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# QUADRO ATTUALE E PROSPETTIVE PER LA TRANSIZIONE ENERGETICA

Venerdì 31 marzo 2023 - ore 16.45 – 18.45

Napoli > Mostra d'Oltremare > Padiglione 6 > Sala Vesuvio

## QUADRO ATTUALE E PROSPETTIVE PER LA TRANSIZIONE ENERGETICA

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## ACADEMIC EXPERTISE

- ✓ Scientific analyses of the **conventional and novel energy resources**, their effectiveness, their **environmental impact**
  - ✓ Studies of the Economical implications
    - ✓ Analysis of the Techniques of Carbon Capture and Storage (CCS) Projects
      - ✓ Cooperation / Interaction with the ECMWF  
(European Centre for Medium-Range Weather Forecasts)

## REAL CASES EXPERIENCE



- ✓ Participation in big Oil & Gas On-shore and Off-shore / Petrochemical Projects (Middle East, North Africa, Europe), including power generation
- ✓ Participation in Projects dealing with Hydrogen Production (green hydrogen) and Power Generation
- ✓ Participation in CCS Projects (capture and reinjection)
- ✓ Participation in Power Generation Projects

# Climate Change and Global Warming Essential Framework



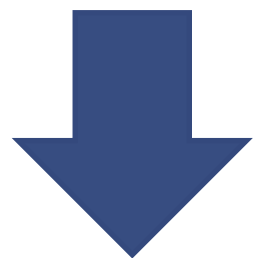
The Climate Change and its Impact on the Economy and the Human Life have been one of the most **debated** and **controversial** topics of the last decades



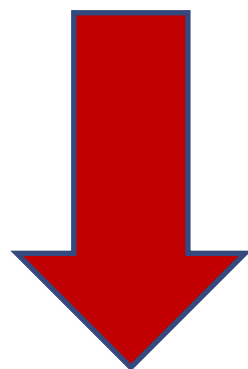
## THE PILLARS OF ECOLOGICAL TRANSITION



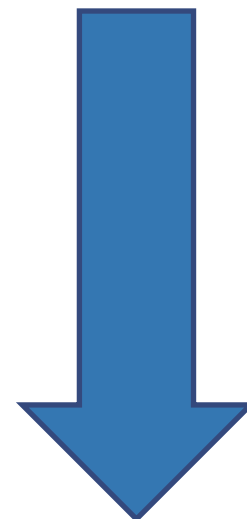
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Scientific  
Robustness



Regulation  
Compliance



Technology  
Change



Integration  
Planning

# SCIENTIFIC ROBUSTNESS





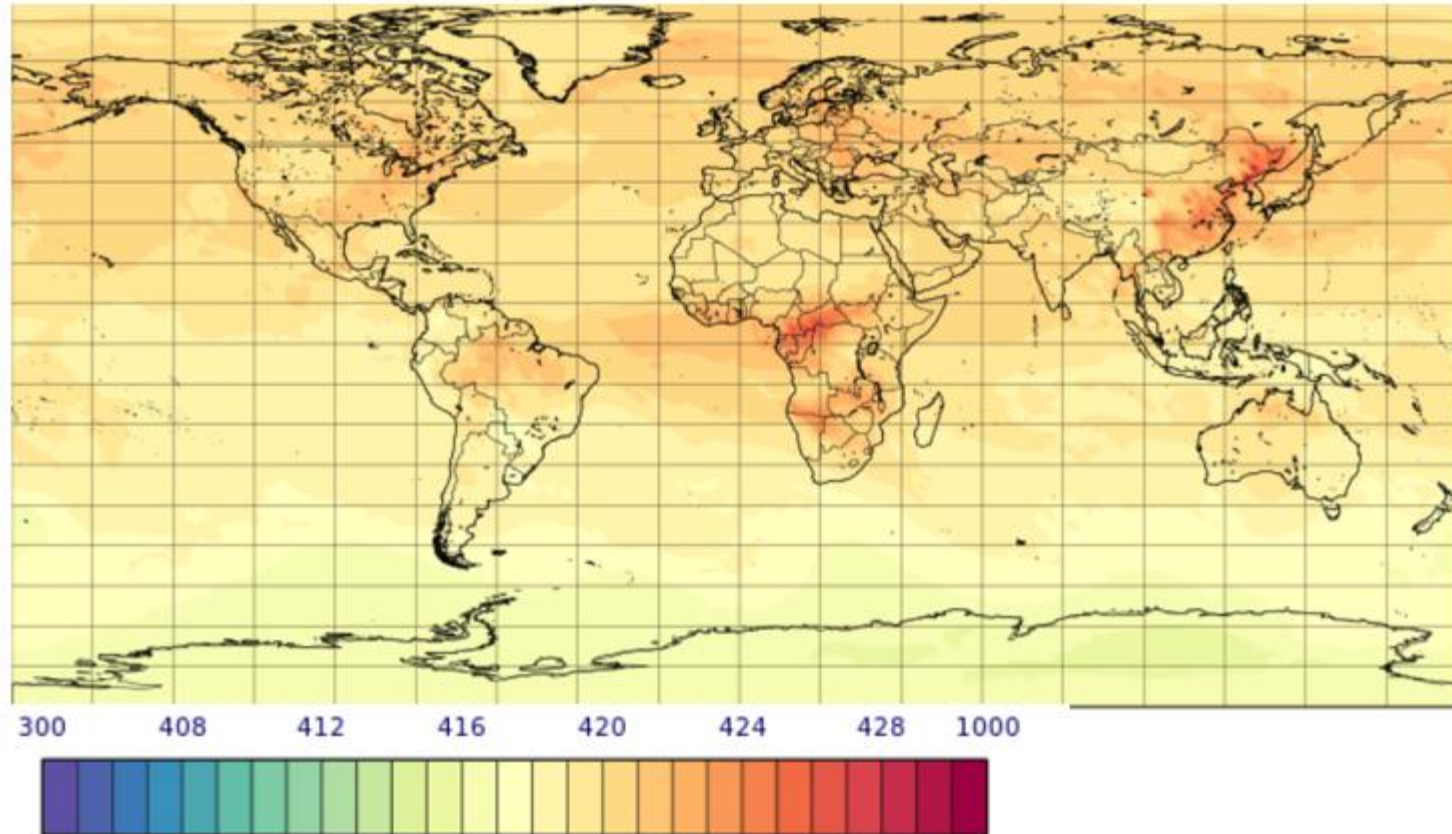
# SCIENTIFIC ROBUSTNESS

Continuous monitoring of the *behaviour* of the two main greenhouse gases (carbon dioxide and methane), and the *physical correlations* with the climate change trend have clearly shown their role and responsibility for *global warming*

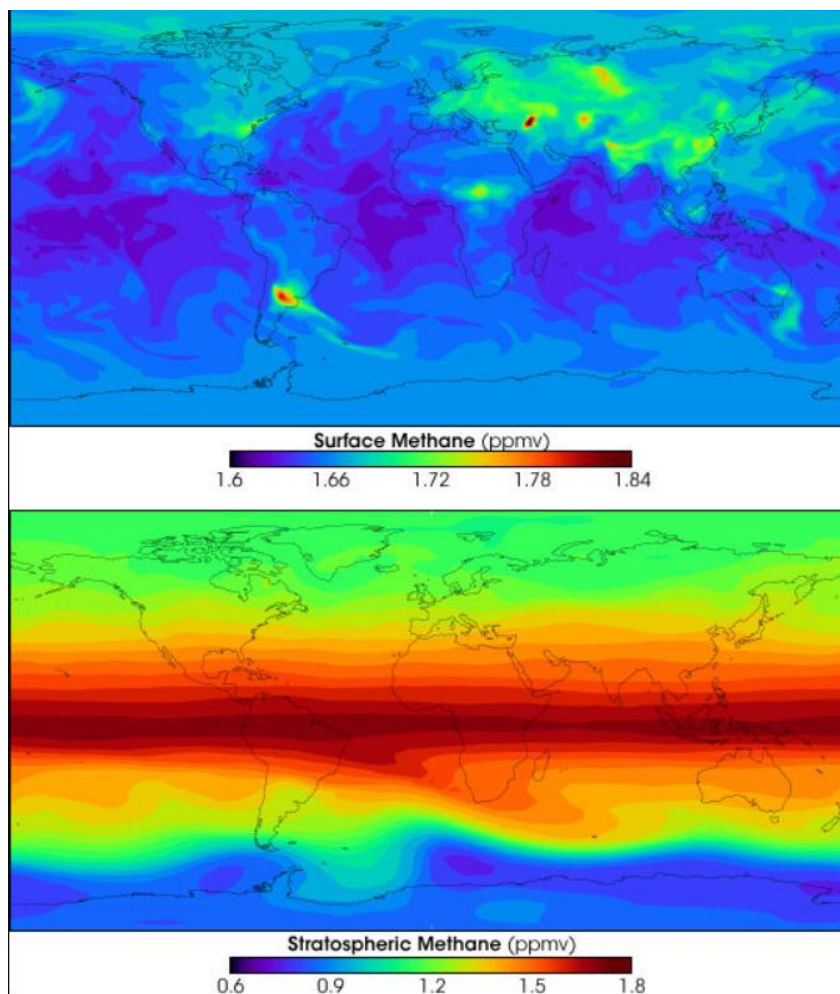


# SCIENTIFIC ROBUSTNESS

Total column of carbon dioxide [ ppmv ] (provided by CAMS, the Copernicus Atmosphere Monitoring Service)  
Friday 25 Nov, 00 UTC T+9 Valid: Friday 25 Nov, 09 UTC





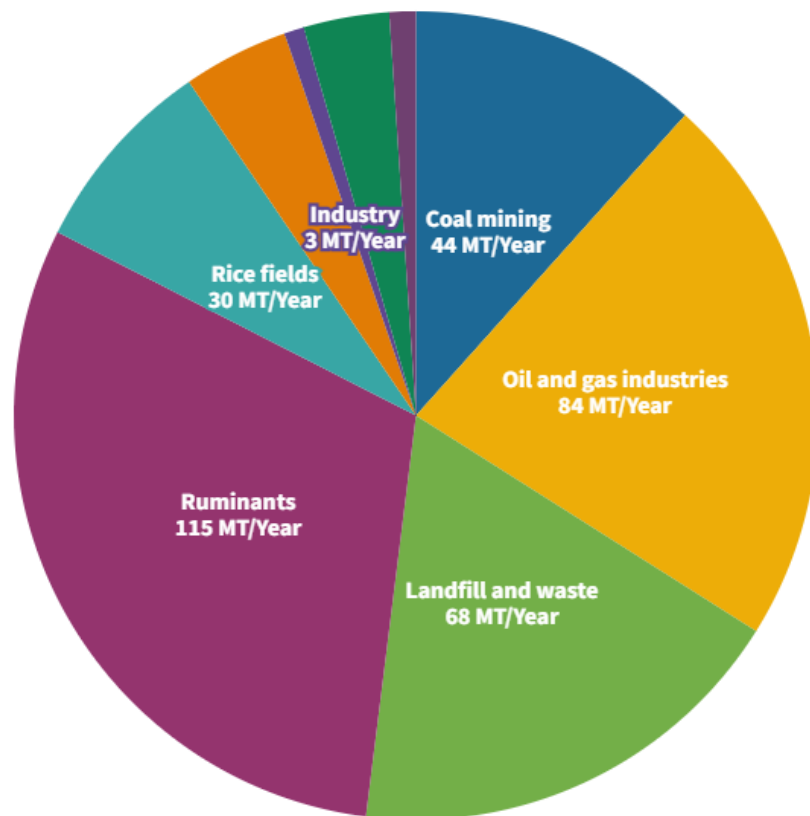


Methane is the second greenhouse gas affecting the climate change.

*Its escalation is relatively much greater than that of CO<sub>2</sub>.*

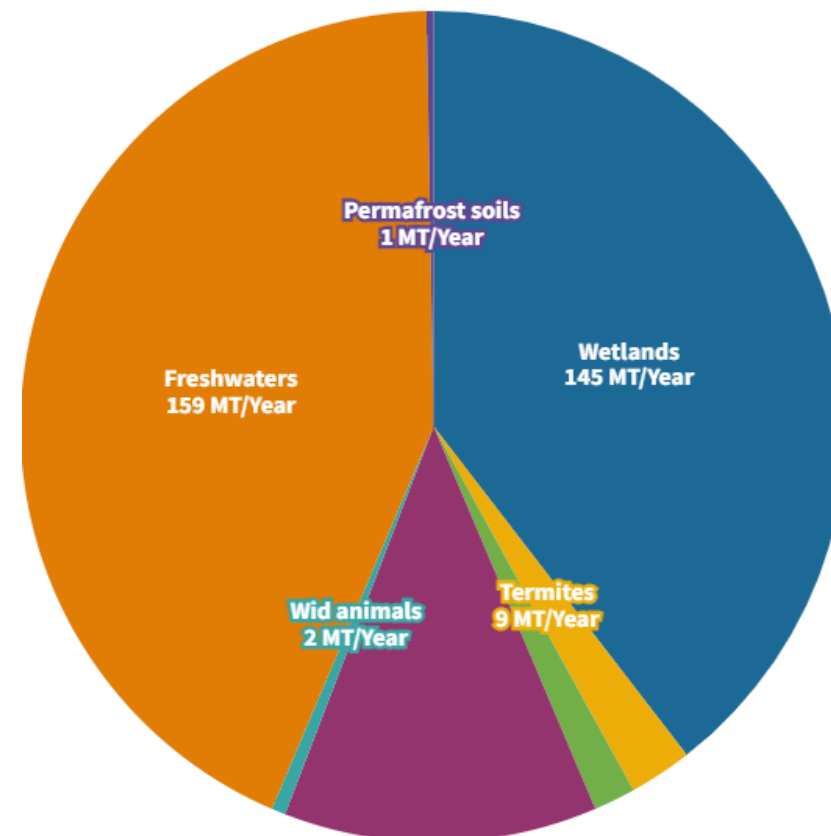
(Source Copernicus)

## Methane emissions (source: Copernicus)



**Methane emissions: contribution of anthropogenic sources**

Total: 380 Mt/Year



**Methane emissions: contribution of natural sources**

Total: 367 Mt/Year

# REGULATION COMPLIANCE



## Main remarkable *Jointly Binding Aspects* of Paris Agreement on Climate Change (2015)

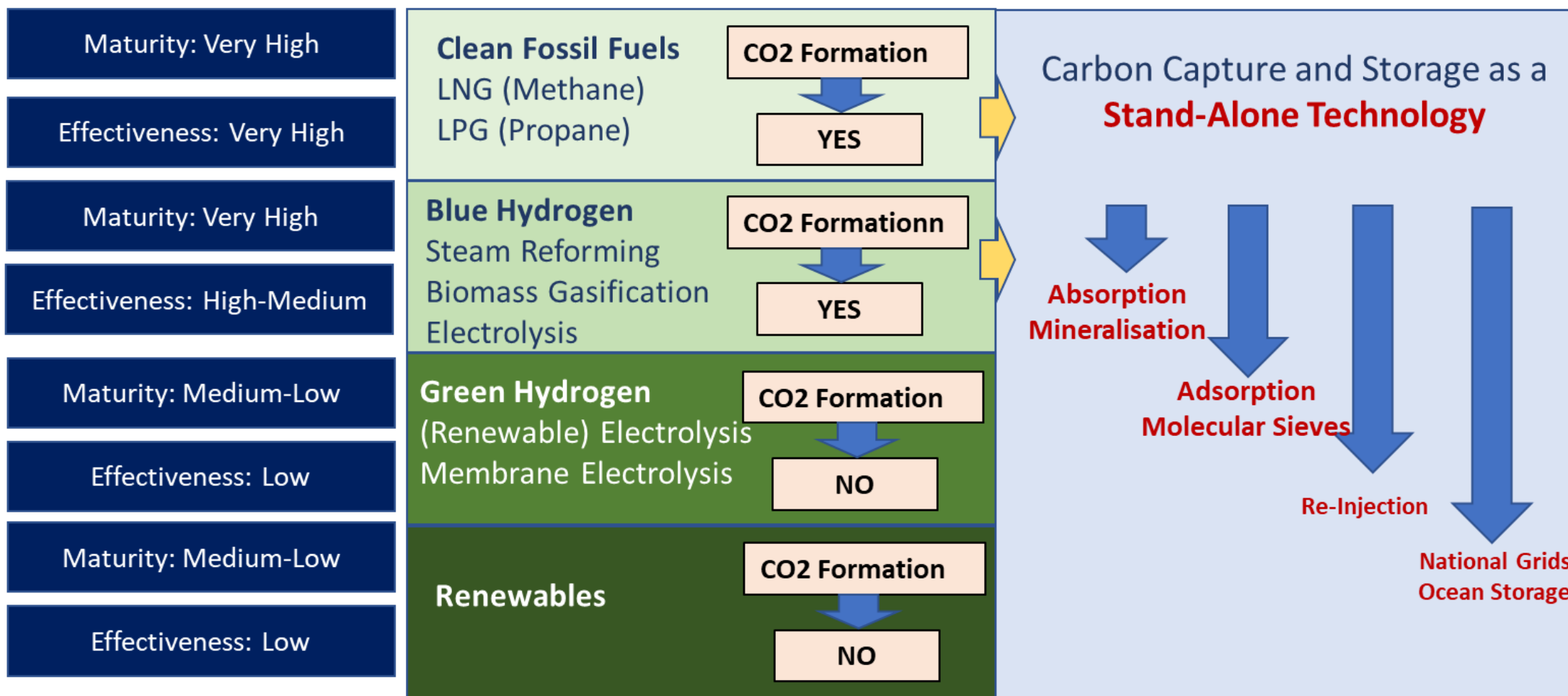
- ✓ Holding the increase in the *global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels* (Article 2.1-a)
- ✓ Making *finance flows* consistent with a pathway towards low greenhouse gas emissions and climate-resilient development (Article 2.1-c)
- ✓ This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, *in the light of different national circumstances* (Article 2.2)



# TECHNOLOGY CHANGE



# TECHNOLOGY CHANGE



Nuclear has not been considered in this slide

# INTEGRATION PLANNING



## *Golden Rules for a Jointly Effective Transition*

- ✓ Climate change must be stopped by progressively reducing emissions of **Carbon Dioxide** and **Methane (fugitive)**
- ✓ Status of technology and planetary Energy Demand impose the harmonised, integrated and realistic accomplishment of **ECOLOGICAL TRANSITION**
- ✓ A **Simplistic Manichean Approach**, breaking down technologies into GOOD and EVIL, is neither scientifically correct nor technically feasible
- ✓ The **most effective new technologies** are still in progress and produce carbon dioxide like natural gas combustion. On the other hand, **reserves, safety, environmental sustainability and flexibility of natural gas** will maintain this source as the most important for many years

- ✓ **Carbon Capture and Storage Techniques** have reached a good level of applicability. However **its adoption is very poor**, although it can allow the utilization of Natural Gas. Moreover, most of **hydrogen production technologies**, claimed as fully carbon-free, **are accompanied by CO<sub>2</sub> formation** instead.
- ✓ Renewable techniques present a **inherent limitation in the overall energy balance**. **Integration of technologies** is a driver concept.
- ✓ Countries must **work jointly, sharing knowledge and planning common strategies and joint infrastructural developments**. This is consistent with **Paris Agreement philosophy**.
- ✓ A **Common Approach** will minimize vantage of those players who, relying on a **deregulated approach** to low-carbon economy, will capitalize on a **wild competition**.

# INTEGRATION PLANNING



*Grazie!*