



THE OXFORD
INSTITUTE
FOR ENERGY
STUDIES

Methane Abatement in the Oil and Gas Sector

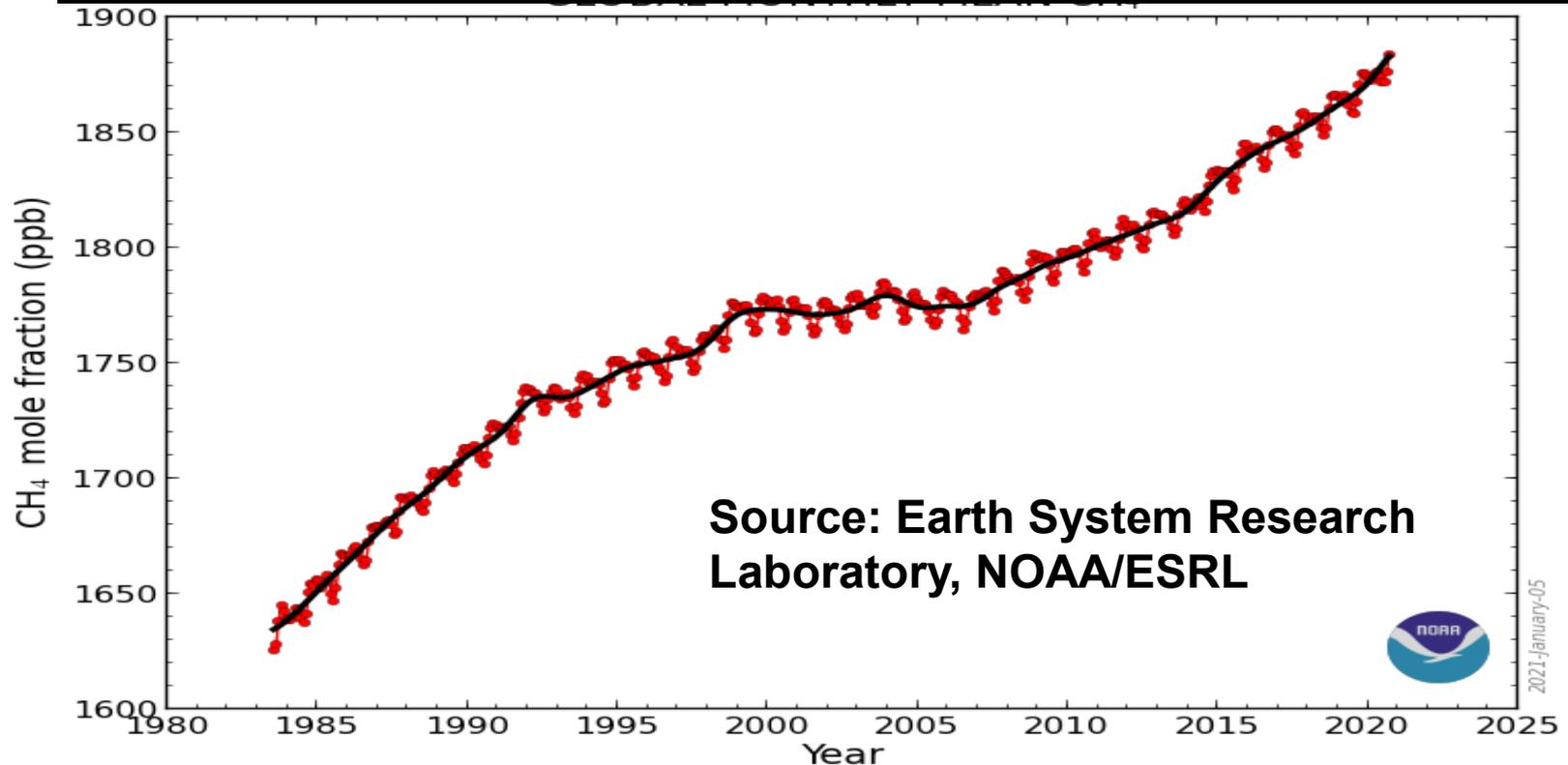
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Methane Emissions: steadily increasing since 2005

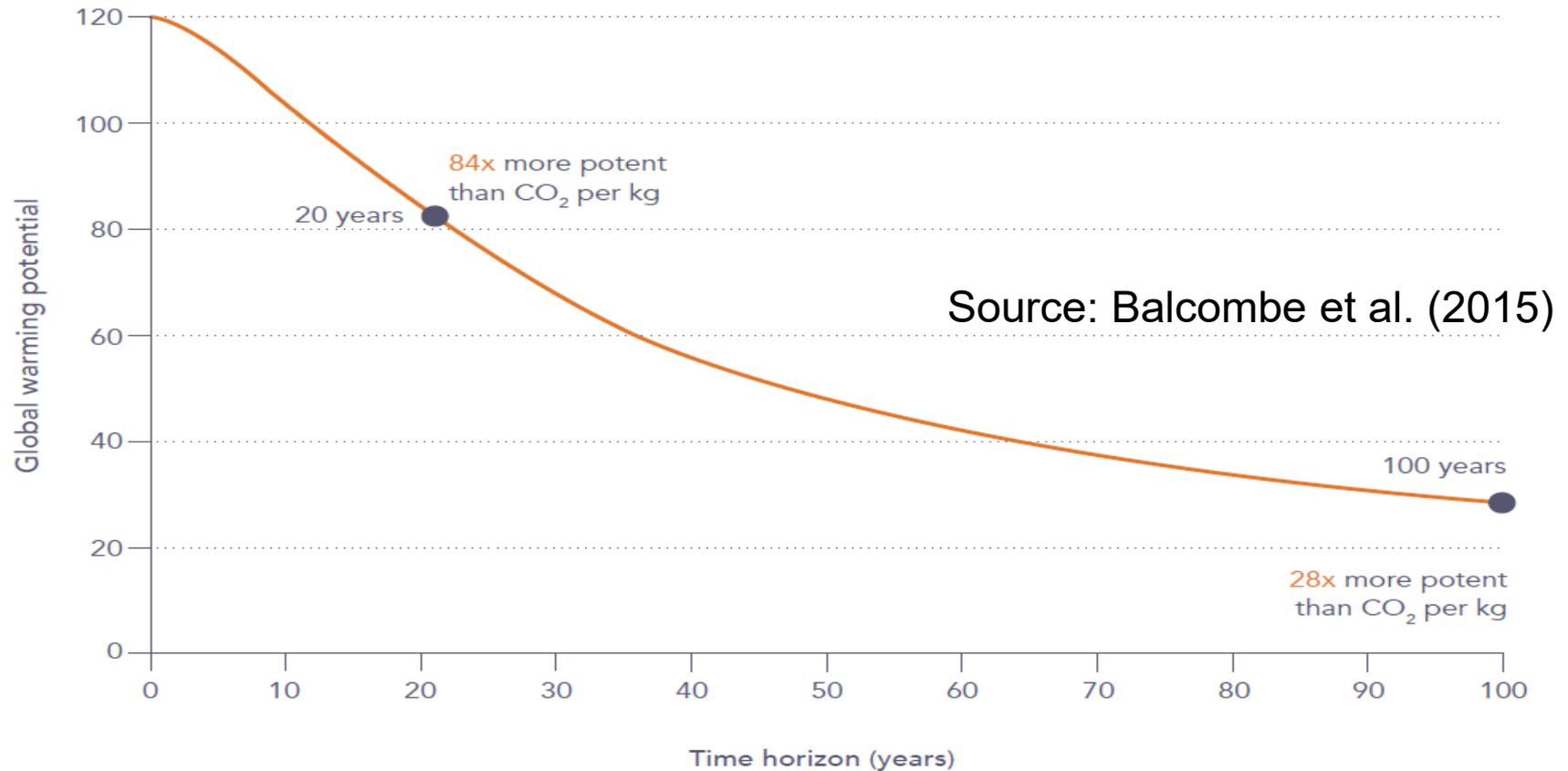
Global Monthly Mean Atmospheric Methane Concentrations 1983-2020



Methane emissions have been rising rapidly over the past decade, data for 2008-17 show an increase in anthropogenic methane 60% of which is agriculture and 40% fossil fuels, of which 57% oil and gas



Greenhouse Gas Emissions: the global warming potential (GWP) of methane relative to CO₂



IPCC AR5 (and most of the fossil fuel literature) uses a 100 year time horizon ie 28 x CO₂ For a 20 year time horizon the GWP would be 84 times that of CO₂



Major Sources of Methane Emissions from Fossil Fuels: data availability

- **VENTING**: from oil and gas production and processing (tends to be deliberate)
- **FLARING**: particularly from gas associated with oil production, mainly CO₂ but can include methane and other uncombusted gases
- **FUGITIVE**: emissions (usually unintended) from gas pipelines and LNG (liquefaction, shipping and regasification)

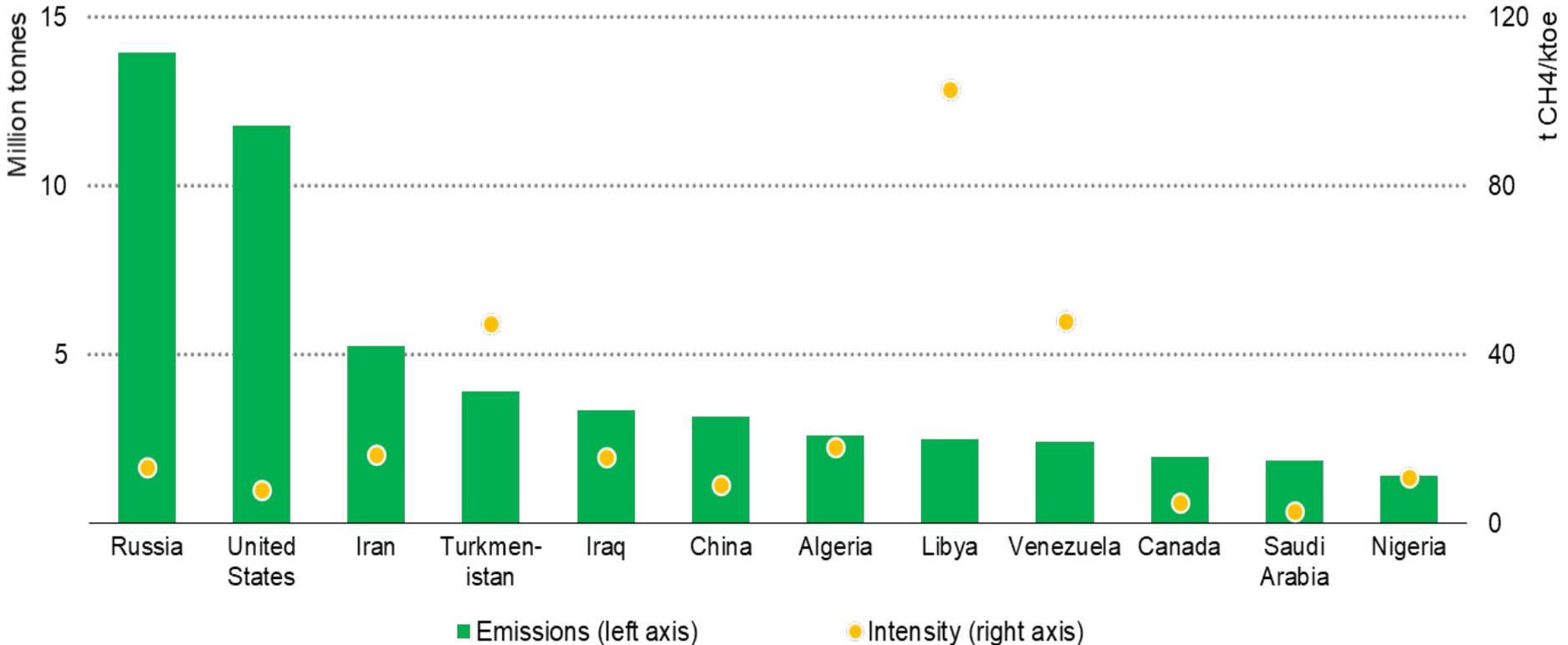
TWO MAIN SOURCES OF DATA:

- **UNFCCC**: 30-year time series and full chain, but inconsistent and with countries (mostly) limited to Annex 1
- **IEA Methane Tracker**: short time series, upstream only, but consistent and includes many more countries



Average Upstream Methane Intensity of Major Gas and LNG Exporters to EU Countries (2020)

Source: IEA Methane Tracker (2021)



This is national intensity from oil and gas exploration and production only; not intensity from gas and LNG exports

Different Approaches to Methane Emissions Reduction

- **GLOBAL** – UN Observatory will collect, collate and publish national emissions data
- **EU Regulatory Approach:**
 - EU Methane Strategy will require MRV for EU imports of (all fossil fuels but focussed on) natural gas and LNG; this may be completely different to national data
- **ASIA Corporate (per LNG cargo) Approach):**
 - Carbon-neutral LNG cargos
 - Long(er) term LNG contracts with defined MRV methodology for each cargo (could become a multilateral standard)



Transparent Measurement, Reporting and Verification of Methane Emissions: questions for companies

MEASUREMENT:

- How were emissions measured: with what instruments, were bottom up and top down measurements carried out and reconciled?

REPORTING:

- How have emissions been reported: by field (production), network (transmission and distribution), export/import (pipeline and LNG value chain)?
- Are they reported by fuel – oil, gas and coal?
- How are they attributed between oil and gas production?

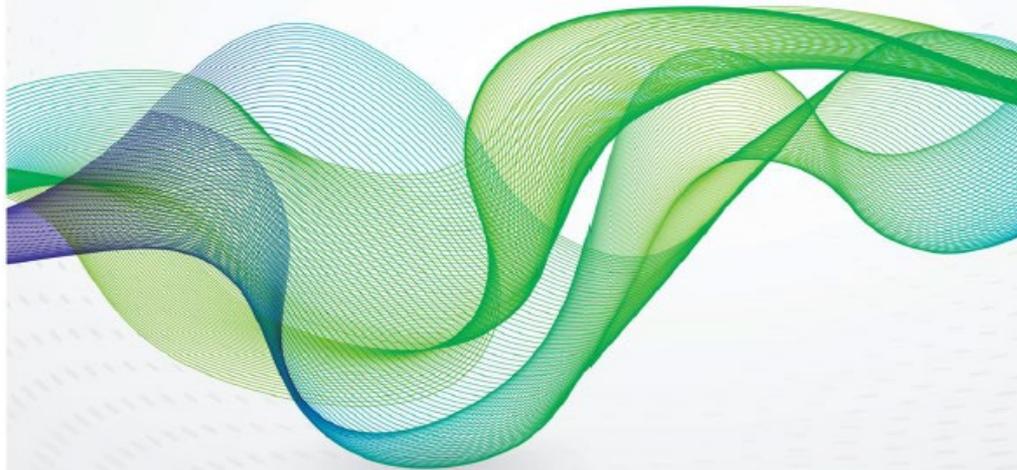
VERIFICATION:

- Which organisation has verified the emissions; was this an accounting exercise or did it include sampling of emissions?

Confidentiality is the enemy of credibility

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**Methane Emissions from Natural
Gas and LNG Imports:
an increasingly urgent issue for
the future of gas in Europe**



OIES PAPER: NG 165

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