgia ("Carbon stock in the region of Inner Kartli", Gizo Gogichaishvili). In particular, based on the research carried out in Eastern Georgia, according to the type of soil dominating on croplands in Georgia (Cambisols and Calcic Kastanozems) it has been identified that the carbon stock is 52 ton 1 ha C (soil depth 0-30 cm.). It should be noted here that by the classification of soils provided in the respective Table of the IPCC methodology, and taking into account the types of soils spread in Georgia, the reference carbon stock for Georgia is 38 t C/ha"

#Check 63: Is there a monitoring of carbon stocks in mineral soils?

No monitoring identified on soils.

Some specific data on soils are presented in the report on desertification PRAIS 2018, but they are very different from the common ranges and should thus be considered cautiously.

#Check 64: Are organic soils monitored?

Investigations were led on organic soils in the NIR although no estimate was produced.

4.3.6. Agriculture land monitoring

Large biomass changes can occur on agricultural lands, on perennial crops, but also in hedges or agroforestry systems. Then agricultural lands are essential because their soils large stocks of carbon that can increase or decrease depending agricultural practices. Depending on the type data, it can be obtained by surveys or by direct measurement (like remote sensing).

#Check 65: Are perennial crops specified?

Perennial crops are identified and calculations of carbon fluxes on biomass are made. The calculation is not fully clear because gains and losses are not calculated with the same scope which gives overestimated gains compared to losses.

No specific data on biomass from perennial crops were identified.

#Check 66: Is data on agricultural practices available (tillage, residue management, fertilization management)?

No monitoring was identified on tillage, residue management, fertilization management.

Only set-aside data was clearly identified.

#Check 67: Is data on hedges or isolated trees out of forest available?

No national monitoring was identified.

4.3.7. Wetlands monitoring

Specific emissions of CO_2, CH_4 and N_2O are related to wetlands. It can be linked to peat extraction, to flooded areas or to drainage.

#Check 68: Is data on wetlands available?

Areas of wetlands are presented with details (lake, swamps, etc.) but are considered constant overtime in the NIR. No calculation is made for this area.

NIR (5-90) No calculations were performed for this source category due to lack of relevant data.

4.3.8. Fire monitoring

Emissions from Wildfires are estimated thanks to the monitoring of burnt areas combined with estimates biomass present on burnt areas.

#Check 69: Is data on fires available?

Burnt areas of forest are provided in the Georgian Statistical Yearbook, Ministry of Environment Protection and Agriculture of Georgia, National Forestry Agency.

(NIR 5-72) Data obtained from the National Forestry Agency and Forestry Agency of Adjara, forest fires of various intensity were registered on forest areas during the period of inventory. As a result, various volumes of biomass have been burnt on these areas.

5. OVERVIEW

With the introduction of the enhanced transparency framework, all countries are being pushed to improve the quality of their inventory systems. The LULUCF sector is specific:

- it mobilizes significant resources,
- it is often assumed to be difficult to manage
- it has significant political weight because of the magnitude of the emissions and removals that are generally estimated
- the uncertainty associated with these emissions is high.

This uncertainty tends to pay close attention to this sector.

In this document the analysis focused on the documents published so far but also on the interviews carried out with different actors currently identified in the system in place. The overview of this assessment is presented in the following table of strengths and weaknesses:

TABLE 1: STRENGTHS AND WEAKNESSES FOR MAIN COMPONENTS OF THE LULUCF MRV SYSTEM IN GEORGIA

	Strengths	**Weaknesses**
Organizational mandates	Updated forest regulation A system that was effective for former exercises A lot of departments included in MEPA Extended mandate for EIEC on BTR Rather clear picture of existing system	No real documents for mandates Project dependent Limited resources
Expertise	A few experts involved in the process for a long time Experts trained to IPCC methods Agricultural research centres exist and could be involved A forest department involved	Few experts identified Few transfers of expertise No training procedure Inventory experts mostly external consultants
Data flows	Basics on references are available A few parameters are country-specific	Explanation on the use of data very detailed Some data missing Limited resources
Land monitoring	All lands estimated Global consistency ensured Land estimate by climate type A land monitoring agency exist and could be involved	Approach 1 is used (still a bit unclear) Few data on land uses Some differences with FRA 2020 on forest area Some land use changes are missing

	Strengths	Weaknesses
Forest monitoring	NFI in progress Comprehensive forest regulation	No real NFI available A unique temporal reference on increment is used Unclear picture on illegal loggings Dependence on biomass expansion factors from IPCC
Wood monitoring	The forest survey is supposed to gather information on wood	No survey on wood products Unclear picture on illegal loggings
Dead organic matter monitoring	NFI in progress	No monitoring
Soil monitoring	Agricultural research centres exist and could be involved	Large differences with PRAIS reporting on soils No soil maps No estimate for organic soils
Agriculture land monitoring	Agricultural research centres exist and could be involved	Unclear estimate on perennials Unclear application of IPCC tier 1 for soils under croplands and grasslands No monitoring on agricultural practices No monitoring on trees out of forest
Wetlands monitoring	Agency of Protected Areas exist and could be involved	No monitoring
Fire monitoring	Burnt areas are provided by national statistics	
Coordination, systems and tools	MEPA gather most of the stakeholders MEPA and EIEC are working well together Recent publications exist and fits with the standards The NIR is well organised A recent review (QA) with relevant recommendations	Mix of Excel spreadsheets and IPCC tool for inventory Difficult coordination for reporting Unclear archiving of previous editions Few resources for next exercises
Stakeholder engagement		Project dependent
Structuration of institutional arrangements	Some MoU exist	Few procedures clearly identified

ANNEX ON PARIS AGREEMENT

Common rules

Chapter II of the MPGs defines common elements to the National Inventory Report of Anthropogenic Emissions by sources and removals by sinks of greenhouse gases.

Definitions (paragraph 17)

The definitions of the GHG inventory principles used shall be as provided in the 2006 IPCC Guidelines, volume 1, chapter 1, section 1.4.

National circumstances and institutional arrangements (paragraphs 18 et 19)

Parties should implement and maintain national inventory arrangements, including institutional, legal and procedural arrangements that can support the continued estimation, compilation and timely preparation and submission of their national inventory reports. Such arrangements will vary by Party depending on their national circumstances and preferences and will change over time.

Methods (paragraphs 20 à 36)

Guidelines: In preparing their national inventory report, all Parties shall use the 2006 IPCC Guidelines, and any subsequent version of or refinement to these IPCC guidelines agreed upon by the CMA. Further, each Party is encouraged to use the Wetlands Supplement.15 In this chapter, the term "the IPCC guidelines" refers to the 2006 IPCC Guidelines and the Wetlands Supplement together.

Use of nationally appropriate methodologies: The MPGs also provide that a Party should use nationally appropriate methodologies if they better reflect its national circumstances and are consistent with the IPCC guidelines. For such cases, the Party must transparently explain the national methods, data and/ or parameters selected.

Tiers: Each Party should make every effort to use a recommended method (tier level) for key categories. A Party may be unable to apply a higher tier method for a particular key category owing to a lack of resources. In such cases, the Party may use a tier 1 approach, and shall clearly document why the methodology used was not in line with the corresponding decision tree of the IPCC guidelines. The Party should prioritize for future improvement any key categories for which the good practice method elaborated in the IPCC guidelines cannot be used.

Country-specific emission factors and activity data: Parties are encouraged to use country-specific and regional emission factors and activity data, where available, or to propose plans to develop such emission factors and activity data in accordance with the IPCC guidelines.

Key category analysis: Each Party must identify key categories using IPCC approach 1, whereby key categories are identified using a predetermined cumulative emissions threshold20 for the starting year and the latest reporting year of its GHG inventory with and without LULUCF categories for both level and trend assessment. Those developing country Parties that need flexibility in the light of their capacities have the flexibility to identify key categories at a lower threshold value, no lower than 85 per cent, in place of the 95 per cent threshold defined in the IPCC guidelines. This flexibility is intended to allow Parties that apply it to focus on improving fewer categories and prioritizing resources.

Time series consistency and recalculations: The same methods and approach to underlying activity data and emission factors should be used consistently for each reported year. In cases when there are missing emission values resulting from a lack of activity data, emission factors or other parameters, surrogate data, extrapolation, interpolation and other methods consistent with splicing techniques contained in the IPCC guidelines should be used to fill in data gaps and ensure a consistent time series.23 In the event there are any changes in the methods and/or assumptions, it is important to recalculate the complete time series to ensure that changes in emission trends are not introduced as a result of changes in methods or assumptions across the time series, in accordance with the IPCC guidelines.

Uncertainty assessment: Parties must quantitatively estimate and qualitatively discuss the uncertainty of the emission and removal estimates for all source and sink categories, including inventory totals, for at least the starting year and the latest reporting year of the inventory time series. It is also essential to estimate the trend uncertainty of emission and removal estimates for all source and sink categories, including totals, between the starting year and the latest reporting year of the inventory time series, using at least approach 1 contained in the 2006 IPCC guidelines. Those developing country Parties that need flexibility in the light of their capacities have the flexibility to instead provide, at a minimum, a qualitative discussion of uncertainty for key categories in the event that quantitative input data are unavailable to quantitatively estimate uncertainties. At the same time, these Parties are encouraged to provide a quantitative estimate of uncertainty for all source and sink categories of the GHG inventory.

Assessment of completeness: If the national inventory report does not consider some sources and sinks (categories, pools and gases) for which estimation methods are included in the IPCC guidelines, the Party should clearly indicate those sources and sinks, and explain the reasons for their exclusion. When completing common reporting tables, notation keys (see Box 1) must be used where numerical data are not available, and reasons must be provided as to why emissions from sources and removals by sinks and associated data for specific sectors, categories and subcategories or gases are not reported.27 Once emissions or removals have been estimated for a category, these must be reported in subsequent submissions if they continue to occur.

QA/QC: All Parties must elaborate an inventory QA/QC plan in accordance with the IPCC guidelines, including information on the inventory agency responsible for implementing QA/QC. They must implement and provide information on general inventory QC procedures in accordance with their QA/QC plan and the IPCC guidelines. However, flexibility is offered in this reporting area to those developing country Parties that need flexibility in the light of their capacities; they are instead encouraged to elaborate an inventory QA/QC plan in accordance with the IPCC guidelines and implement and provide information on general inventory QC procedures in accordance with their QA/QC plan and the IPCC guidelines.

Metrics (paragraph 37)

Metrics: The value of the global warming potential to be used for expressing emissions and removals of GHGs in CO2 eq shall be a 100-year time-horizon from the IPCC Fifth Assessment Report,33 or 100-year time-horizon global warming potential values from a subsequent IPCC assessment report, as agreed by the CMA. In addition, other metrics, such as global temperature potential, may be used to report supplemental information on aggregate emissions and removals of GHGs, expressed in CO2 eq. In such cases, the Party shall provide in the national inventory document information on the values of the metrics used and the IPCC assessment report they were sourced from, in addition to the estimates of GHG emission and removal.

A. Information to be reported: Sectors and gases (paragraphs 38 à 58)

Regarding information on methods, Parties must communicate:
- Information on methods and cross-sectoral elements
- Sectors and gases
- Time series

Flexibility provisions

Specific provisions that offer flexibility to those developing country Parties that need it in the light of their capacities in relation to reporting anthropogenic emissions by sources and removals by sinks of GHG in the national inventory report are presented below:

TABLE 5. OVERVIEW OF SPECIFIC FLEXIBILITY PROVISIONS FOR THOSE DEVELOPING COUNTRY PARTIES THAT NEED IT IN THE LIGHT OF THEIR CAPACITIES IN RELATION TO A NATIONAL INVENTORY REPORT (SOURCE: 2020-1 UNFCCC)

REFERENCE IN THE MPGs (ANNEX TO DEC. 18/CMA.1)	PROVISION IN THE MPGs	FLEXIBILITY PROVISION FOR THOSE DEVELOPING COUNTRY PARTIES THAT NEED IT IN THE LIGHT OF THEIR CAPACITIES
Paragraph 25 *Key category analysis*	Parties shall implement the key category analysis consistent with the IPCC guidelines (i.e. apply the 95 per cent threshold defined in the IPCC guidelines).	Identify key categories using a threshold no lower than 85 per cent in place of the 95 per cent threshold defined in the IPCC guidelines.
Paragraph 29 *Uncertainty assessment*	Parties shall quantitatively estimate and qualitatively discuss the uncertainty of the emission and removal estimates for all categories, including inventory totals, for at least the starting year and the latest reporting year of the inventory time series, and shall also estimate the trend uncertainty for these same categories/ inventory totals for the entire time series.	Provide, at a minimum, a qualitative discussion of uncertainty for key categories, using the IPCC guidelines where quantitative input data are unavailable to quantitatively estimate uncertainties. Parties are also encouraged to provide a quantitative estimate of uncertainty for all source and sink categories of the GHG inventory.
Paragraph 32 *Use of the notation key "NE" (not estimated)*	A category should only be considered insignificant if the likely level of emissions is below 0.05 per cent of the national total GHG emissions, excluding LULUCF, or 500 kt $_{CO2}$ eq, whichever is lower. The total national aggregate of estimated emissions for all gases from categories considered insignificant shall remain below 0.1 per cent of the national total GHG emissions, excluding LULUCF.	Consider emissions to be insignificant if the likely level of emissions is below 0.1 per cent of the national total GHG emissions, excluding LULUCF, or 1,000 kt CO_2 eq, whichever is lower. The total national aggregate of estimated emissions for all gases from categories considered insignificant, in this case, shall remain below 0.2 per cent of the national total GHG emissions, excluding LULUCF.
Paragraph 34 *QA/QC*	Parties shall elaborate an inventory QA/QC plan in accordance with the IPCC guidelines, including information on the inventory agency responsible for implementing QA/QC.	Encouraged to elaborate an inventory QA/QC plan in accordance with the IPCC guidelines, including information on the inventory agency responsible for implementing QA/QC.

Paragraphe 35 *QA/QC*	Parties shall implement and provide information on general inventory QC procedures in accordance with the QA/QC plan and the IPCC guidelines.	Encouraged to implement and provide information on general inventory QC procedures in accordance with the QA/QC plan and the IPCC guidelines.
Paragraph 48 *Gases*	Parties shall report on seven gases: CO2, CH4, N2O, HFC, PFC, SF6 and NF3.	Report at least three gases (CO_2, CH_4 and N_2O) as well as any of the additional four gases (HFCs, PFCs, SF_6 and NF_3) that are included in the Party's NDC under Article 4 of the Paris Agreement, are covered by an activity under Article 6 of the Paris Agreement or have been previously reported.
Paragraphe 57 *Time series*	Parties shall report a consistent annual time series starting from 1990.	Parties may report data covering, at a minimum, the reference year/period for their NDC under Article 4 of the Paris Agreement and, in addition, a consistent annual time series from at least 2020 onward.
Paragraphe 58 *Reporting year*	The latest reporting year shall be no more than two years prior to the submission of the national inventory report.	The latest reporting year shall be no more than three years prior to the submission of the national inventory report.