



The limits to our freedom

In **2009**, the Stockholm Resilience Centre defined the **nine boundaries of the planet** that formed the framework of its functioning before the industrial revolution.

Exceeding one of the frontiers does not cause an immediate rupture but **increases the risk on the stability and resilience of the earth**. In the graph, the distance from the center in green reflects the increase in risks.

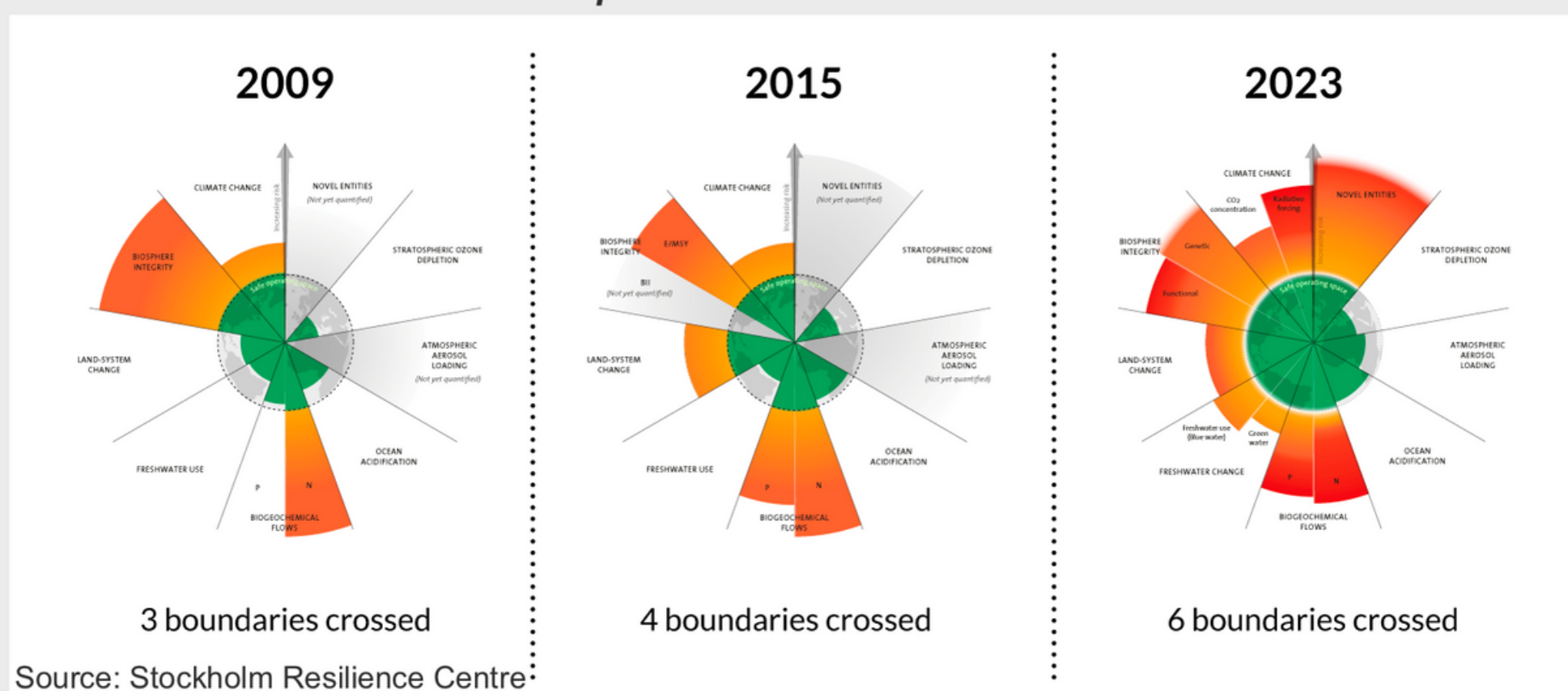
The study published in **2009** indicated that **3 of the 9 limits** were exceeded. The **2015** update increased this figure to **4**. In **2023**, the study, published on September 13, indicates that **6 limits have been exceeded** and that **two more could be done quickly**. These two elements are **ocean acidification** and **fine particle pollution**.

The major point highlighted in the publication is that **exceeding each limit creates a risk by itself** but that the **interactions between limit exceedances cause dynamics and consequences that are impossible to predict**.

This implies that there are **short-term risks** that can already be observed and **longer risks that are not yet known**. It is this double dimension that requires a vision that goes beyond climate change that is the easiest indicator to read.

Action is therefore needed on a case-by-case basis at each border to improve the resilience and stability of the land.
This is the work of every citizen of the world. .

The planet boundaries





The 9 boundaries

- 1- Climate change - overrun in 2009
- 2- Change in biosphere integrity - 2009
- 3 - Stratospheric ozone depletion
- 4 - Ocean acidification
- 5 - Biochemical flux for phosphate and nitrogen - 2009 for nitrogen and 2015 for phosphates
- 6 - Forest system change - 2015
- 7 - Freshwater supply - 2023
- 8 - Fine Particulate Air Pollution
- 9 - Other elements (chemical pollution, plastic release,...) - 2023

