



# VERIFY GA meeting #1

## WP1 – GHG MRV user requirement framework

March 14, 2019

ECMWF

Reading, UK

*Lucia Perugini (CMCC)*

*Dirk Günther (UBA)*



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# Results from Katowice Package

## NDC

National Determined Contribution

Focus on Mitigation, Adaptation on voluntary basis

## GST

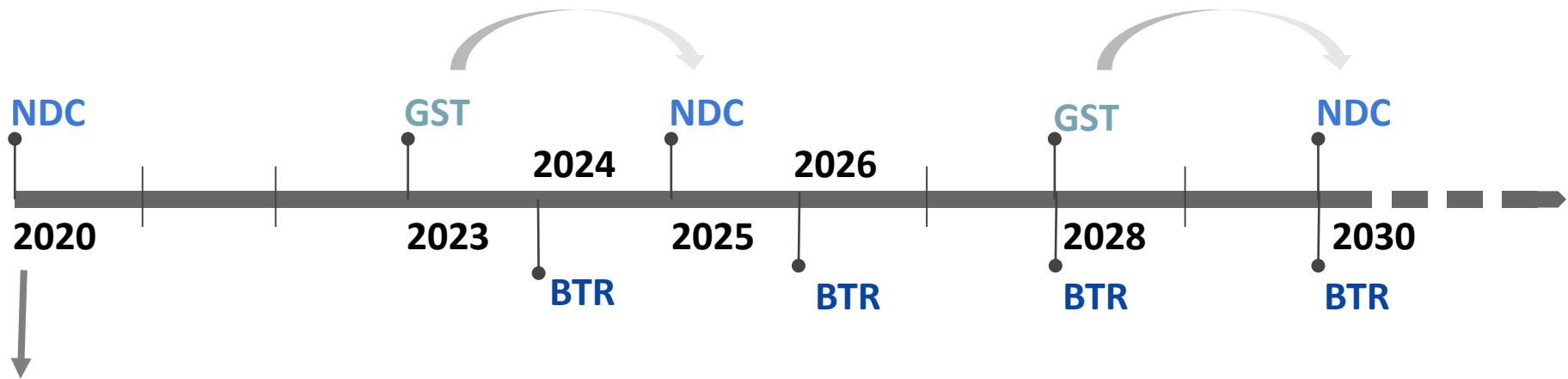
Global Stocktake

Every 5 years to assess the collective progress against long term targets

## BTR

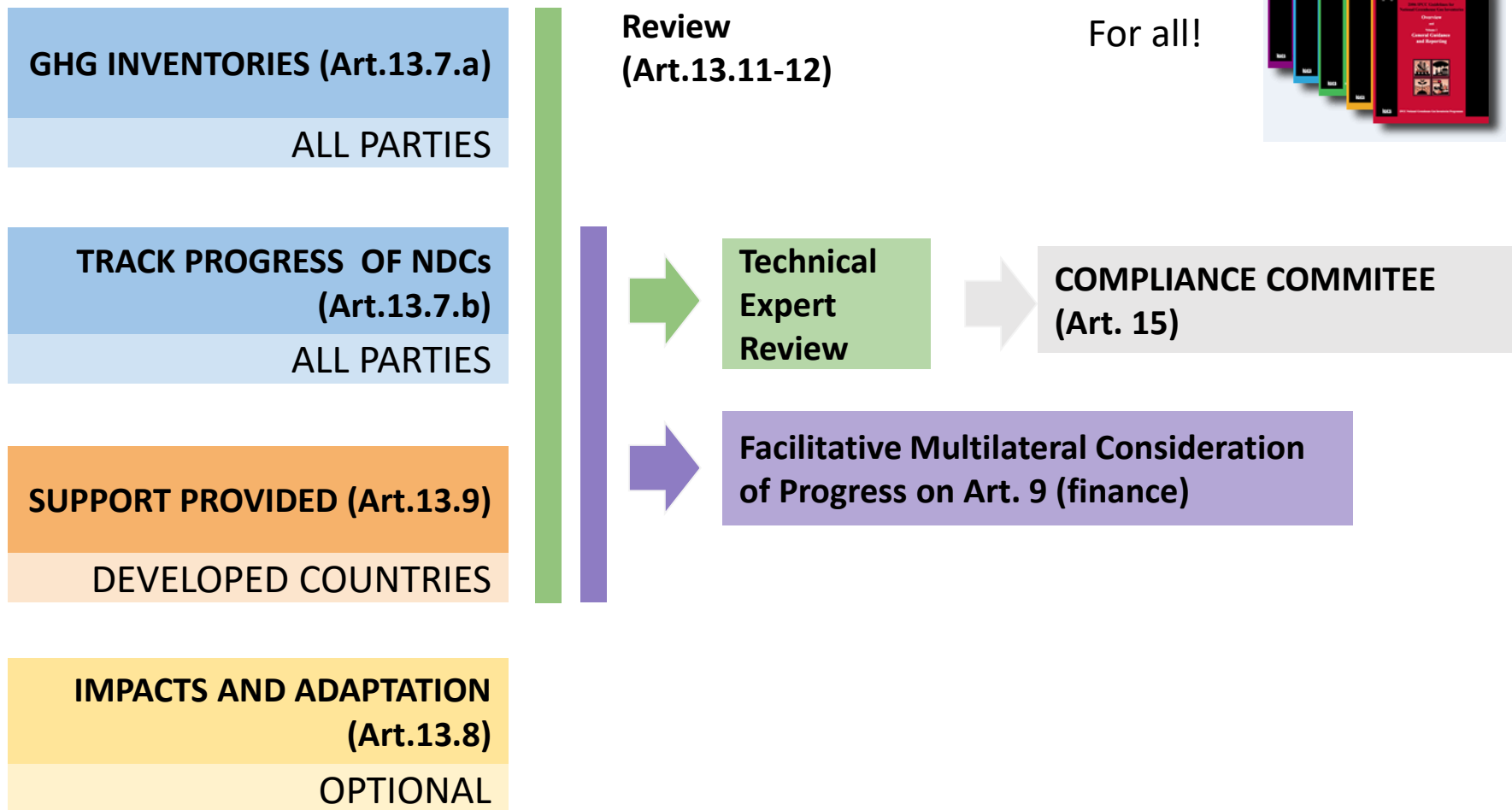
Biennial Transparency Report

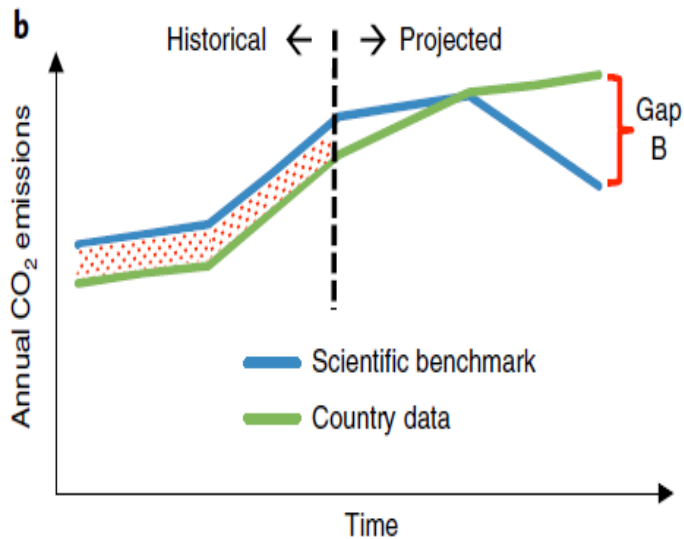
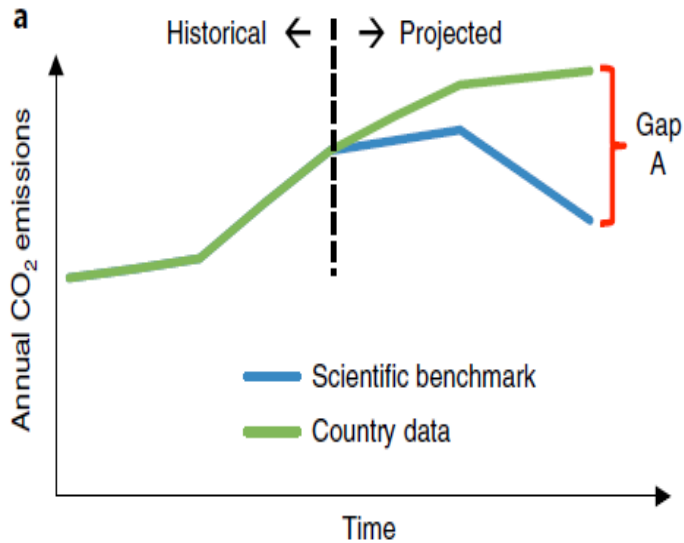
GHG inventories  
Track progress of NDC implementation (mitigation, adaptation and financial support)



- Communicate long-term low GHG emission development strategy by 2020
- NDC up to 2025 or 2030 -> New NDC by 2020 then every 5 years

## Enhanced Transparency Framework





Source Grassi et al 2018 NCC



❶ GST is the main tool for the assessment of the achievement of the global targets of the PA.

❷ Two main sources of data:

- 🟡 globally aggregated data from the NGHGI reports 13.7(a) of the PA
- 🟡 best available science (art 14.1) such as IPCC.

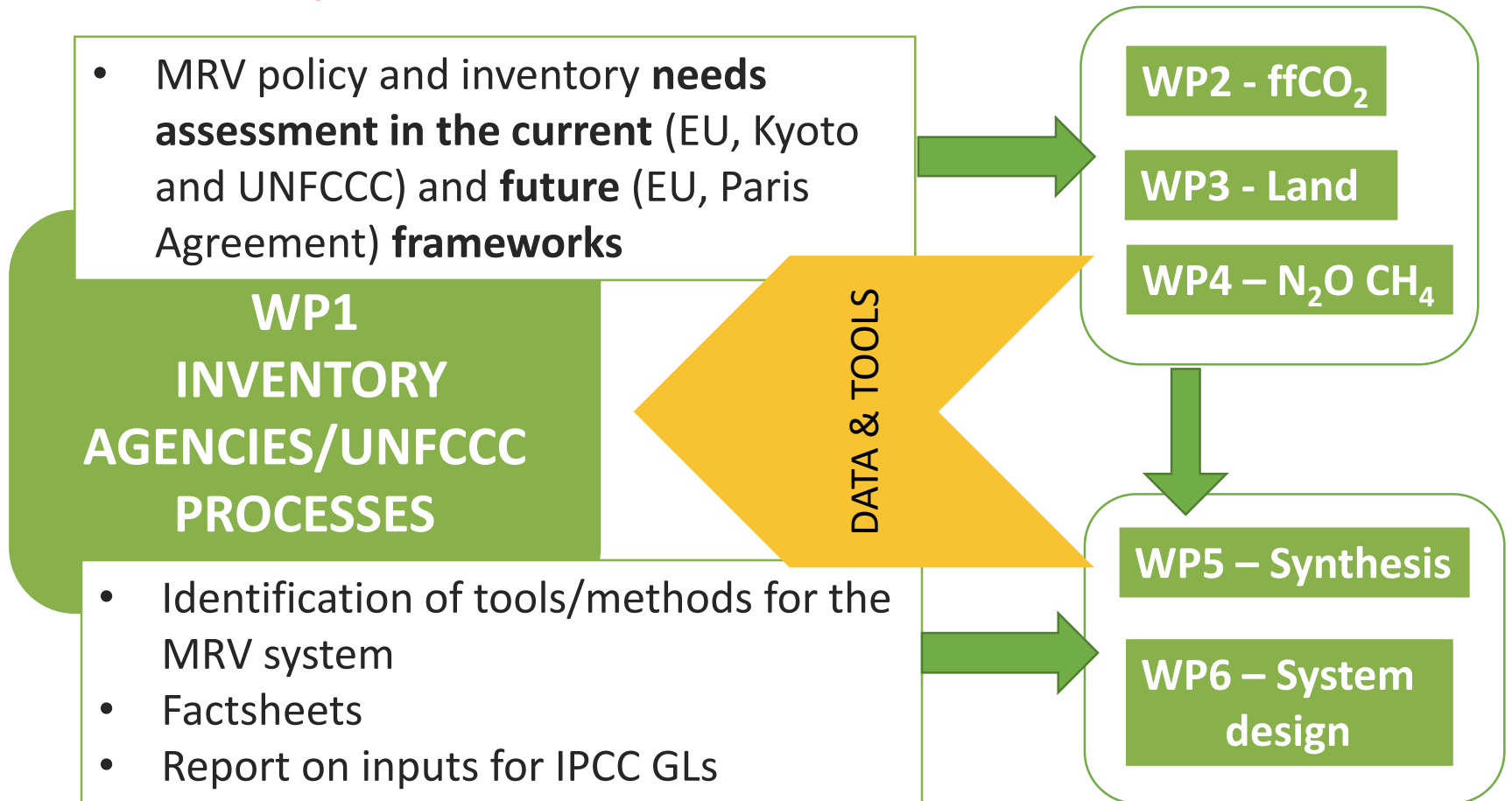
❸ This will require comparability between these two data sources!



- From activity based to land based
- Tracking of land will be complementary to UNFCCC reporting
- Managed FL, CL, GL and changes are accounted obligatory
- Wetlands to be included from 2026
- FL reference level to be submitted in 2018 (2020-2025) and 2022 (2025-2030) on the basis of BAU (2000-2009) projections
- **Spatial explicit reporting and tier 2 level of complexity!**

*Regulation 841 / 2018*

## Main objectives: Create an User Requirement Document (URD) for the MRV system for GHGs





# WP Time schedule

**Terminology** analysis (D.1.2 – July 2018)

**MR** Consolidated reporting requirement assessment (D1.3-April 2019)

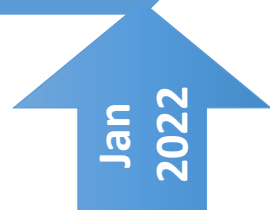
Fact sheets -> per country/sector/gases

**Verification** requirements assessment (D1.4 – April 2019)



User requirement Document (URD)

Report on the connection of VERIFY and IPCC process



**NETWORKING: national inventory agencies and the scientific community**



# ASSESSMENT OF INTERNATIONAL AND NATIONAL REQUIREMENTS FOR MRV FOR GHG EMISSIONS

- ❏ ***WP 1 should develop the framework of requirements and provide it to the subsequent working packages to fulfill the MRV targets***
- ❏ **Outline general policy framework of the overarching objective of the MRV**
- ❏ **Identify critical issues related to terminologies and definitions between UNFCCC world and scientific community**

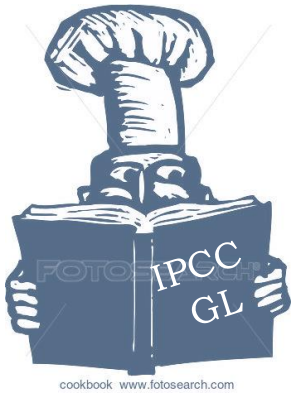
**D.1.1 User requirement Document (URD)**

**D.1.2 Terminology analysis**

***Lead CMCC***



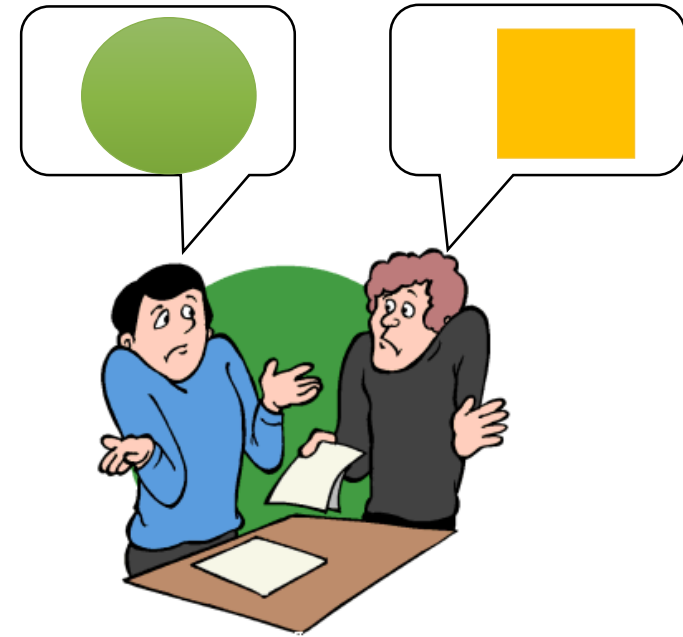
## IPCC AR AND GHGI



**GHGI**: Internationally agreed methods (reporting GLs and IPCC GLs) for the estimation of **national anthropogenic GHG**, with a **consistent time-series data**

**IPCC ARs** focuses on assessing the **state of the science on the global carbon budget** using globally applied data, definitions and modelling methods

## Do they speak the same language?



## System Boundaries



- **Spatial Scale**

GHGI -> Country level (Bottom up approach)

IPCC AR -> From Global (Top down approach) to local level

- **Temporal scale**

GHGI -> Annual

IPCC AR -> Variable (generally more refined)

## Methodology differences

## Emission attribution

## Terminology

 System Boundaries

 **Methodology differences** →

**GHGI** -> Wide use of **Emission factors**

**IPCC AR** -> [for inversion models]  
inversions of atmospheric GHG concentration  
gradients in combination with more  
process based flux models

 Emission attribution

 Terminology

System Boundaries

Methodology differences

**Emission attribution**



Terminology

System Boundaries

Methodology differences

Emission attribution

**Terminology**



Atmospheric budget

Reported GHG emissions

Accounted quantity

**Reporting** refers to the presentation of estimates in the tables or other standard formats used to transmit inventory information (**Parties' annual emissions**)

**Accounting** refers to the way the reported information is used to assess the achievement of mitigation target/s set out in the NDC (**e.g. reduced emissions against '90 levels**)

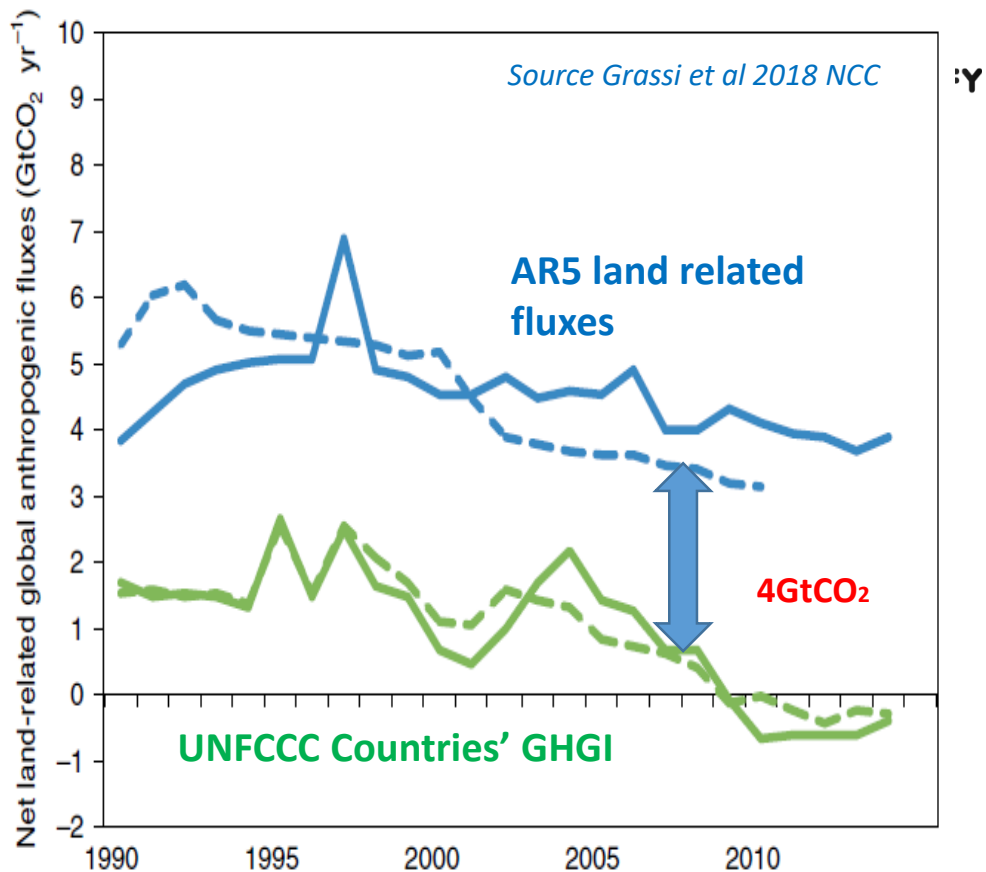
System Boundaries

Methodology differences

Emission attribution

**Terminology** →

E.g. nine different definition of net LULUCF flux (Pongratz et al 2014)



## LULUCF sector the most affected:

Complexity in GHG pathways

Difficulties to differentiate anthropogenic sources/sinks

Methodological complexity



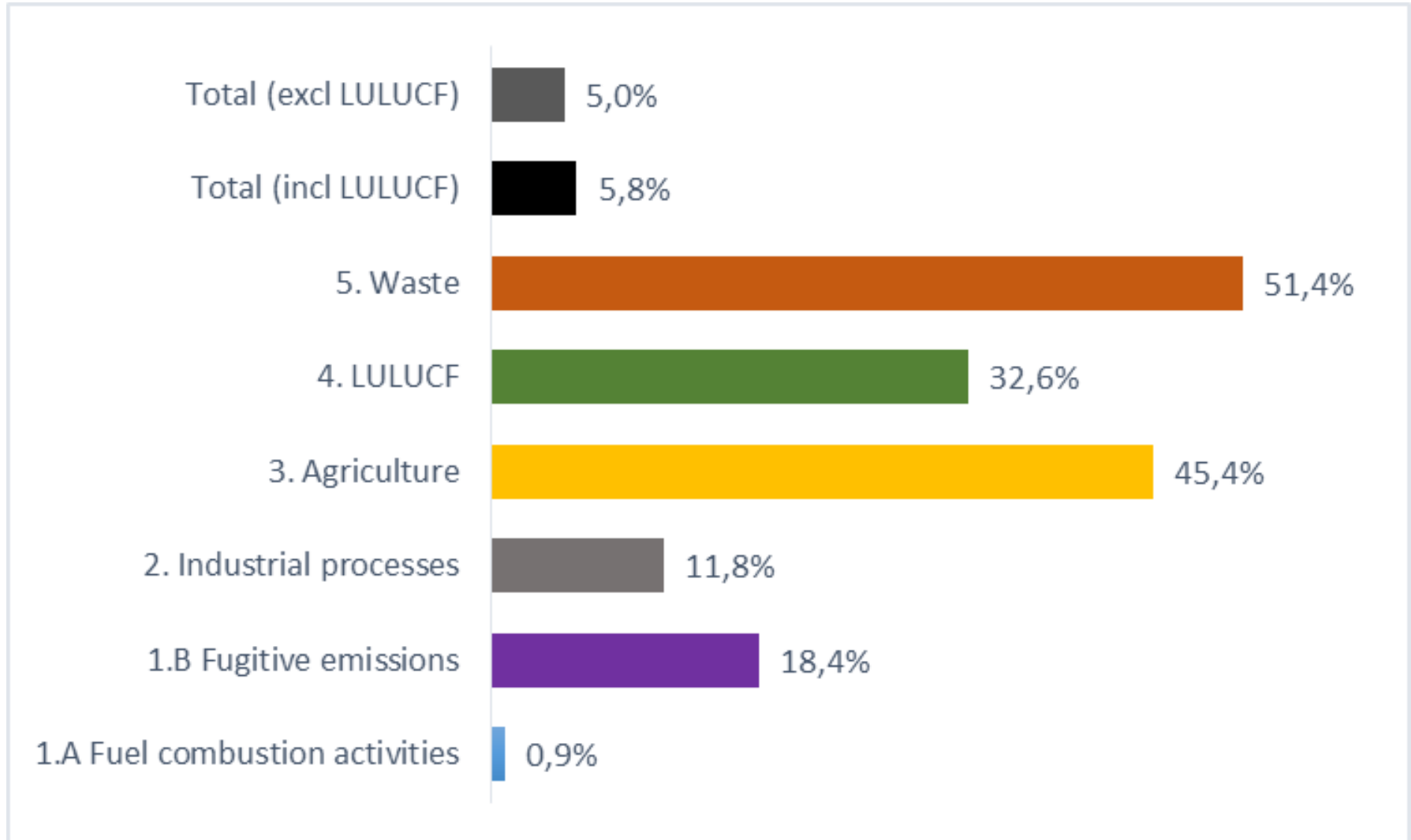
## T1.2 MR: OVERVIEW OF METHODS IN USE FOR THE GHG INVENTORIES AND MAIN DIFFICULTIES.

- State of the art of **methodological principles** (e.g. 2006 IPCC Guidelines), **models and tools in use** and of the monitoring networks for **main sectors/gases**.
- **Identification of main “uncertainties”**
- **Identification of data needs and methodological supplements**
- **Compiling the existing methodological requirements**
- **FOCUS: National level, EU and developing countries**
- **Fact sheet for gases/sectors/EU countries**

### D1.3 Consolidated reporting requirement assessment

***Lead: UBA***

# EU28 UNCERTAINTY ESTIMATES







## FACT SHEETS FOR GASES/SECTORS/EU COUNTRIES:

- Overview of the **historical time series per sector, per gas**
- Short description of **emissions and trends**
- Overview of **uncertainties** based on the uncertainty analysis
- Description of **gaps/missing data** synthesized with qualitative interviews
- Example **good practises**
  
- Data/Information for the Fact Sheets are based on National Inventories (2018) by countries and Europe, EEA data viewer, and GHG profiles for Annex I countries for the last inventory year (2016).
  
- **LINKS WITH WP 5 AND 6**



## TASK 1.3 - V : OVERVIEW OF TOOLS AND METHODS AVAILABLE FOR INDEPENDENT VERIFICATION AND GAPS

- **Identify requirements**
- **Identify alternative approaches** applicable also for developing countries.
- **Review of international systems**
- **FOCUS: Global, National**



### D1.4 Verification requirements assessment

**Lead: UNI Bristol**



# DEVELOPING INTERACTIONS AND NETWORKING

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This task will guarantee the continuous interaction **between national inventory agencies and the scientific community**

Project results from other WPs will be reported to inventory agencies in the course of the project.

**3 ad hoc meetings (M6, M24; M48)**

***Lead: RIVM***

Scientific outcome of the project in line with IPCC inventory methods are communicated to **IPCC via EF database**

**D1.8 Report on the connection of VERIFY and IPCC process**

***Lead: EMPA***



# RESULTS: FIRST NETWORKING MEETING

- 🌀 1<sup>st</sup> networking meeting held on the 14 November 2018, Paris
- 🌀 40 participants
- 🌀 Presentations from inventory agencies and relevant WPs
- 🌀 **Inventories strictly based on source categories**
- 🌀 **CH4 and N2O have the highest uncertainties but importance limited in terms of total emissions**
- 🌀 **LULUCF sector most uncertain and complex**

LULUCF	WEAKNESSES IN INVENTORY	INVERSIONS REGIONAL/NATIONAL/SUB-NATIONAL	SATELLITE	PROCESS BASED MODELS	GROUND BASED INVENTORY MEASUREMENTS	FLUX MEASUREMENTS
LAND CONVERTED	C stocks, rates of growth/decomp.	Trends?	AD, biomass	EF, emissions	AD, EF	EF
LAND REMAINING	ditto					
AGB/BGB						
SOC MINERAL/Organic						
DOM						
Wetland CH4						

**What can methods supply?** - Activity data (AD)  
 Emission Factors (EF)  
 Emissions estimations (EmEs): annual, national, subnational, regional  
 Parameters (P)



# Highlights

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- Improve mutual understanding
- Whenever possible, refer to IPCC GL terminology
- Careful choice and declaration of the component of the fluxes included or not in the studies
- Possibility to disaggregate/aggregate components to increase comparability
- Acknowledging this discrepancy in the land sector is key for the full understanding of the outcome of the GST and the overall balance of emissions and removals
- **VERIFY DATABASE: inventory definitions and requirements should be embedded as far as possible**



## WP1 – GHG MRV USER REQUIREMENT FRAMEWORK

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Inconsistencies lead  
to the  
dark side...





# WP1 – Status of Deliverables (M1-M24)

DEL n°	DEL Title	Leader	Due date	Status	Comments
D.1.2	Terminology Analysis	CMCC	July 2018	Submitted	
D1.4	<i>Verification requirements assessment</i>	UoBri	Jan.2019	Deferred	NEW DATE TBD
D.1.3	Consolidated reporting requirement assessment	UBA	Feb. 2019	In progress	↓
D1.1	User requirement document	CMCC	Apr. 2018	To be started	
D1.5	<i>Report on First ad hoc meeting</i>	RVIM	July 2018	Submitted	Submitted in Nov 2018