




European Commission

Climate Policy and Agriculture - The European context

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European Commission

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Background information

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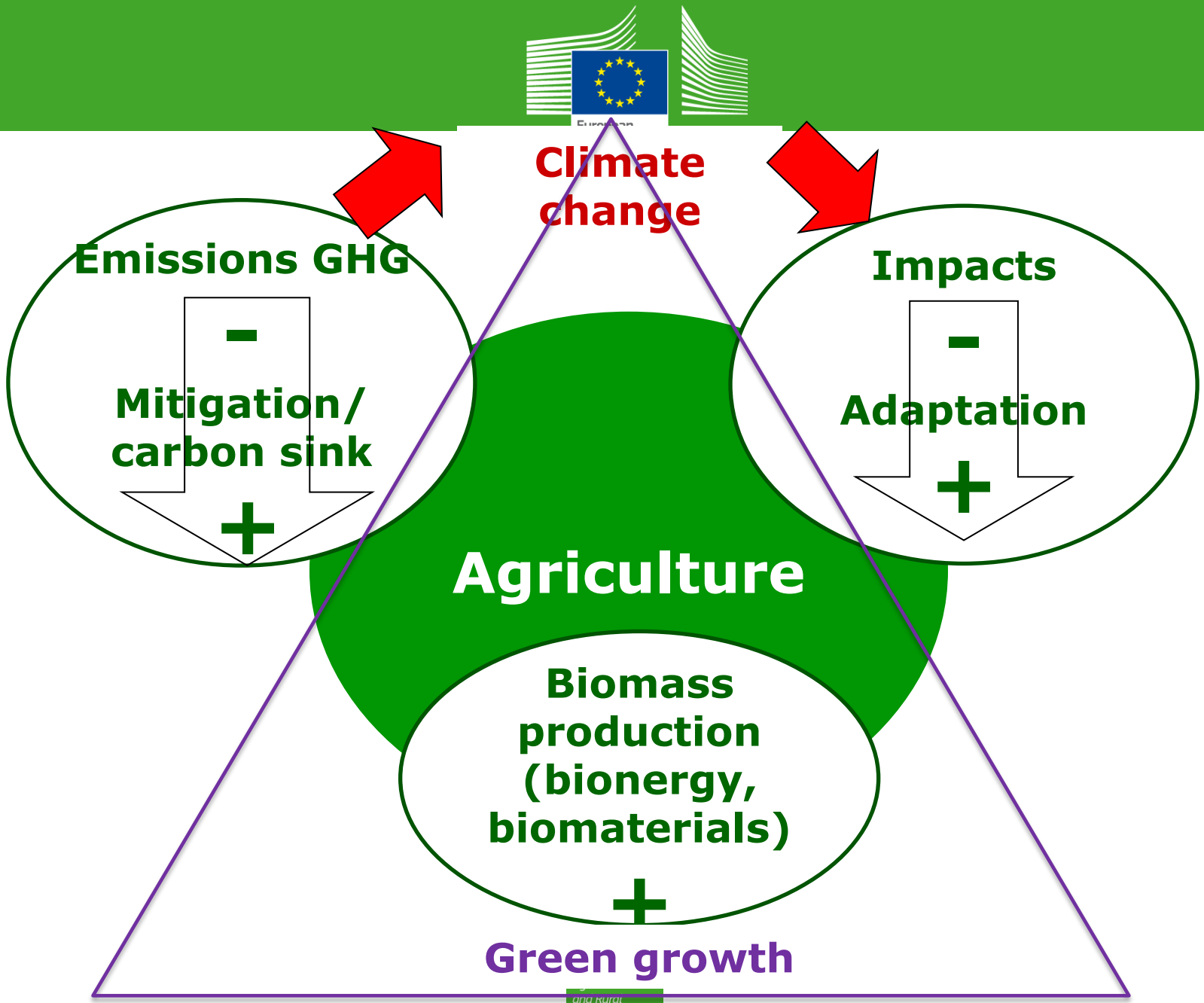
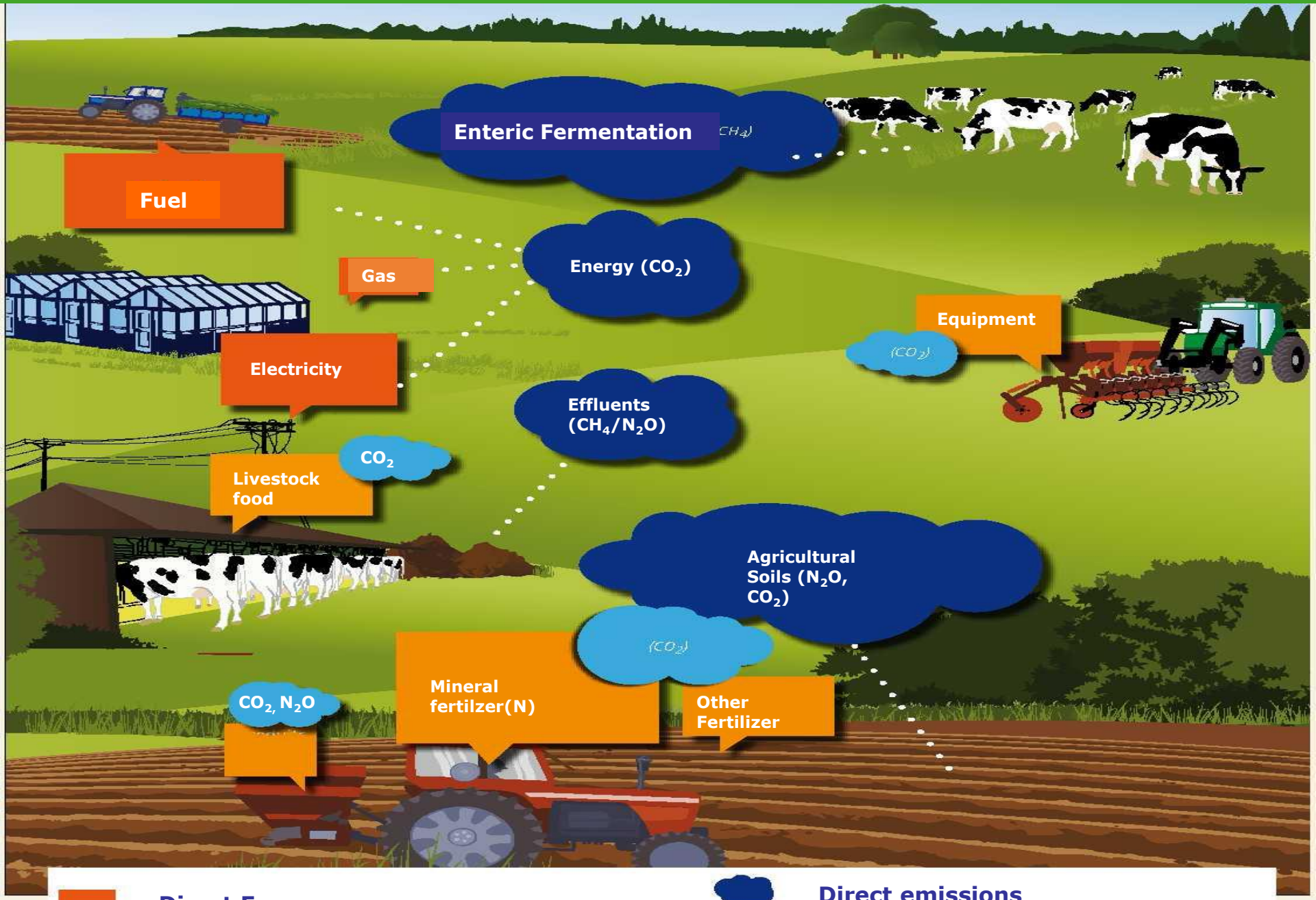
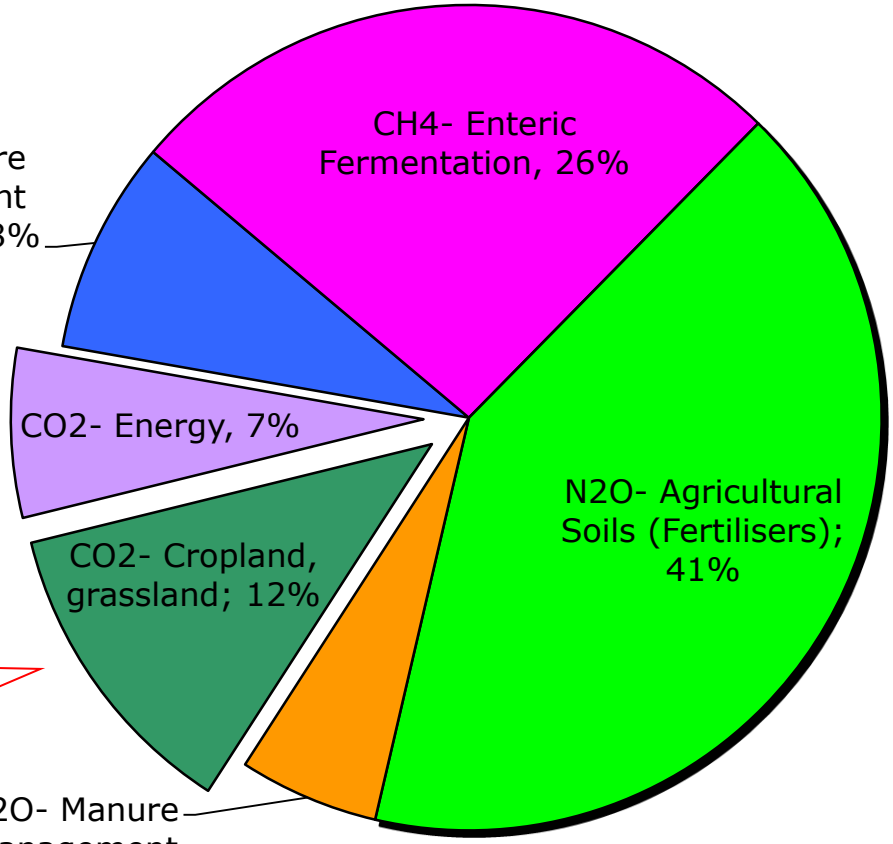

Climate change
Emissions GHG
-
Mitigation/ carbon sink
+
Impacts
-
Adaptation
+
Agriculture
Biomass production (bionergy, biomaterials)
+
Green growth


Enteric Fermentation
CH_4
Fuel
Gas
Energy (CO_2)
Equipment
(CO_2)
Electricity
Effluents (CH_4/N_2O)
CO_2
Livestock food
Agricultural Soils (N_2O, CO_2)
(CO_2)
CO_2, N_2O
Mineral fertilzer(N)
Other Fertilizer
Direct Energy
Indirect Energy
Direct emissions
Indirect Emissions

Share of GHG from sectors "Agriculture", "Energy" and "LULUCF", EU-27, 2011



80,3 Mt from croplands (source) and - 12,3 Mt (sinks) from grasslands

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EU climate policy - key policy instruments

GHG Target in 2020: -20% compared to 1990

-14% compared to 2005

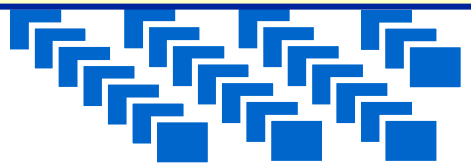
EU Emissions Trading System (ETS)
-21% compared to 2005

Effort sharing Decision
Non ETS sectors (transport, buildings, waste, agriculture)
-10% compared to 2005

27 Member State targets stretching from -20% to +20%

CH_4 and N_2O from agriculture included

CO_2 from LULUCF NOT included



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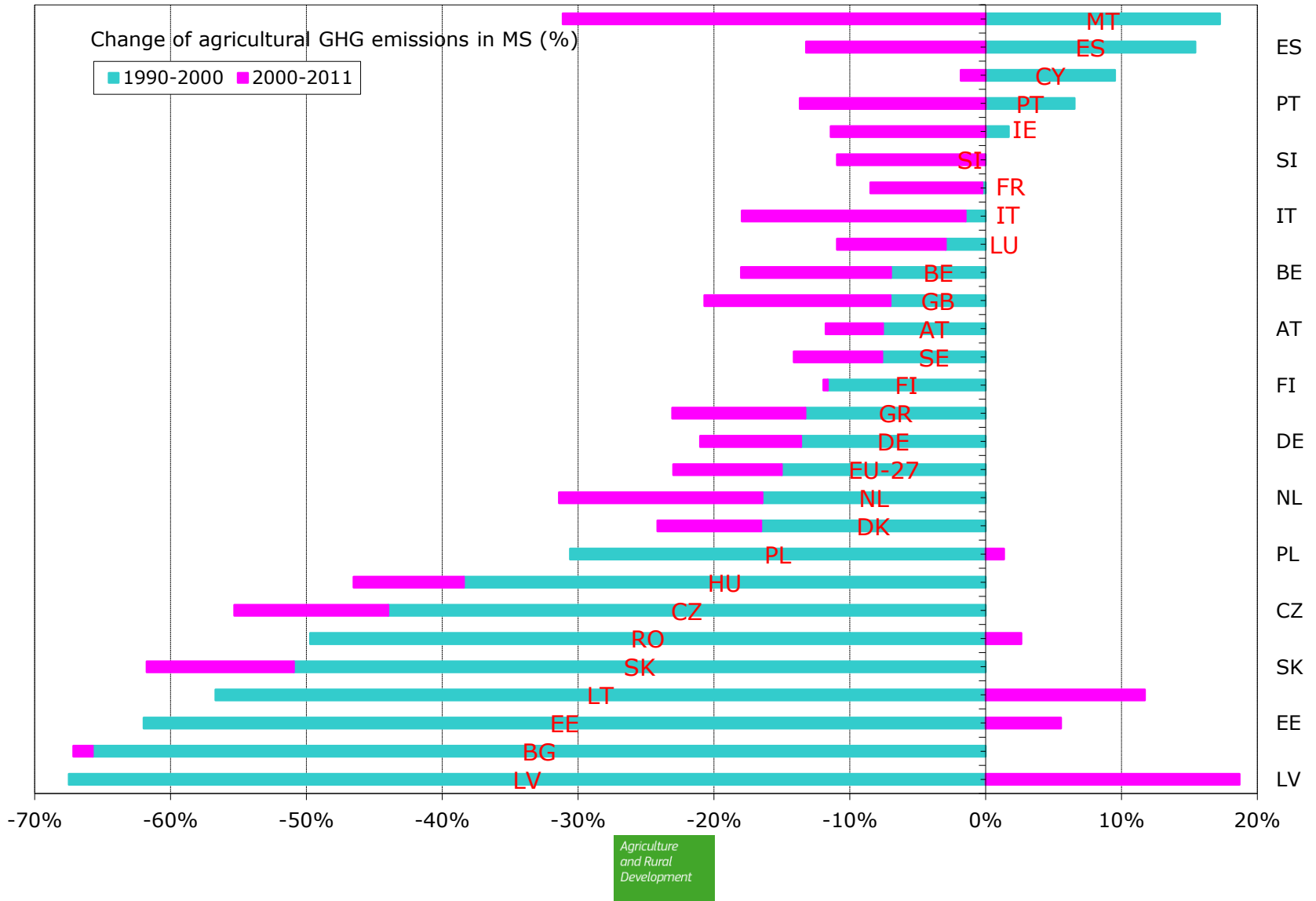
Change of agricultural GHG emissions in MS (%)
1990-2000
2000-2011
MT
ES
CY
PT
IE
SI
FR
IT
LU
BE
GB
AT
SE
FI
GR
DE
EU-27
NL
DK
PL
HU
CZ
RO
SK
LT
EE
BG
LV
ES
PT
SI
IT
BE
AT
FI
DE
NL
PL
CZ
SK
EE
-70%
-60%
-50%
-40%
-30%
-20%
-10%
0%
10%
20%

Share of agriculture in total ESD GHG emissions
(2008-2012 average)

Finland	**18%**
Estonia	**23%**
Latvia	**27%**
Lithuania	**31%**
EU-28	**17%**

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Climate mitigation in EU agriculture

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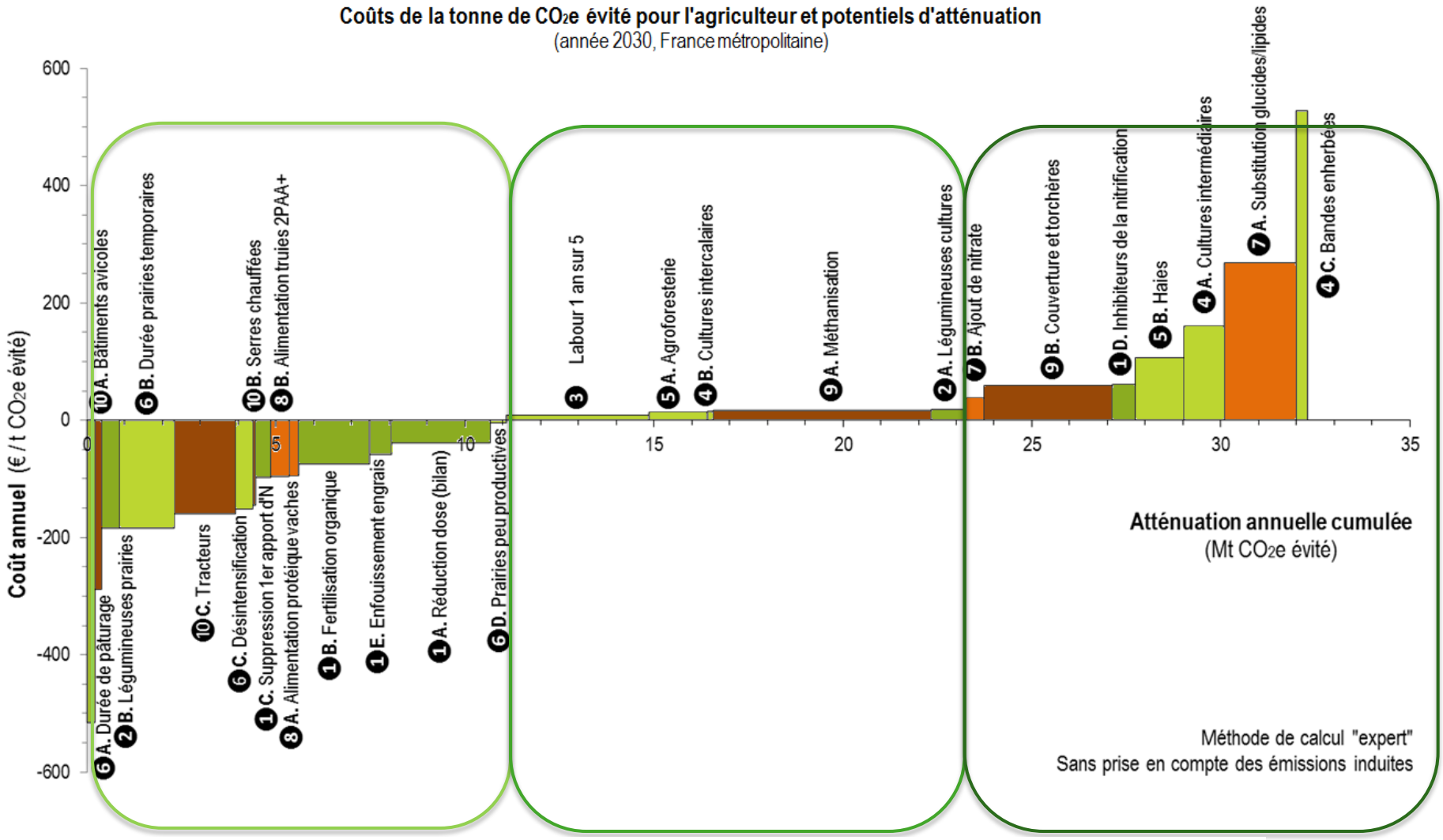
Mitigation – concept

- Broadly, agriculture can contribute to **mitigation** by**:**
  - ▼ direct emissions from farm operations (CH4 and N2O)
  - ▼ CO2 emissions by improving farm "energy profile" (efficiency, on-farm use of renewable energies)
  - Improve CO2 balance of farmland soils by protecting or expanding carbon sinks
  - ▼ CO2 from fossil fuel use in other sectors by supplying feedstock for bioenergy and industrial applications
- Measures with **highest mitigation potential:**
  - *Increase production efficiency (fertilizer, resource use)*
  - *Improving manure and slurry management (storage, application)*
  - *'Waste to worth' (anaerobic digestion for animal waste – biogas)*
  - *Grassland management (improving livestock "carbon footprint" and carbon sink)*
- Actions which improve **resource efficiency** are positive for climate (reduce direct and indirect emissions)
- **Synergies** with soil protection (erosion), water quality (nitrates), air quality (ammonia)
- High mitigation potential **variability** in systems and management practices: potential depends on baseline climates, soil types, farm production systems
- Large **uncertainties**



Source: Quelle contribution de l'agriculture française à la réduction des émissions de GES?, INRA (France), July 2013

Climate change adaptation in EU agriculture

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EC policy framework on adaptation

- **White Paper on 'Adapting to climate change: towards a European framework for action'** (April 2009)

- **EU Adaptation Strategy** (April 2013)

  - **General aim**: enhancing Europe's resilience to the impacts of climate change
  - **Specific objectives**:
    - *Enhancing the knowledge base and widening access to information*
    - *Mainstreaming adaptation into EU policies, strategies and programmes*
    - *Capturing the potential of the market, market-based instruments and the private sector*
    - *Support to and facilitation of collaboration, exchange of knowledge and good practice examples, etc. between MS, regions, cities…*
  - **Agriculture** is a vulnerable sector – the strategy draws on CAP for providing adaptation support
    - *Climatic changes will lead to a **variety of risks** which call for adaptation responses*
    - *make Rural Development Policies more **climate resilient** and*
    - *dedicate funds **directly** for adaptation*

ANNEX – Additional slides

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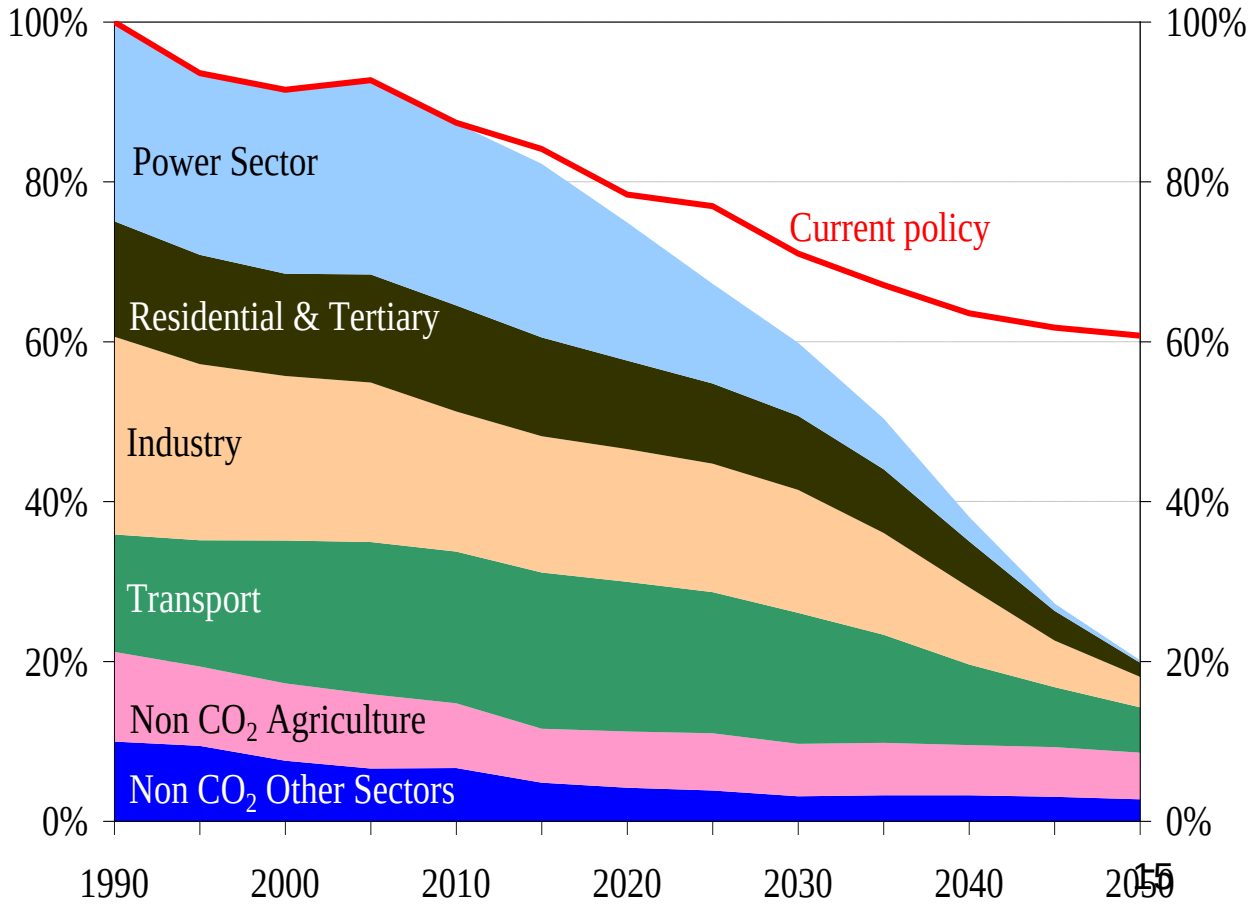
Looking beyond 2020: roadmap 2050

80% domestic reduction in 2050 is feasible:

- With currently available technologies,
- With behavioural change induced by prices
- If all economic sectors contribute to a varying degree & pace

Milestones for agriculture:

-25% in 2020
-36% to -37% in 2030
-40 to -50% in 2050



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Tackling climate change through livestock

Emissions

Methane (CH_4)

- *Renewal*
  - *Nutrition*
- *Effluent management*
  - *Biogas*

Nitrogen monoxyde(N_2O)

- **Fertilization management**
  - **Global nitrogen management**

CO_2 (energy)

- **Legumes**
- ***Fuel***
  - ***Mecanisation***
    - ***Tractor tuning***
  - ***Livestock food***
    - ***Autocons.***
- ***Electricity***

Sinks

CO_2

- ***Grassland***
  - ***Ecological infrastr.***

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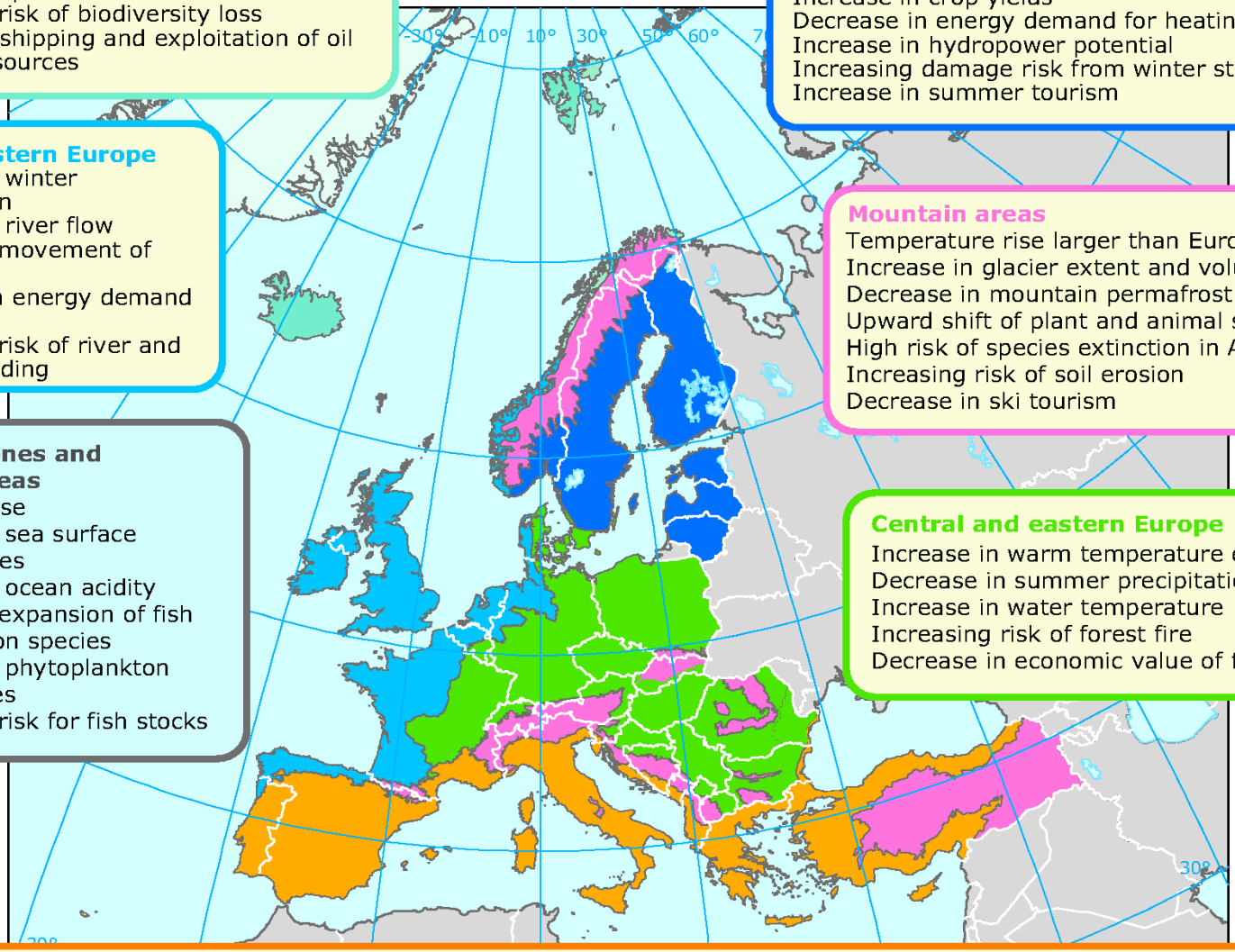

Arctic
Temperature rise much larger than global average
Decrease in Arctic sea ice coverage
Decrease in Greenland ice sheet
Decrease in permafrost areas
Increasing risk of biodiversity loss
Intensified shipping and exploitation of oil and gas resources

Northern Europe
Temperature rise much larger than global average
Decrease in snow, lake and river ice cover
Increase in river flows
Northward movement of species
Increase in crop yields
Decrease in energy demand for heating
Increase in hydropower potential
Increasing damage risk from winter storms
Increase in summer tourism

North-western Europe
Increase in winter precipitation
Increase in river flow
Northward movement of species
Decrease in energy demand for heating
Increasing risk of river and coastal flooding

Mountain areas
Temperature rise larger than European average
Increase in glacier extent and volume
Decrease in mountain permafrost areas
Upward shift of plant and animal species
High risk of species extinction in Alpine regions
Increasing risk of soil erosion
Decrease in ski tourism

Coastal zones and regional seas
Sea-level rise
Increase in sea surface temperatures
Increase in ocean acidity
Northward expansion of fish and plankton species
Changes in phytoplankton communities
Increasing risk for fish stocks

Central and eastern Europe
Increase in warm temperature extremes
Decrease in summer precipitation
Increase in water temperature
Increasing risk of forest fire
Decrease in economic value of forests

Mediterranean region
Temperature rise larger than European average
Decrease in annual precipitation
Decrease in annual river flow
Increasing risk of biodiversity loss
Increasing risk of desertification
Increasing water demand for agriculture
Decrease in crop yields
Increasing risk of forest fire
Increase in mortality from heat waves
Expansion of habitats for southern disease vectors
Decrease in hydropower potential
Decrease in summer tourism and potential increase in other seasons

Adaptation & risk prevention

- Adaptation to CC is **broader than 'risk prevention/risk management'** –
  - *aims to **enhance resilience** of: economic sectors and systems (infrastructures, agriculture, forestry) and environmental resources (biodiversity, soil, water)*
  - *has a **long-term perspective** vs short/medium-term for 'risk prevention'*
- Over the coming years, it may require **changes** in: production patterns and methods, farm structures and strategies, with investments and costs
- Possible **adaptive solutions** – examples
  - *Adapting timing farm operations (planting, sowing)*
  - *Technical measures (frost protection, ventilation systems, livestock housing)*
  - *Soil management (rise water holding capacity, organic matter)*
  - *Better adapted and more resilient crop varieties (less water intensive)*
  - *More effective pest and disease controls*
  - *Improving efficiency of water use and irrigation equipment*
  - *Protect and build "green infrastructure" (hedgerows, floodplains, wetlands)*
- "Best" **approach** to cope with uncertainties – build **resilience**
  - *Prioritise **no-regret** actions*
  - *Protecting **natural environment base** on which agriculture takes place*
  - *"**Synergetic**" actions*
  - *Improve **adaptive capacity***

Looking into the future

- Farmers need to face the **climate challenge** - reduce farm-level GHG emissions, and adapt and manage risks
  - In a context of rising of global food demand, increasing input prices
  - Environmental constraints (water, soils, biodiversity) intensified by climatic change
- Agriculture's carbon footprint is reducing but the sector needs to **strengthen efforts** towards mitigation – EU climate policy framework 2030
- The **CAP 2020** offers a range of tools for incentivising the adoption of mitigation and adaptation action within the wider context of sustainable food production (but has also its limits)
- "Voluntary" approach needs to **address barriers** to action:
  - **Technology** solutions - improve farming methods and develop solutions
  - Encourage **behavioural** changes
  - Improve **measuring tools** at different levels – GHG inventories, LCA, farm-level GHG assessment tools
- Indentifying **climate policy instruments** for farming sector is a key task
- **Global context** – international climate agreement (2015)