

The European CO₂ initiative in the international context

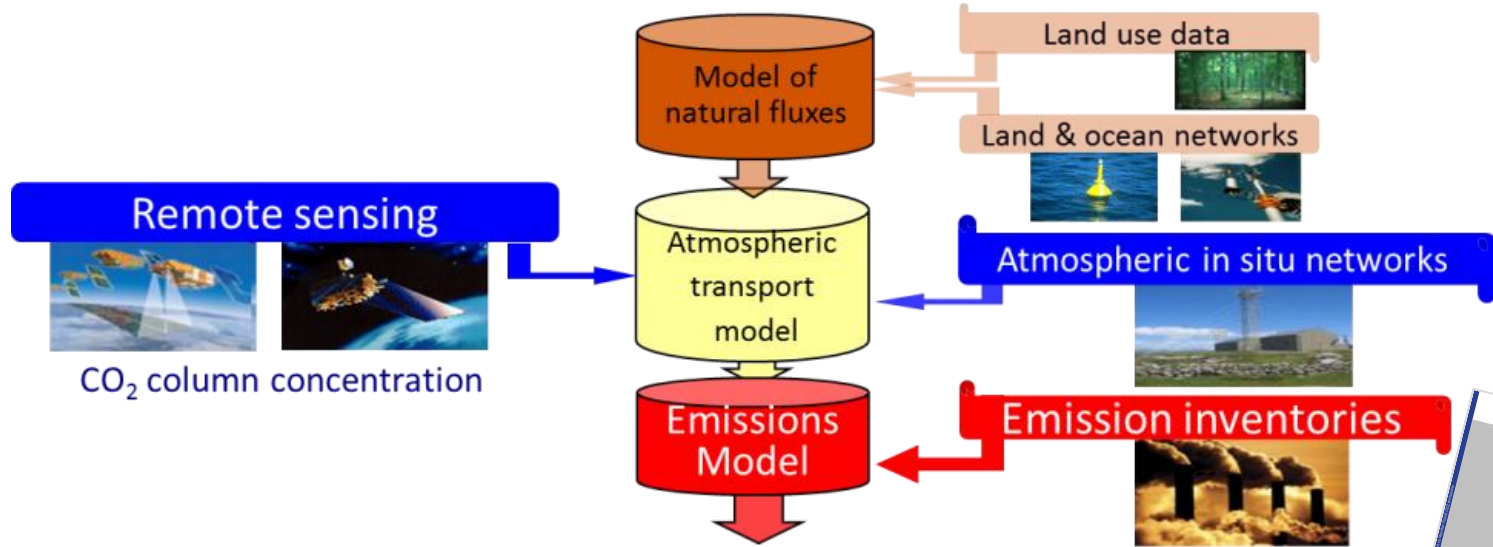
G. Maenhout, B. Pinty, M. Dowell

Greet.Maenhout@ec.europa.eu

1. Paris Agreement & CO₂ Monitoring Task Forces
2. CO₂ Monitoring & Verification Support (MVS)
 - i. Space component
 - ii. Ground component
3. Reaching out to policymakers



EUROPE'S INTENTIONS



<http://edgar.jrc.ec.europa.eu>

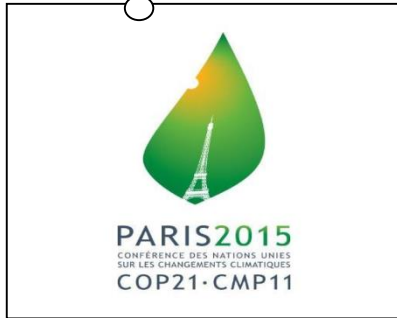
<http://copernicus.eu/news/report-operational-anthropogenic-co2-emissions-monitoring>





THE PARIS AGREEMENT

All 195 parties are solicited to contribute (iNDCs) within the **enhanced transparency framework** (inventories and reviews + complementary info from observations).

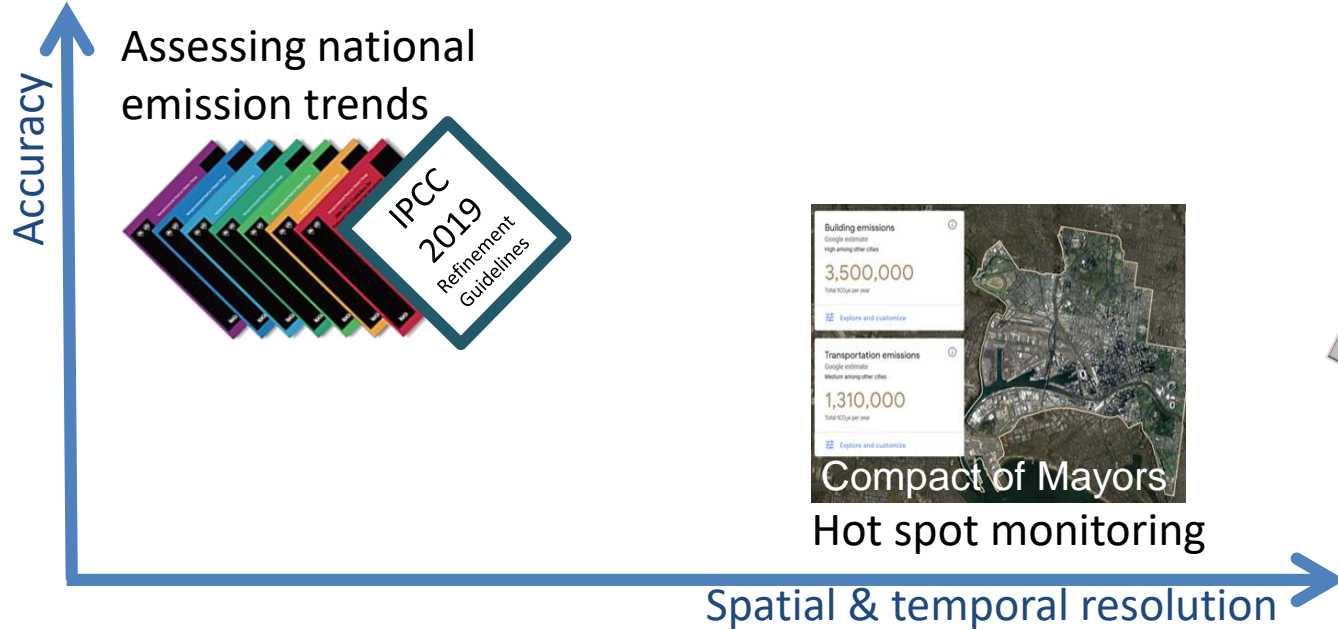


17 sustainable development goals world-wide.
230 indicators defined for monitoring progress with statistics + observations





Objectif: EU sets up an operational system and seeks international buy-in



UNFCCC/SBSTA recognises Earth Observation capacities for GHG monitoring



Jun 2015	Dec 2015	Jun 2016	Dec 2016	Jun 2017	Dec 2017		
----------	----------	----------	----------	----------	----------	--	--

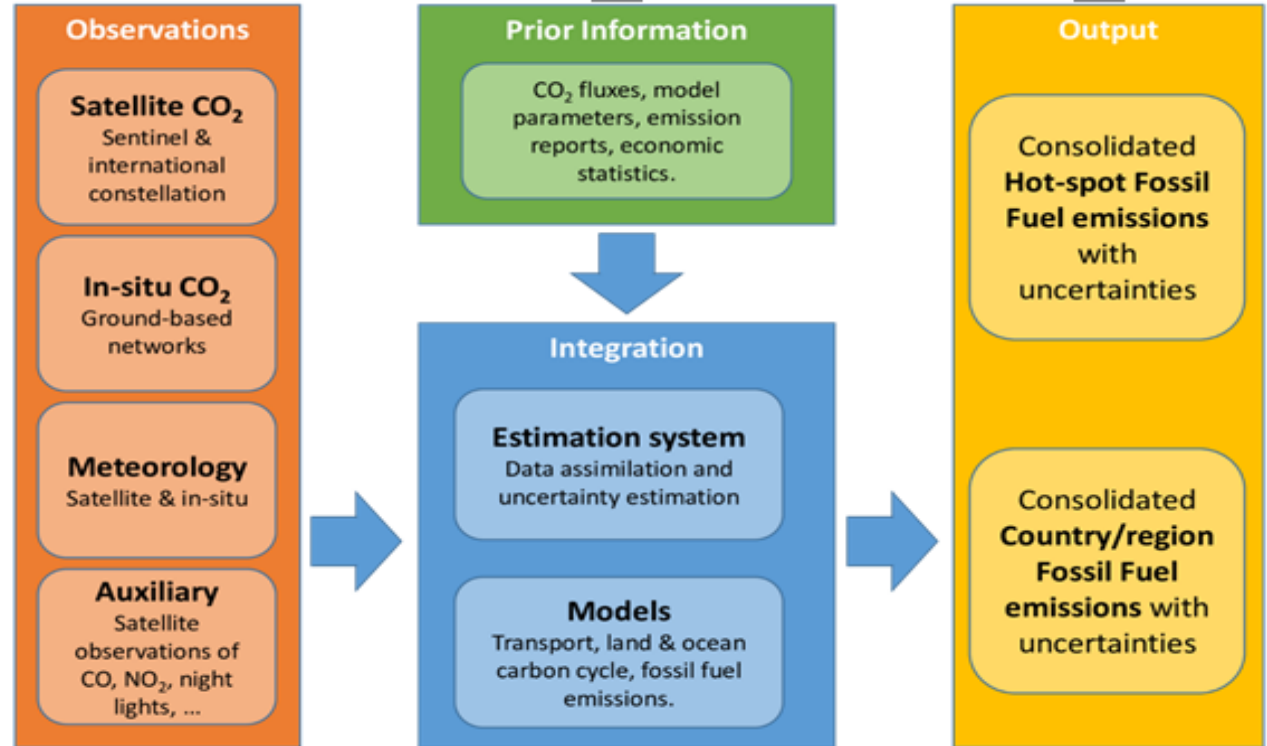




CO₂ MVS

CO₂ Monitoring & Verification Support (MVS)

5 building blocks





SPACE COMPONENT of the CO₂ MVS

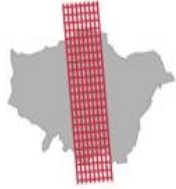
GOSAT

85 km²



OCO-2 & TanSat

2.3 x 1.3 km²



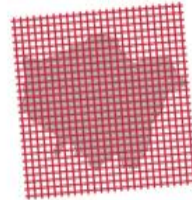
MicroCarb

6 x 5 km²



CO2M

2x2 km²



- **Requirements for XCO₂**
- XCO₂ precision: **0.5 – 0.7 ppm**
- Systematic bias **< 0.5 ppm**
- Spatial resolution **4 km²**
- Swath width **200 – 300 km**
- Revisit around **2–3 days** (polew. 40°)
- **constellation of 2 to 3 satellites**
- Orbit equator crossing time **11:30**
- **Auxiliary observations:**
- **NO₂ observations** for plume detection of anthropogenic emissions
- **Multi-Angle Polarimeter** for aerosol/cloud correction
- **Cloud imager** at high resolution to assess sub-pixel cloud contamination



10 km



5 km



240 km

Credits: IUP, Bremen





International COLLABORATION

1. Followup of the CEOS (AC-VC) whitepaper on defining an optimum constellation for CO₂ and GHG monitoring



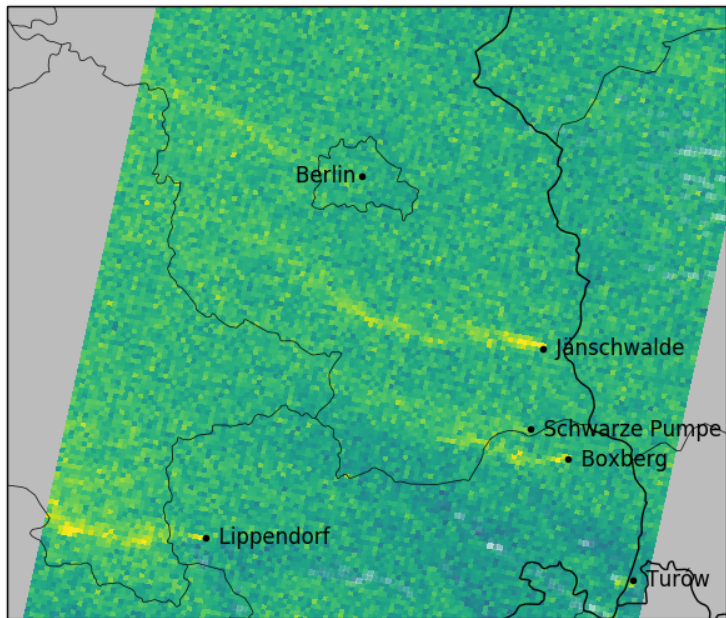
2. In collaboration with CGMS, EUMETSAT & counterparts of CEOS agencies
3. In collaboration with WMO (in particular in-situ component world-wide and the Integrated Global Greenhouse Gas Information System (IG³IS))





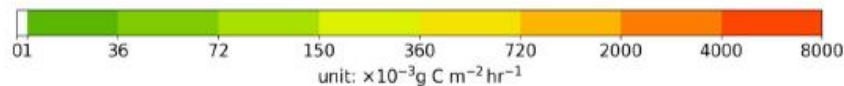
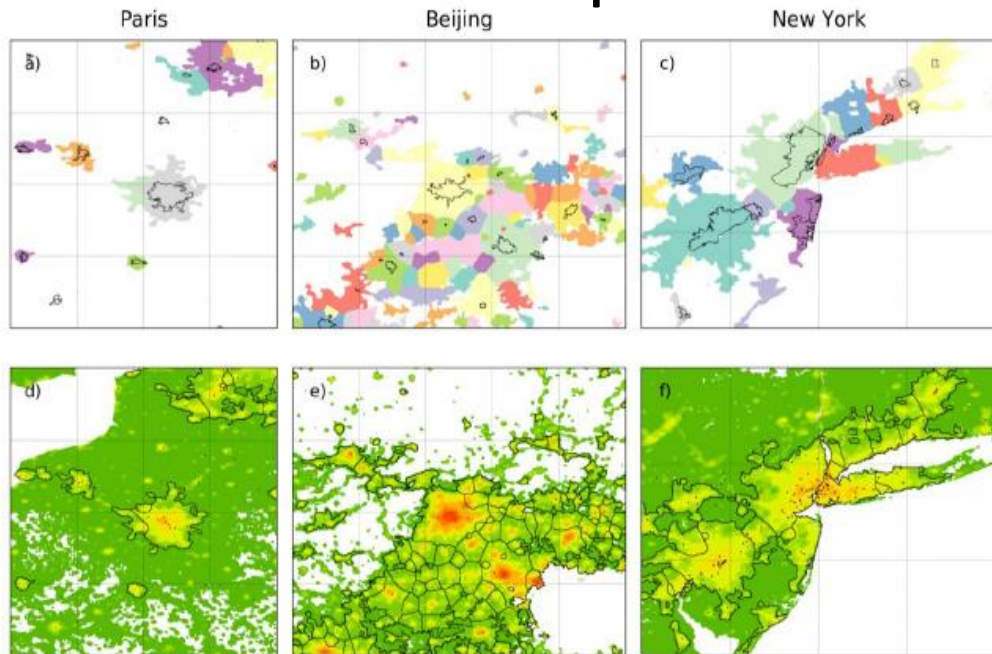
GROUND COMPONENT of the CO₂ MVS

Plume modelling



XCO₂ (0.5 ppm noise)

Emission clumps



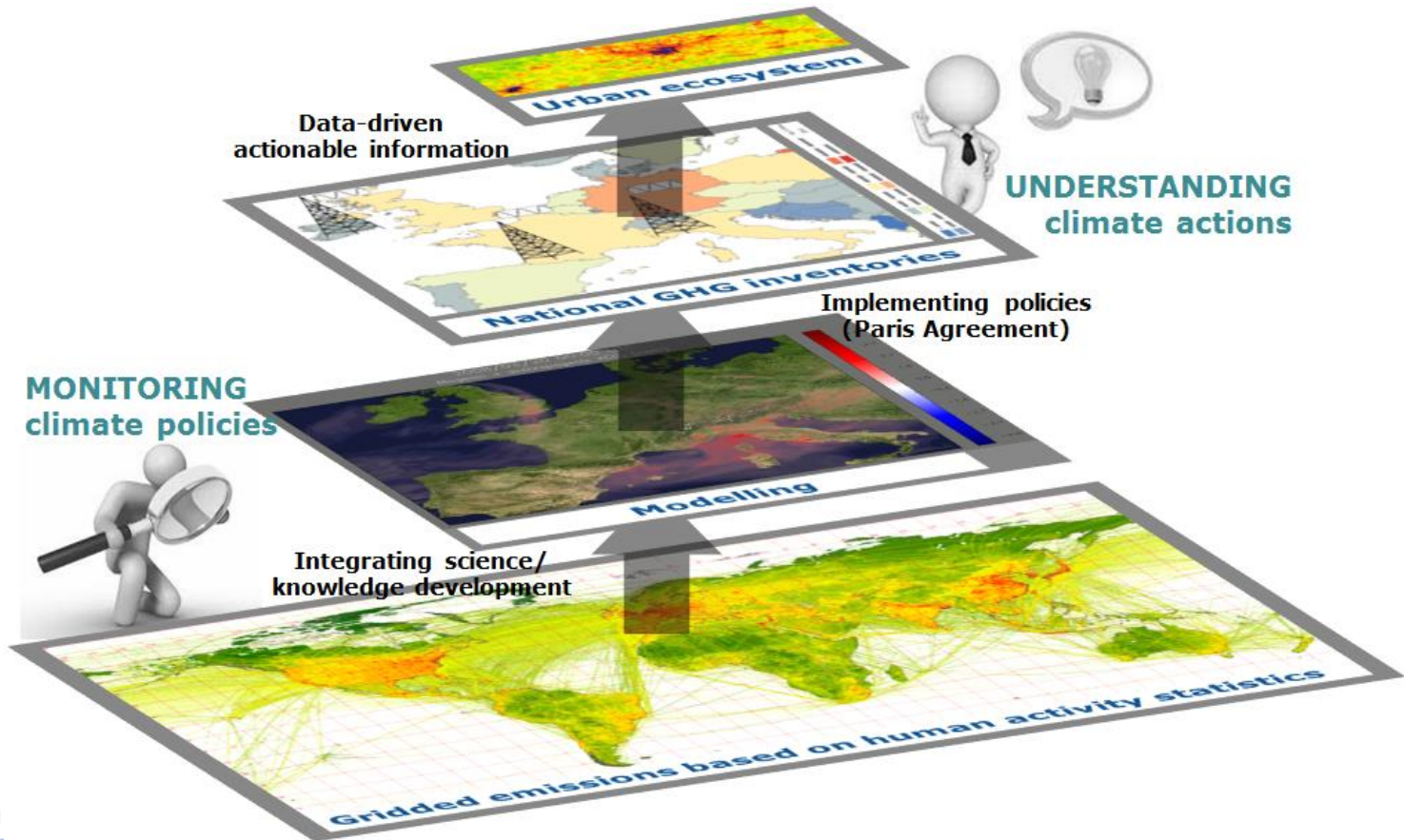
Credits: EMPA

Credits: LSCE





GROUND COMPONENT of the CO₂ MVS

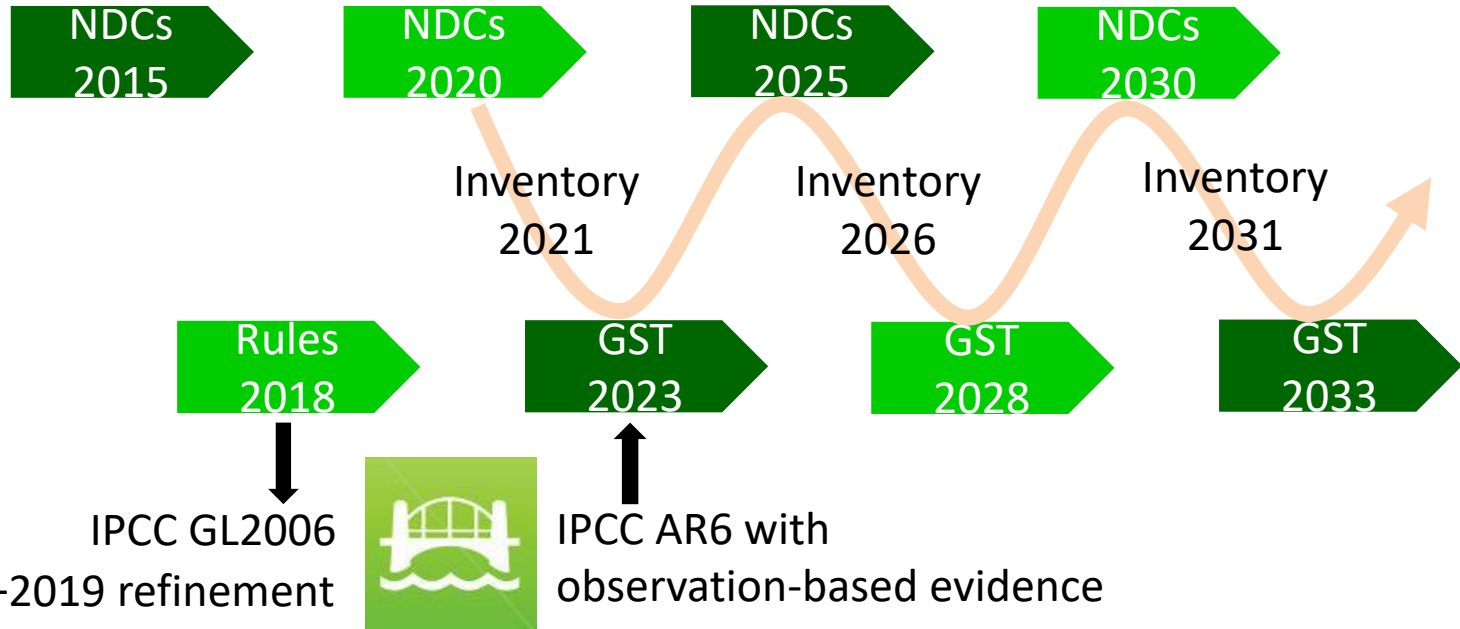




FOLLOWING AN AMBITIOUS RAMPING UP

Nationally determined Contributions (NDCs) as actions

Global Stock Take (GST) as information to strengthen the actions





What was the major outcome of the COP24 in Katowice ?

RULEBOOK for Paris Agreement

GLOBAL STOCKTAKE attempt

OBSERVATIONS - IG3IS

Modalities, Procedures GUIDELINES





What was the major outcome of the COP24 in Katowice ?

RULEBOOK for Paris Agreement

NDC

GST

TER=Technical Expert Review

FMCP=Facilitative Multilateral Consideration of Progress

NAP=National Adaptation Plan



Jun 2015	Dec 2015	Jun 2016	Dec 2016	Jun 2017	Dec 2017	Jun 2018	Dec 2018	
-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	--





Country fact sheet: Austria

1. Total greenhouse gas emissions

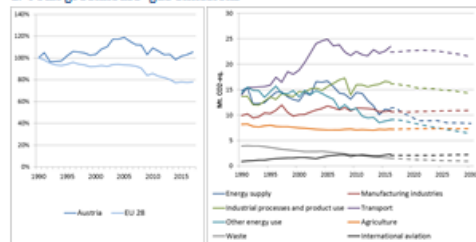


Figure 1: Left side: Total greenhouse gas emissions 1990-2017 (index 1990=100%). Right side: Total greenhouse gas emissions by sector - historical emissions 1990-2016, projections 2017-2030 (Mt. CO₂-eq.).¹



Figure 2: Share of emissions covered by the ETS and the ESD (2016).²

¹ National total, excluding international aviation.
² Excludes international aviation CO₂ from domestic aviation and ETS.

4. ETS emissions

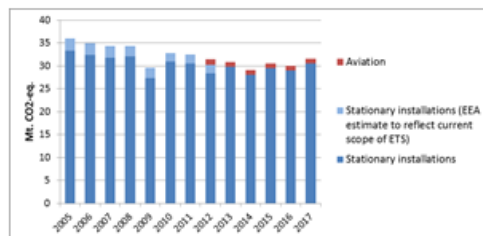


Figure 3: ETS emissions (Mt. CO₂-eq.).³

3. Emissions in Effort Sharing sectors

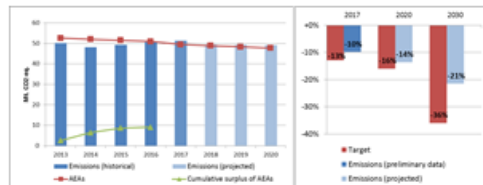


Figure 4: Left side: Emissions, annual emission allocations (AEAs) and accumulated surplus/deficit of AEAs under the Effort Sharing Decision 2013-2020 (Mt. CO₂-eq.). Right side: Emissions and targets under the Effort Sharing Decision/Effort Sharing Regulation 2017, 2020 and 2030 as percentage change from 2005.

³ The scope of ETS was extended from 2015. To reflect the current scope of ETS, an estimate made by EEA is included in the figures from 2005 to 2012. The estimate covers only emissions from stationary installations.

4. Land use, land use change and forestry

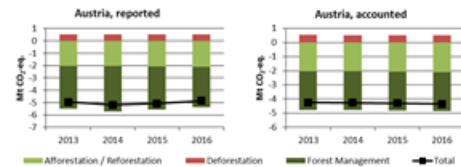


Figure 5: Reported and accounted emissions and removals from LULUCF

Reported quantities under the Kyoto Protocol for Austria show net removals of, on average, -5.0 Mt CO₂-eq. for the period 2013 to 2016. In this regard Austria contributes with 1.5% to the annual average sink of -364.4 Mt CO₂-eq. of the EU-28. Accounting for the same period depicts net credits of, on average, -4.5 Mt CO₂-eq. which corresponds to 5.7% of the EU-28 accounted sink of -115.7 Mt CO₂-eq. Reported net removals are highest for 2014 and decreased slightly over the following years, while accounted net credits show no notable trend. In this preliminary simulated accounting various potential credits by forest management of, on average, -1.8 Mt CO₂-eq. per year are capped to -1.7 Mt CO₂-eq. per year. Austria is one of eight EU Member States which exceed the cap of 3.5% from emissions of the base year (1990).

Data sources:

Figure 1: Annual European Union greenhouse gas inventory 1990-2016 (European Environment Agency).
 Reported and accounted emissions and removals 2013-2020 (European Environment Agency).
 Member States national projections, reviewed by the European Environment Agency.

Figure 2: ETS data viewer (Abstract from European Union Transaction Log 20.07.2016). Final reviewed ESD data (...).

Figure 3: ETS data viewer (Abstract from European Union Transaction Log 20.07.2016).

Figure 4: Final reviewed ESD data 2013-2016 (...). Reported and accounted emissions and removals 2013-2020 (European Environment Agency). Member States national projections, reviewed by the European Environment Agency.

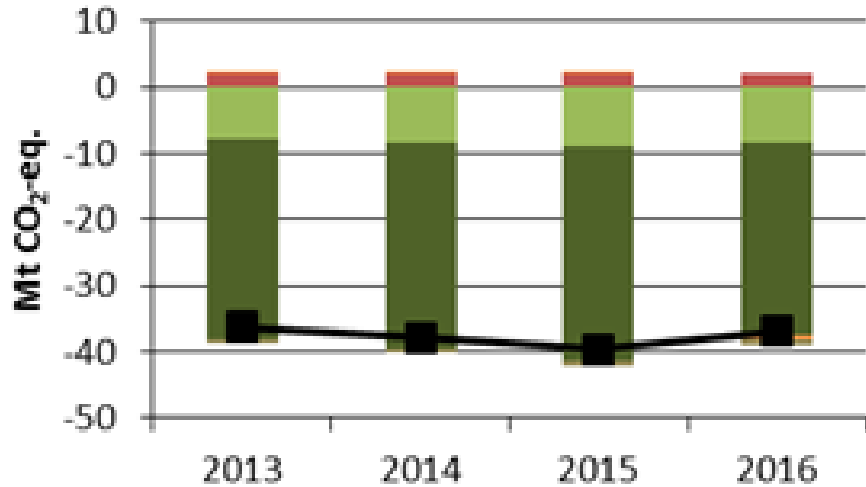
Figure 5: European Commission based on data accounted and reported by Member States under the Kyoto Protocol (...).

⁴ The difference between reported and accounted emissions from LULUCF under the Kyoto Protocol are described in part 1b.

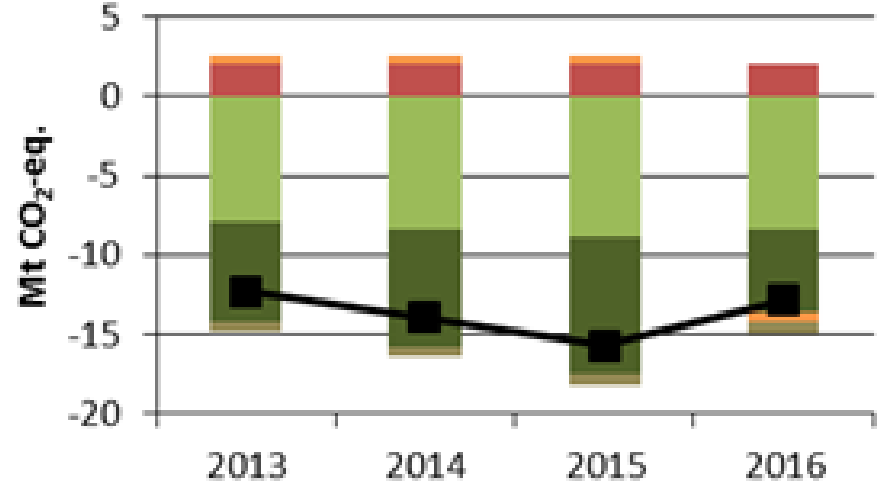


REACHING OUT TO POLICYMAKERS

Italy, reported



Italy, accounted



Afforestation / Reforestation

Deforestation

Forest Management

Cropland Management

Grazing Land Management

Total



Thank you for your
attention

