CROATIAN AGENCY FOR THE ENVIRONMENT AND NATURE

Regional Training Seminar on National Systems for Greenhouse Gas (GHG) inventories (and projections)

Zagreb, Croatia

14 – 16 October 2015

National Systems for GHG estimation in Croatia Data collection and QA/QC

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According to Art. 7. Regulation on the Monitoring of Greenhouse Gas Emissions, Policies nad Mitigation measures in the Republic of Croatia (Official Gazette, No. 87/2012)

Croatian Agency for the Environment and Nature (CAEN) is responsible for:

- Organization of the GHG Inventory preparation
- Collection of activity data
- Development of QA/QC Plan
- Implementation activities QA/QC
- Archiving of all documents which used for Inventory planning
- Selection of Authorized Institution

According to the Air Protection Act, CAEN is responsible to the Reporting to the European Commission under MMR

How we start?

We start with QA/QC Plan

- This is main document
- Is made for each Inventory year, (eg. QA/QC Plan NIR 2016)
- It contense activities, responsibilities, time frame

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TIME FRAME DELIVERIES NIR 2016

TIME FRAME FOR DELIVERIES According to MMR 525/13		2015	2016											
Activities	**Responsibility**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
MINI NIR 2016, Art. 7.1. MMR 525/13 Deliveries to CAEN	Authorised Institution	23												
MINI NIR 2016, Art. 7.1. MMR 525/13 QC	CAEN													
MINI NIR 2016 Art. 7.1. MMR 525/13 Deliveries to MENP	CAEN	31												
MINI NIR 2016 Art. 7.1. MMR 525/13 QA (Approval)	MENP Committee for ISC													
MINI NIR 2016 Art. 7.1. MMR 525/13 Deliveries to EC	CAEN		15											
NIR 2016, Art. 7.3 MMR 525/13 Deliveries to CAEN	Authorised Institution		31											
NIR 2016 Art. 7.3 MMR 525/13 QC	CAEN													
NIR 2016, Art. 7.3 MMR 525/13 Deliveries to MENP	CAEN			15										
NIR 2016 Art. 7.3 MMR 525/13 QA (Approval)	MENP Committee for ISC				14									
NIR 2016, Art. 7.3 MMR 525/13 Deliveries to EC	CAEN				15									
NIR 2016 Art. 7.4 MMR 525/13 Deliveries to CAEN and MENP	Authorised Institution					1								
NIR 2016 Art. 7.4 MMR 525/13 QC, QA	CAEN, MENP Committee for ISC					14								
NIR 2016 Art. 7.4 MMR 525/13 Deliveries to UNFCCC	MENP					15								
NIR 2016, Art. 8 MMR 525/13 Deliveries to CAEN	Authorised Institution								7					
NIR 2016, Art. 8 MMR 525/13 QC	CAEN								14					
NIR 2016, Art. 8 MMR 525/13 Deliveries to MENP	CAEN								15					
NIR 2016, Art. 8 MMR 525/13 QA, (Approval)	MENP									23				
NIR 2016, Art. 8 MMR 525/13 Deliveries to EC	CAEN									31				
Harmonization and approval of the "Annual data collection Plan" (ADCP) for NIR 2017"	Authorised Institution													
Data collection for NIR 2017 According ADCP	CAEN													

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Responsibilities (1/2)

How we are organized?

QA/QC NIR coordinator is nominated by Director and is responsible for:

- Coordination of all QA/QC activities of Inventory within the Agency
- Coordination of all QA/QC activities of Inventory with QC coordinator of an Authorized Institution
- Delivery of Inventory (and other documents) in the Ministry and EU
- Archiving of all documentations on implemented QA/QC activities
- Participation in the work of the Committe for intersectoral coordination on the national system for monitoring of GHG emission
- Participation and coordination of all activities within the Agency related to the review by ERT and EC
- Conduct audits per sector with Sector Experts at the Authorized Institution
- Initiate and participate in projects for Inventory improvement

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Responsibilities (2/2)

Sector Experts are nominated in accordance with the thematic areas (Energy, IP and PU, AFOLU,LULUCF, Waste,)

They are responsible for:

•All activities from own sector (collecting data, QC activities)

•Participation in activities related to the review by ERT and EC

•Participations in audits per sector with QA/QC coordinator at the Authorized Institution

•Participation in the work of the Committe for intersectoral coordination on the national system for monitoring of GHG emission

•Initiation and participate in projects for Inventory improvement from own sector

They are responsible to QA/QC NIR coordinator

Activities Data Collection (1/3)

Croatian Agency for the Environment and Nature (CAEN) is responsible for data collection

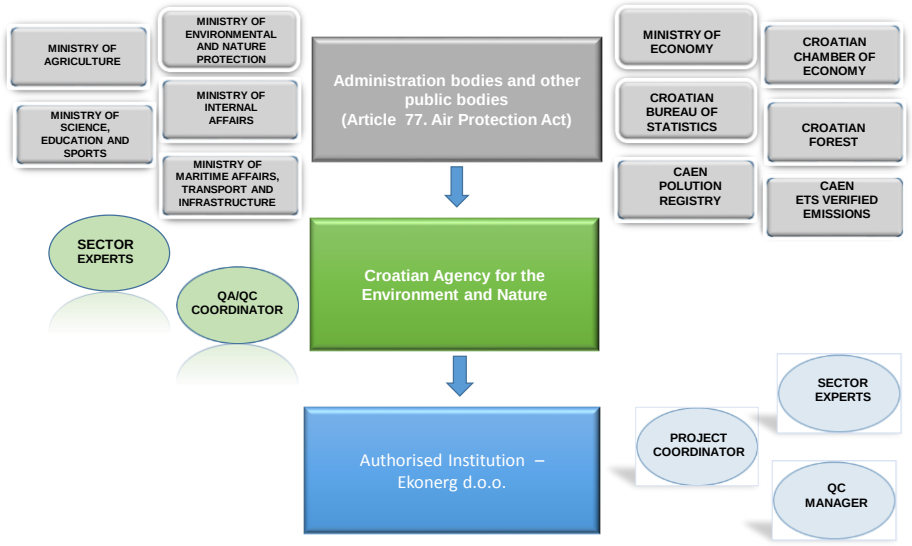
Main document for data collection is Annual data Collection Plan (ADCP)

Annual data Collection Plan (ADCP)

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

- Art. 77 of the Air Protection Act regulates timeliness and completeness of requirements that the state administration bodies and other public bodies which collect and/or hold data on activities according to sectors, in which greenhouse gas emissions are emitted or removed, and which data are required for producing this report ***should deliver*** such data to the Agency. The data should be delivered yearly free of charge, taking in consider deadlines prescribed by this Act and the scope and format published by the Ministry on its website (ADCP) .

Data Collection (2/3)



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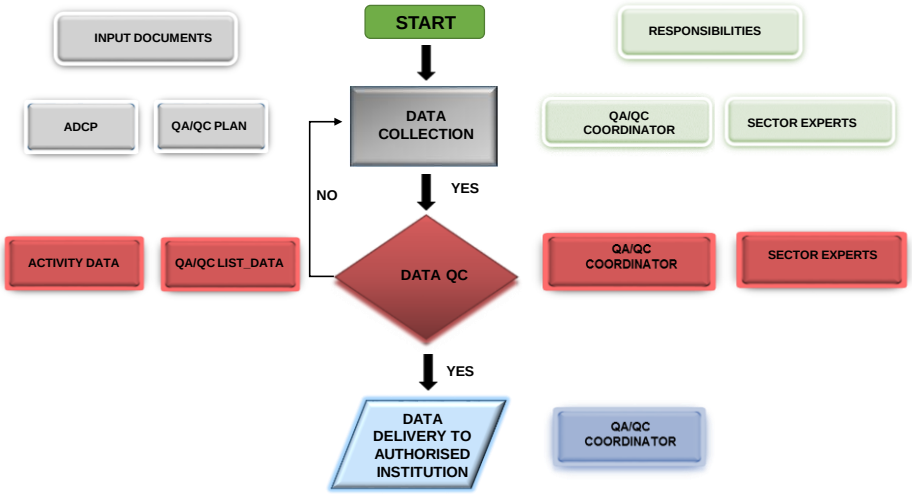
Data Collection (3/3)



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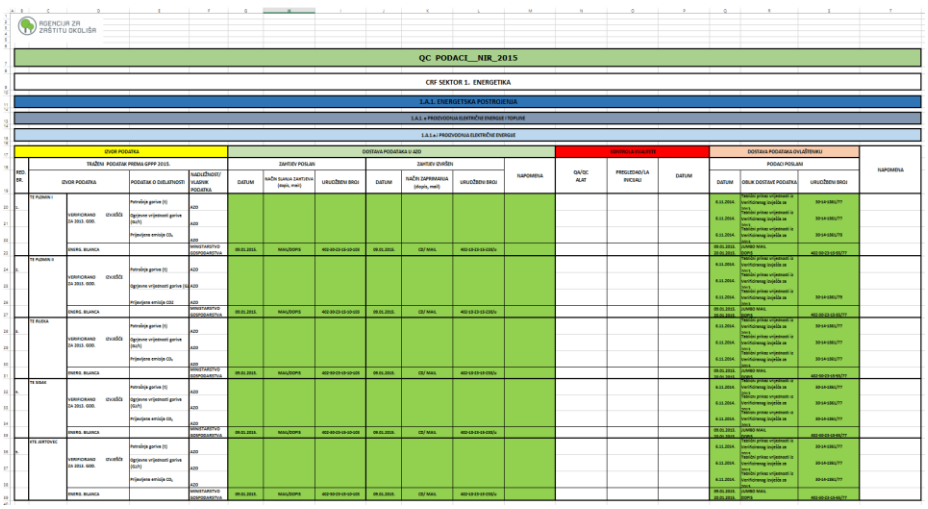
QC LIST_DATA



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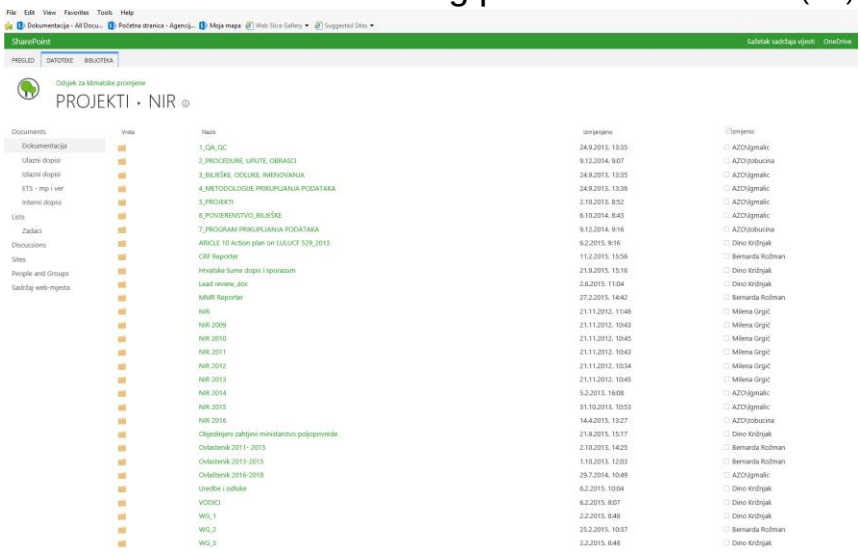
Working platform (1/4)



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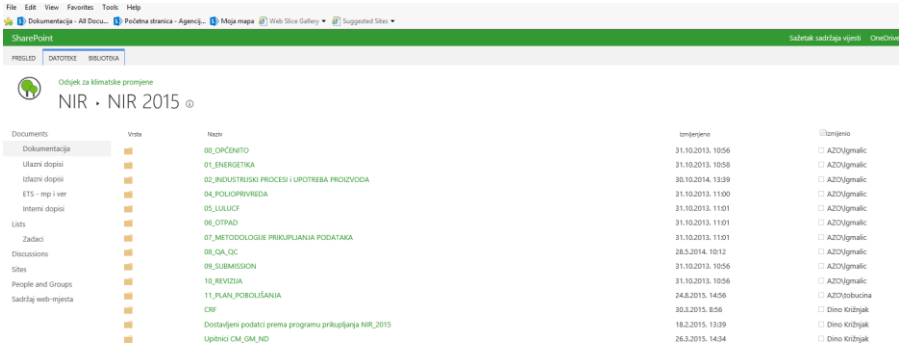
Working platform (2/4)



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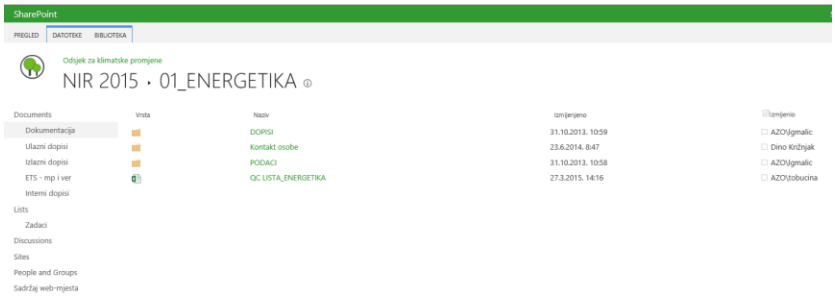
Working platform (3/4)



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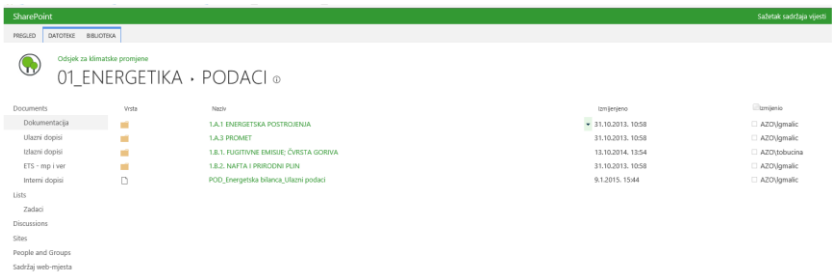
Working platform (4/4)

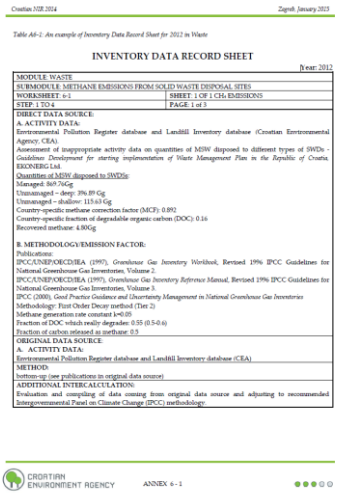


Archiving Procedures (1/2)

INVENTORY DATA RECORD SHEET (IDRS) is document which were used in purpose archiving all Inventory data.

- activity data,
- data source,
- emission factors,
- methodology,
- data archivation
- data gaps,
- suggestion for the future
- responponsibility

Archiving Procedures (2/2)



Croatian NIR 2014 Zagreb, January 2015

Table A6-1: An example of Inventory Data Record Sheet for 2012 in Waste

INVENTORY DATA RECORD SHEET

Year: 2012

MODULE: WASTE	
SUBMODULE: METHANE EMISSIONS FROM SOLID WASTE DISPOSAL SITES	
WORKSHEET: 6-1	SHEET: 1 OF 1 CH_4 EMISSIONS
STEP: 1 TO 4	PAGE: 1 of 3

DIRECT DATA SOURCE:

A. ACTIVITY DATA:

Environmental Pollution Register database and Landfill Inventory database (Croatian Environmental Agency, CEA).

Assessment of inappropriate activity data on quantities of MSW disposed to different types of SWDs - *Guidelines Development for starting implementation of Waste Management Plan in the Republic of Croatia*, EKONERG Ltd.

Quantities of MSW disposed to SWDSs:

Managed: 869.76Gg

Unmanaged – deep: 396.89 Gg

Unmanaged – shallow: 115.63 Gg

Country-specific methane correction factor (MCF): 0.892

Country-specific fraction of degradable organic carbon (DOC): 0.16

Recovered methane: 4.80Gg

B. METHODOLOGY/EMISSION FACTOR:

Publications:

IPCC/UNEP/OECD/IEA (1997), *Greenhouse Gas Inventory Workbook*, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2.

IPCC/UNEP/OECD/IEA (1997), *Greenhouse Gas Inventory Reference Manual*, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3.

IPCC (2000), *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*

Methodology: First Order Decay method (Tier 2)

Methane generation rate constant k=0.05

Fraction of DOC which really degrades: 0.55 (0.5-0.6)

Fraction of carbon released as methane: 0.5

ORIGINAL DATA SOURCE:
A. ACTIVITY DATA:
Environmental Pollution Register database and Landfill Inventory database (CEA)
METHOD:
bottom-up (see publications in original data source)
ADDITIONAL INTERCALCULATION:
Evaluation and compiling of data coming from original data source and adjusting to recommended Intergovernmental Panel on Climate Change (IPCC) methodology:

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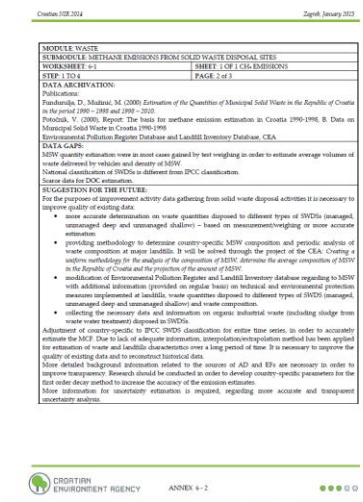

Croatian NIR 2014 Zagreb, January 2015

MODULE: WASTE	
SUBMODULE: METHANE EMISSIONS FROM SOLID WASTE DISPOSAL SITES	
WORKSHEET: 6-1	SHEET: 1 OF 1 CH_4 EMISSIONS
STEP: 1 TO 4	PAGE: 2 of 3

DATA ARCHIVATION:

Publications:

Fundurulja, D., Mulinić, M. (2000) *Estimation of the Quantities of Municipal Solid Waste in the Republic of Croatia in the period 1980 – 1988 and 1989 – 2010.*

Potočnik, V. (2000), Report: The basis for methane emission estimation in Croatia 1990-1998, B. Data on Municipal Solid Waste in Croatia 1990-1998

Environmental Pollution Register Database and Landfill Inventory Database, CEA

DATA GAPS:

MSW quantity estimation were in most cases gained by test weighing in order to estimate average volumes of waste delivered by vehicles and density of MSW.

National classification of SWDSs is different from IPCC classification.

Source data for DOC estimation.

SUGGESTION FOR THE FUTURE:

For the purposes of improvement activity data gathering from solid waste disposal activities it is necessary to improve quality of existing data:

- more accurate determination on waste quantities disposed to different types of SWDSs (managed, unmanaged deep and unmanaged shallow) – based on measurement/weighing or more accurate estimation
- providing methodology to determine country-specific MSW composition and periodic analysis of waste composition at major landfills. It will be solved through the project of the CEA: *Creating a uniform methodology for the analysis of the composition of MSW, determine the average composition of MSW in the Republic of Croatia and the projection of the amount of MSW.*
- modification of Environmental Pollution Register and Landfill Inventory database regarding to MSW with additional information (provided on regular basis) on technical and environmental protection measures implemented at landfills, waste quantities disposed to different types of SWDS (managed, unmanaged deep and unmanaged shallow) and waste composition.
- collecting the necessary data and information on organic industrial waste (including sludge from waste water treatment) disposed in SWDSs.

Adjustment of country-specific to IPCC SWDS classification for entire time series, in order to accurately estimate the MCF. Due to lack of adequate information, interpolation/extrapolation method has been applied for estimation of waste and landfills characteristics over a long period of time. It is necessary to improve the quality of existing data and to reconstruct historical data.

More detailed background information related to the sources of AD and EFs are necessary in order to improve transparency. Research should be conducted in order to develop country-specific parameters for the first order decay method to increase the accuracy of the emission estimates.

More information for uncertainty estimation is required, regarding more accurate and transparent uncertainty analysis.

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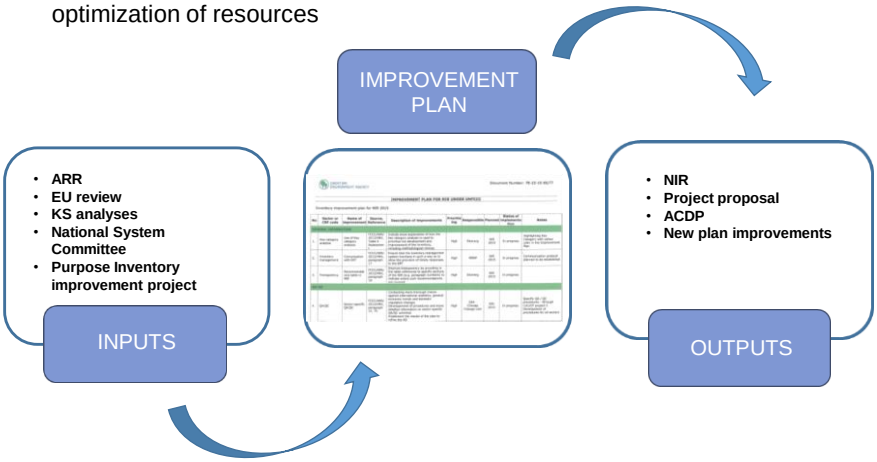
Inventory Improvement (1/2)

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



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Inventory Improvement (2/2)

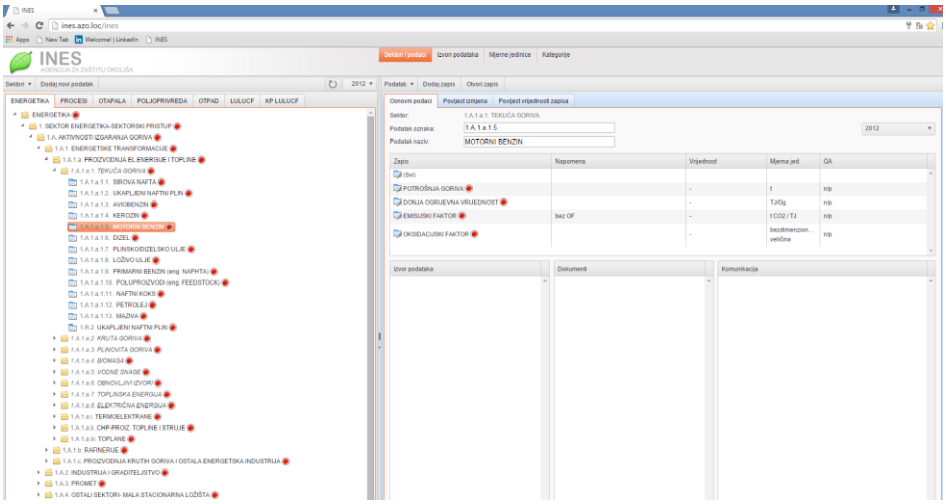
CROATIAN ENVIRONMENT AGENCY

Document Number: 78-23-15-66/77

IMPROVEMENT PLAN FOR NIR UNDER UNFCCC

No	Sector or CRF code	Name of improvement	Source, Reference	Description of improvements	Prioritizing	Responsible	Planned	Status of implementation	Notes
5.	QA/QC	Enteric fermentation	FCCC/ARR/2013/HRV, paragraph 51, 52	(1) Improve the sector-specific routine QC procedures, especially at the stage of data transfer from the calculation sheet to the CRF tables (2) Updates a list of sector-specific improvements and implement the improvement on schedule	High	Ekonerg	NIR 2015	In progres	
6.	QA/QC	Solid waste disposal	FCCC/ARR/2013/HRV Paragraph 75	Strengthen QA/QC procedures to avoid errors and provide more detailed information on sector-specific QA/QC activities	High	CEA - Waste Department	NIR 2015	In progres	Development of procedures for waste sector and inclouding in QA/QC Plan NIR2015
ENERGY SECTOR									
7.	Interna-tional bunker fuels CRF 1.C.	International aviation IEA – CRF data	FCCC/ARR/2013/HRV, paragraph 26	Investigate the discrepancies between CRF table 1.C and IEA data (related to the fact that a larger part of jet kerosene consumption is reported as international aviation in the CRF table)	High	Ekonerg	NIR 2015	In progress	Project for estimation emissions from Transport will receive the data, followed by analysis NIR2014 chapter 3.2.2./partial
8.	Statio-nary combustion solid, liquid and gaseous fuels – CO2 CRF 1.A.1. CRF 1.A.2.	Country-specific factors	FCCC/ARR/2013/HRV, paragraph 29	(1) Apply country-specific factors to estimate emissions for the main fuel types (2) If country-specific factors are not available, include the implementation timeline for the plan to apply country specific factors to estimate emissions for the main fuel types	High	CEA - Climate Change Unit	NIR 2017	Not started	Requirements for new Project in frame/schedules after NIR 2015
9.	CRF 1.B.2.c.	Oil and natural gas, venting and flaring	FCCC/ARR/2013/HRV, paragraph 32, 33	(1) Take steps towards reporting emissions from venting and flaring separately (2) Estimate CH4 emissions from transmission and distribution using a higher-tier method	Medium	CEA - Climate Change Unit	NIR 2017	Not started	Request for new Project frame/schedules after NIR 2015

Plan for future



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Thank you!

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