

The first global nitrogen policy database

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Abstract

Calls to address nitrogen pollution are gaining traction in the policy world. However, there is little understanding of the nitrogen policy landscape across different countries. This study introduces the first global database of national and regional nitrogen policies. Initial results show that there are at least 2726 nitrogen policies current in force, though less than 50% set quantitative targets for nitrogen loss and/or management. Water dominates sink-focused policies, while wastewater and agriculture constitute one third each of sector-focused policies. Very few policies address multiple sectors or sinks, highlighting the lack of integrated approaches to nitrogen pollution. This stands in stark contrast to scientists' message for a joined-up perspective to this increasingly important issue.

Keywords: Nitrogen; policy database

1. Introduction

Efforts to address nitrogen (N) pollution are at a watershed moment: the policy world is beginning to pay attention, evidenced by the Sustainable Nitrogen resolution adopted by the UN Environment Assembly in March 2019 and the announcement of a new UN Global Campaign on Nitrogen in October 2019. It is therefore critical to understand the policies that are currently in place around the world to address N pollution: what policy instruments predominate, what sinks and sectors are prioritized, and how policies differ across different levels of economic development and N use. Only by understanding the current policy status can local and national governments, as well as the international community, develop coherent, effective policies that adequately match the scale and dynamics of the N pollution issue.

Consequently, this study introduces the first global database of national and regional nitrogen policies. It uses ECOLEX, the largest available database of environmental laws, with over 150,000 local, national and regional laws in addition to international treaties. It combines the law holdings of the

Food and Agriculture Organization of the United Nations, the International Union for the Conservation of Nature and the United Nations Environment Program.

2. Initial results and discussion

Initial results show that there are at least 2726 N policies around the world currently in force, addressing all major sinks and sources of N pollution and covering a range of policy instrument types. However only 1134 are considered "core" N policies for the purpose of this study, which we define as regulatory or economic policies that set quantitative targets related to nitrogen loss and/or management.

Of the core policies that take a sink approach, water is by far the major focus, constituting almost 50%. Air (30%), ecosystems (10%) and climate (6%) make up the majority of the remainder. Of the core policies that take a sectoral approach, wastewater (35%) and agriculture (33%) are the main focus, which stands in stark contrast to the share of N pollution flows from these sectors (8% for wastewater and 66% for agriculture). However, when all N policies are taken into account (not just core policies), agriculture constitutes the dominant share – though more than two thirds of these

are policies that do not limit N pollution, but rather regulate commerce related to organic and synthetic N inputs or subsidize increases in N use, predominantly in non-OECD countries. This highlights the complex balance humanity is attempting to strike with N: managing its role as an essential resource and critical pollutant. Another key finding is that there very few policies that take an integrated approach to N pollution. Policies are often focused on a single sector or sink, with little evidence of joined-up approaches to reduce the risk of pollution swapping.

3. Conclusion

In short, the initial analysis of this new database suggests that while there are many policies currently in place across the world to address various aspects of the N pollution problem, overall they do not match its scale or dynamics. The scientific understanding of the N cascade suggests that much more policy attention should be devoted to the agricultural sector, with an emphasis on joined-up management approaches.