



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

Visnja Grgasovic

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Legislative Framework



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International

UNFCCC, Paris Agreement

EU legislation

Regulation (EU) 2018/1999 on the Governance

National

[Law on Climate Change and Ozone Layer Protection](#) OG 127/2019

Chapter III of the document is related to monitoring greenhouse gas emissions and measures for mitigating and adapting to climate change

Regulation on the Monitoring of Greenhouse Gas Emissions, Policies and Mitigation measures in the Republic of Croatia (Official Gazette, No. 5/2017)

Decision on the establishment of the Committee for inter-sectoral coordination for a national system for monitoring greenhouse gas (Official Gazette, No. 6/2014)



Croatian legal framework



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- Article 25 of the Law on Climate Change and Ozone Layer Protection
- public bodies competent for activities related to: environmental protection, the economy, agriculture, forestry, water management, sea, transport, official statistics, as well as the companies:
 - Hrvatske šume d.o.o. (Croatian Forests)
 - Hrvatske vode (Croatian Waters),
- which collect and/or hold data on activities according to sectors in which GHG are emitted or removed and which data are required for producing this report, should deliver such data to the Ministry
- data are delivered yearly to the Institute for environment and nature in the Ministry, free of charge, taking in consider deadlines, the scope and format published by the Ministry on its website
- the above mentioned bodies are obligated to participate in all phases of data preparation and data submission, report review and revision carried out by the UNFCCC Secretariat and European Commission



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



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



Institutional Arrangements



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



Institutional and organizational structure



- **The Ministry of Economy and Sustainable Development (MESD)** is the central national authority responsible for maintaining the National System
- MESD is a national focal point for the UNFCCC, with overall responsibility for functioning of the National System such as:
 - - communication with the UNFCCC, EU,
 - - control of methodology for emission and greenhouse gas removal calculations,
 - - approval of the GHG Inventory Report,
 - - submission to EC, UNFCCC etc.



Institutional and organizational structure



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



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



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



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



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



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



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



Methodologies and Guidelines for GHG inventory



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



Methodologies and Guidelines for GHG inventory



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



Reporting requirements, CRF



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



Data management and data flow



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

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

Annual data Collection Plan (ADCP)

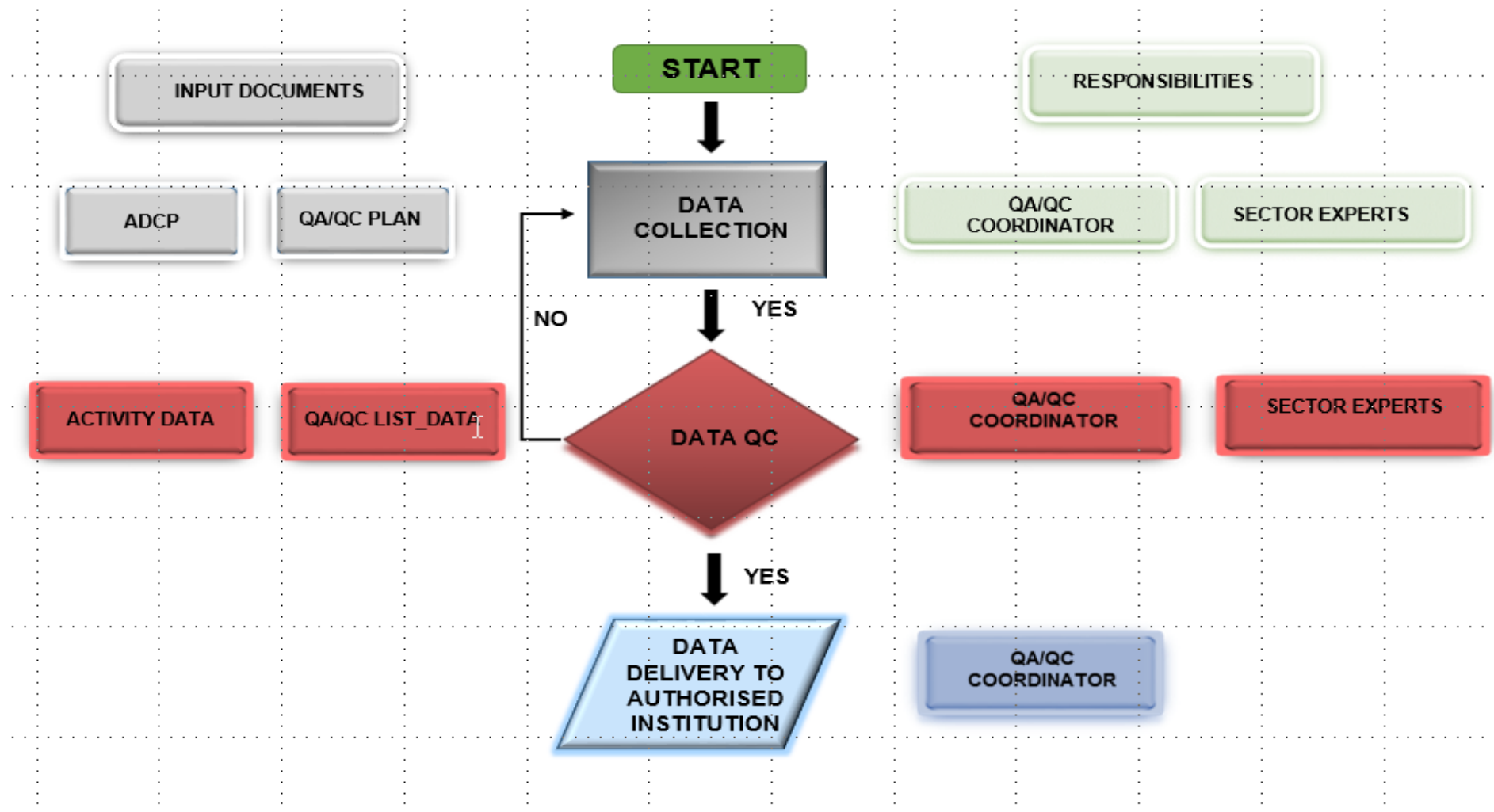
- Is made for each sector
- It contain source categories, activity, activity data, data source and competent authority
- This plan prepared by the Authorized Institution in collaboration with Comity and Ministry
- Published on the official website of the Ministry



Data Collection



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Quality Assurance and Quality Control



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- According to Art. 7. Regulation on the Monitoring of Greenhouse Gas Emissions, Policies and Mitigation measures in the Republic of Croatia Institute for environment and nature in the Ministry is responsible for:
 - Development of QA/QC Plan
 - Implementation activities QA/QC
 - Archiving of all documents which used for Inventory planning
- Procedure starts with QA/QC Plan
- This is main document
- Is made for each Inventory year, (eg. QA/QC Plan NIR 2021)
- It contains activities, responsibilities, time frame



QA/QC Plan

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

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

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

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

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

3

Red. broj		AKTIVNOST	ODGOVORNA OSOBA, INSTITUCIJA	ROK, DATUM PROVEDBE	NAPOMENA
2.	4.	ii GPPP NIR (N) LULUCF - Zemljište pod usjevima (CRF 4.B) - Travnjaci (CRF 4. C) - Močvarna zemljišta (CRF 4.D) - Naseljena područja (CRF 4. E) - Ostala zemljišta (CRF 4. F)	Tatjana Obućina, QA, QC koordinator, Odjel za klimatske aktivnosti, Zavod Hana Mesić, Služba za zaštitu zraka i klimatske aktivnosti, Zavod	20.11. (N-2).	
2.	5.	i GPPP NIR (N) Otpad - Odlaganje otpada (CRF 5.A) - Biološka obrada otpada (CRF 5.B)	Jana Kufrin, Odjel za praćenje sprječavanje nastanka otpada, gospodarenje komunalnim otpadom i odlaganje otpada, Zavod	20.11. (N-2).	
2.	5.	ii GPPP NIR (N) Otpad - Spaljivanje otpada (CRF 5.C)	Zeljka Korica, Odjel za vode, kemikalije, industrijska i integrirana onečišćenja i ostale pritiske, Zavod	20.11. (N-2).	
2.	5.	iii GPPP NIR (N) Otpad - Upravljanje otpadnim vodama (CRF 5.D)	Tatjana Obućina, QA, QC koordinator, Odjel za klimatske aktivnosti, Zavod Zrinka Vranar, Odjel za vode, kemikalije, industrijska i integrirana onečišćenja i ostale pritiske, Zavod	20.11. (N-2).	
3.		Pregled prijedloga GPPP NIR (N) od strane Uprave za klimatske aktivnosti, MINGOR i Povjerenstva	Uprava, MINGOR, Povjerenstvo	po pozivu prije 15.12. (N-2).	
4.		Objava GPPP NIR (N) na stranicama Ministarstva	Uprava, MINGOR, QA, QC koordinator Zavod	15.12. (N-2).	
II PRIKUPLJANJE PODATAKA O AKTIVNOSTIMA ZA IZRACUN EMISIJA STAKLENIČKIH PLINOVA PO SEKTORIMA (sukladno GPPP NIR (N)).					
1.		Dostava podataka o aktivnostima po sektorima sukladno čl. 25. Zakona o klimatskim promjenama i zaštiti ozonskog sloja (NN 127/2019) u Zavod (osim energetske bilance)	Tijela državne uprave, Javne institucije, Trgovačka društva i dr. gospodarski subjekti	30.09. (N-1).	
2.		Dostava energetske bilance i Analize industrije za godinu N-2 godinu u Zavod	MINGOR, Uprava za energetiku	01.12. (N-1).	

4

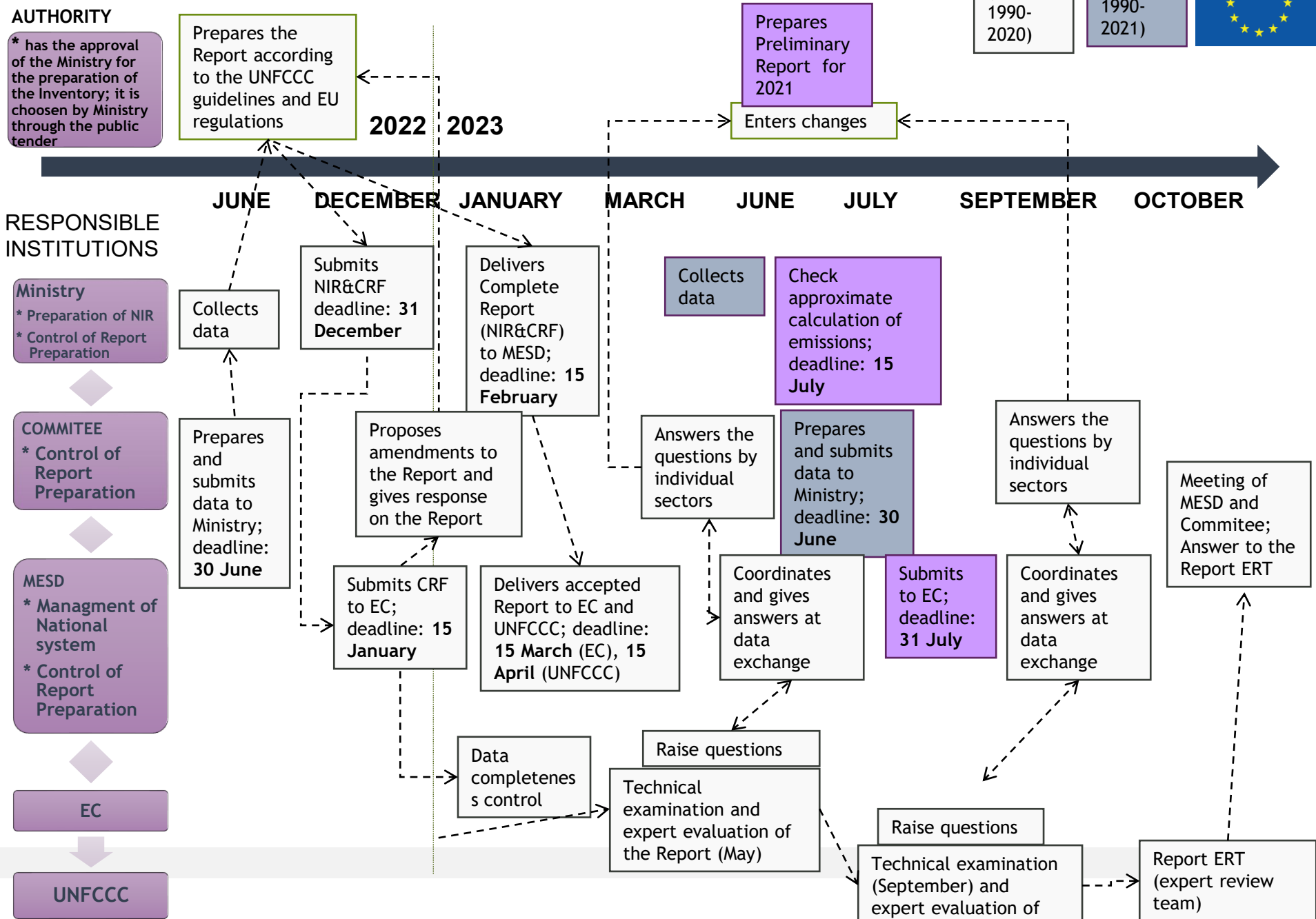
Time flow of the preparation of NIR

NIR 2022
(Data: 1990-2020)

NIR 2023
(Data: 1990-2021)



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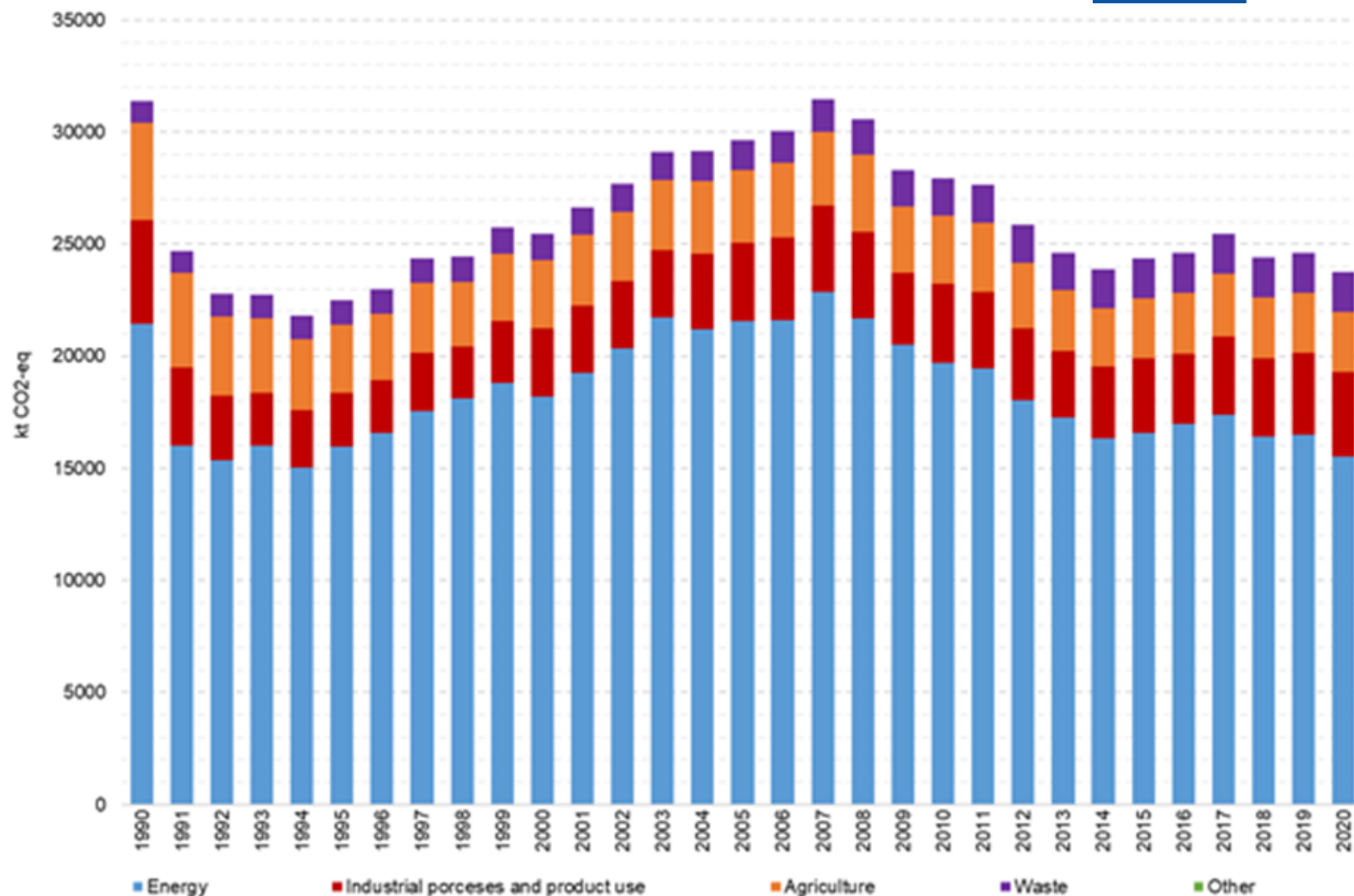
GHG emissions



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



Review of GHG Inventory



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- Croatia has undergone seventeen reviews so far
- in-country review in 2004, 2008, 2012 and 2018
- centralized reviews in 2005, 2006, 2009, 2010, 2011, 2012, 2013, 2014, 2015 2016, 2017, 2019 and 2021.
- Issues recommended by the ERT have been included in next inventory report as far as possible.
- Inventory development is never-ending process - improving is imperative



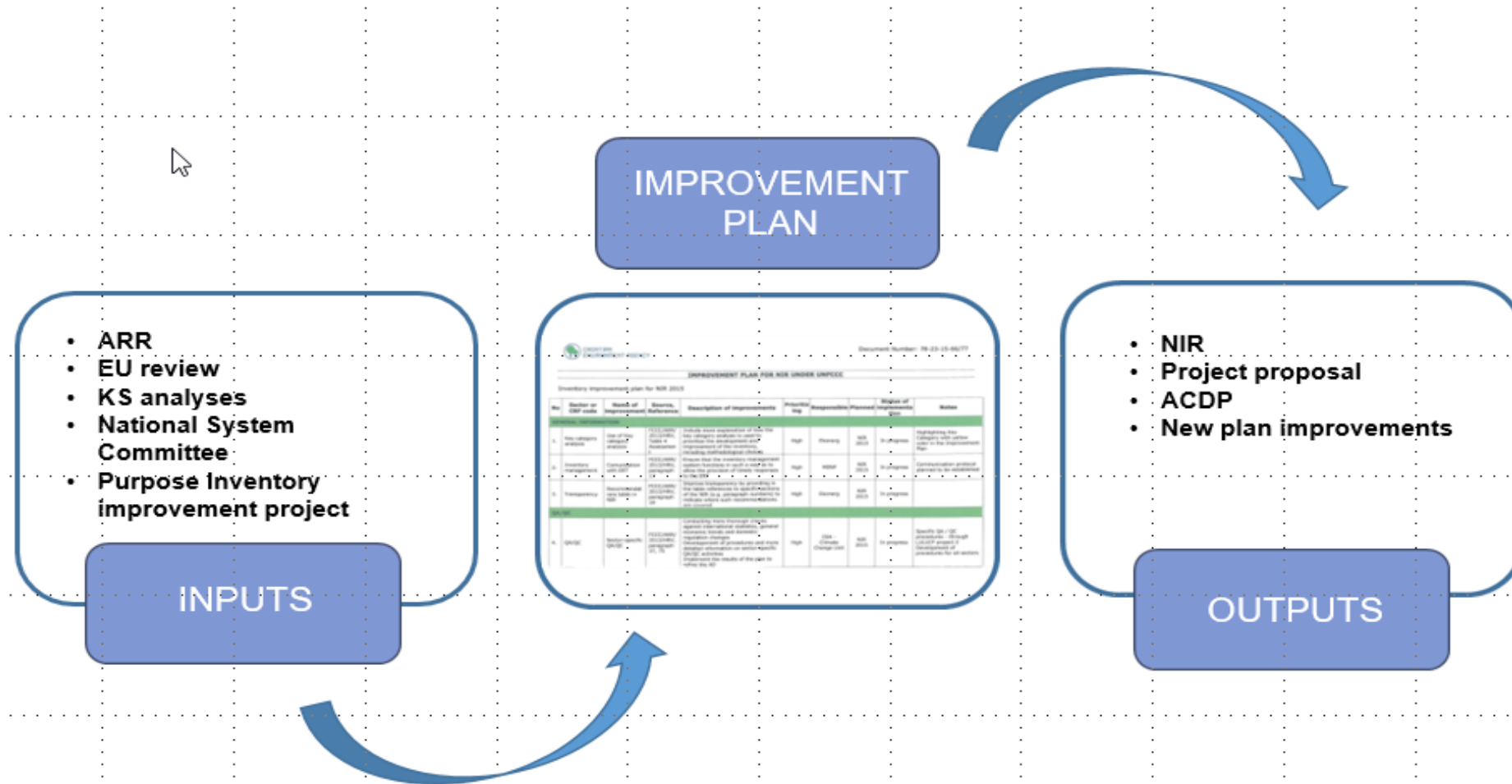
Inventory Improvement



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



Improvement Plan



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No	Sector or CRF code	Name of improvement/ Type of issues /TACCC	Source, Reference	Description of improvements	Responsible	Planned	Notes
ENERGY							
1.	CRF 1.A.1.a Public electricity and heat production – gaseous, liquide and solid fuels – CO ₂	Country-specifics CO ₂ EFs Accuracy	In country review document 2018, E.1	Take steps to optain and use plant-specific CO ₂ emission factors to improve accuracy of emission estimates Apply country-specific factors to estimate emissions for the main fuel types EFs should be aviable from information collected under the EU ETS	CAEN – Climate Change Unit	NIR 2019	Project: „Izrada nacionalnih faktora emisije CO ₂ iz podsektora 1A1a Proizvodnja električne energije i topline za potrebe izrade Inventara emisija stakleničkih plinova za razdoblje 1990.-2017.“ UGOVOR broj: 70/18“
2.	CRF 1.A.2. Manufacturing Industries and Construction – Gaseous, liquid and solid fuels CO ₂ , CH ₄ , N ₂ O	Time-series consistency of the AD Consistency	In country review document 2018, E.2	Take steps to ensure consistency of the AD for fuel use in manufacturing industries and construction, and of the type of AD used for the estimation of CO ₂ emissions from gas transmission pipelines Improve on the consistency of the NIR, time-series consistency is necessary from the base year until the latest year	MEE	2020	

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



LULUCF sector improvement



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- Croatia has strong support for research on improving LULUCF sector - decrease uncertainty, finding PAMs for enhancement of sinks and to improve projections
- CROLIS – Croatia Land Use Information System (LIFE project)
- Project on enhancing sinks by removals in LULUCF sectors
- Capacity building projects for LULUCF projection
- CROWOOD project- Harvested wood product modelling
- Deadwood research and modelling



Strengths and weaknesses



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■ STRENGTHS

- - established national system with all legal and institutional arrangements
- - established Committee for national system
- - financial means for necessary researches are available from auctioning revenues
- - Authorized Institution elected for three year period by public tender
- - good cooperation established with research institutions

■ WEAKNESSES

- - insufficient number of experts in public institutions
- - frequent changes of expert in public institutions
- - long period needed for obtaining of necessary knowledge to be inventory experts



Thank you for your attention



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Visnja Grgasovic
Ministry of Economy and Sustainable
Development
Head for Sector for Climate Policy
Address: Radnicka cesta 80
Zagreb 10 000
t: +385 1 3717 217
m: +385 91 3782 895
visnja.grgasovic@mingor.hr