



European Research Council

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The 'phosphorous' diplomacy

Phosphorous, also known as the “Devil’s element” or “P”, is a scarce but essential resource on Earth. For instance, it is present in DNA structure, cell membranes, enzymes and bones. It is also used in fertilizers, thus supporting the food demand of an ever growing population. Unfortunately it is a finite resource and there is no synthetic way of creating it. In contrast to carbon (C) and nitrogen (N) which are available abundantly, P reserves are limited in most natural environments, and the trend is likely to continue in the next century. These constraints have already triggered some geopolitical disputes.

The IMBALANCE-P project gathers an interdisciplinary team of top researchers, based in four distinct research institutions, to study the on-going shifts in C:P:N balance in different ecosystems and the impact for life on Earth (for instance on biodiversity). The team will conduct a novel experiment in the French Guianese tropical rainforest where they will study the relationship between N:P availability ratios. The researchers will also look at the effects of future P shortages on food security and will help to design future scenarios for food production under limited P resources, and effective policy actions.

This collaboration across multiple and diverse disciplines is unique – including experts in eco-physiology, metabolomics, atmospheric physics and chemistry, remote sensing, economy and agriculture. The global implications of limited P resources have never been studied in such an integrated way. The contribution of the team to the establishment of a science-based P diplomacy will be highly valuable to life, society and the preservation of the planet.

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