On what trajectories are we with carbon dioxide and methane emissions?

**Carbon dioxide** concentrations in the atmosphere have now crossed the 400 ppm threshold.

- Carbon dioxide emissions are almost flat since 3 years. They barely increased in 2016, despite large economic growth in parts of the globe.
- Decreased use of coal in China is the main reason behind the three-year slowdown.


**Methane** is responsible for 20% of the global warming produced by all greenhouse gases so far.

- Atmospheric CH4 concentrations are rising faster than at any time in the past two decades, probably dominantly due to increased biogenic emissions mostly from agriculture.
- Methane mitigation offers rapid climate benefits and economic, health and agricultural co-benefits that are highly complementary to CO2 mitigation.


**What is the temperature baseline for “pre-industrial”?**

Natural recorders of Earth’s climate, such as corals, tree-rings and ice cores, revealed that human-induced climate warming commenced in many parts of the world as early as the 1830s.


What is the mitigation contribution and potential of agriculture?

**Current agriculture practices** can only deliver 21-40% of even the 2°C mitigation target.

**Future agriculture** will need to limit its greenhouse gas emissions to only 6-8 Gt of CO2 eq by 2030 while also increasing production.

- To achieve the 2 degree target, agriculture must reduce emissions of nitrous oxide and methane by 1 Gt by 2030, corresponding to ca. 15% reduction from business as usual.
- However, currently we only have the technologies to achieve ca. 30% of that target. Hence, more transformative technical and policy options will be needed.


Alternative wetting and drying in rice production can reduce emissions by up to 45% – we need more such technologies and the policies to support them.

Future Earth is a major international research platform providing the knowledge and support to accelerate transformations to a sustainable world. It is an open network for scientists of all disciplines, natural and social, as well as engineering, the humanities and law and for stakeholders of scientific knowledge at the global to the individual level. Transdisciplinarity, i.e. co-designing and co-producing knowledge across disciplinary and sectoral boundaries, is at the heart of Future Earth.