Nitrogen emissions in Latin America: impacts, drivers, and policy responses

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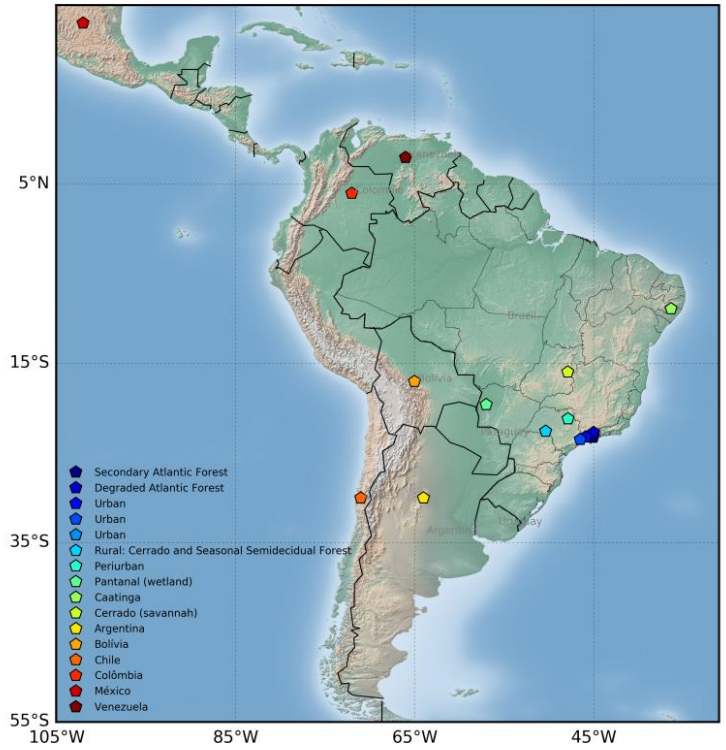
Ciência para sustentabilidade

The Nitrogen Human Environment Network (Nnet Project)

A scientific cooperation network across Latin American countries to investigate the processes that modify diferent aspects of the nitrogen cycle.

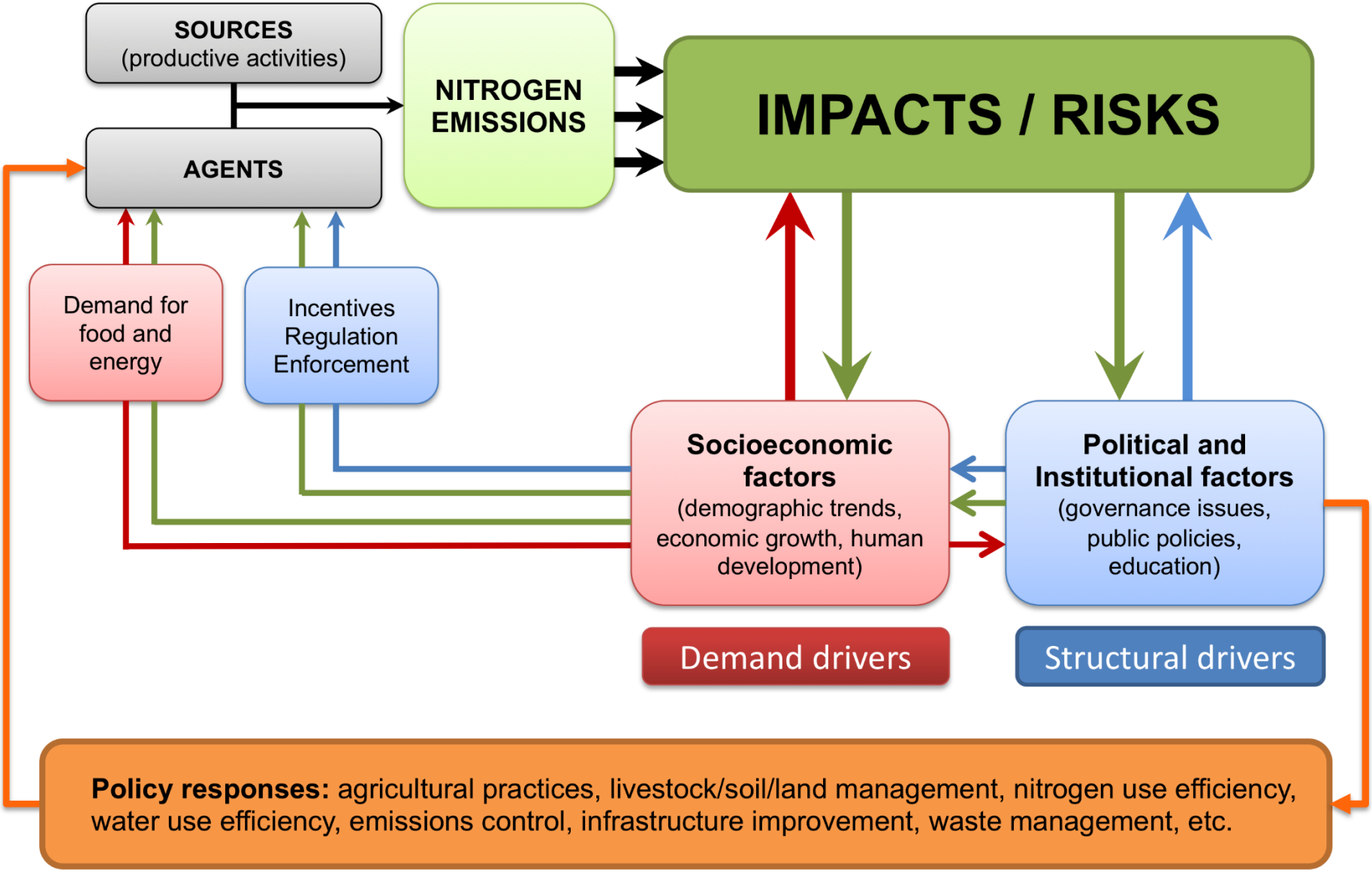


The lack of information on the N cycle in Latin America is a serious impediment to provide a proper evaluation and projection on how human activity is altering N pools at regional scale.

Conceptual framework of nitrogen emissions in Latin America

Main objective is to support an integrated discussion on:

- the nitrogen dynamics in the region
- benefits *versus* costs situation
- impacts, drivers, and vulnerabilities
- policy responses


SOURCES
(productive activities)
AGENTS
NITROGEN EMISSIONS
IMPACTS / RISKS
Demand for food and energy
Incentives Regulation Enforcement
Socioeconomic factors
(demographic trends, economic growth, human development)
Political and Institutional factors
(governance issues, public policies, education)
Demand drivers
Structural drivers
Policy responses: agricultural practices, livestock/soil/land management, nitrogen use efficiency, water use efficiency, emissions control, infrastructure improvement, waste management, etc.

OPEN QUESTIONS

- What factors are responsible for the increasing of emissions from nitrogen use? *production of food and energy*

- Are there other factors along with population growth influencing expansion of N emissions in the LA region? *economic growth, dietary habits*

- What is the role of government institutions in provoking this situation and finally in controlling and reversing this trend? *misguided policies, improving governmental and institutional capabilities*

POLICY RESPONSES

A survey was performed to search for nitrogen in current LA policies:

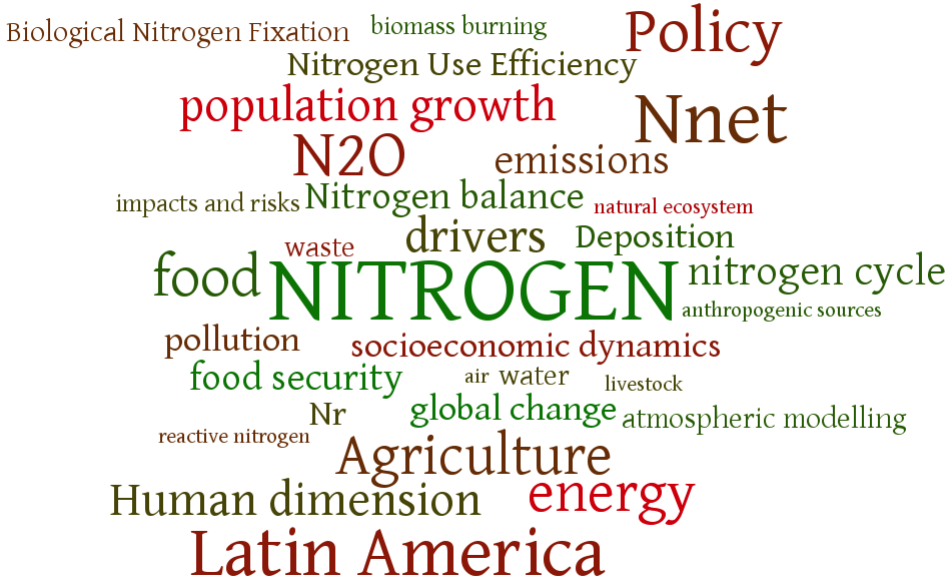
- All countries reported general measures and mechanisms in the UNFCCC National Communications, but only as a GHG (N_2O).
- There are no specific and/or unified policies dealing directly with N emissions.
- Isolated measures have been considered in the legislation of some countries.

COUNTRY	TYPE / YEAR	COMPOUNDS	OBJECTIVE
Chile	Supreme decree (1994)	NO_x	Air quality (vehicles)
Chile	Supreme decree (1997)	NO_3, NH_3	Water quality (consumption)
Brazil	Law (1993)	NO_x	Air quality (vehicles)
Brazil	Ministerial order (2004)	NO_3, NH_3, NO_2	Water quality (consumption)
Brazil	Normative instruction (2007)	NO_3, NH_4	Soil quality (fertilizers)
Brazil	Decree (2010)	N_2O	Low Carbon Agriculture (ABC Plan)
Venezuela	Decree (1998)	NO_3, NO_2	Water quality (consumption)
Venezuela	Law (2015)	NO_x, NO_3, NH_3, NO_2	Air and water quality (pollution)

CONCLUSIONS

- LA countries are still in the diagnostic phase of the N problem, assessing and measuring the effects of human-induced changes in the nitrogen cycle.
- Lack of nitrogen specific policies in the region, neither a common directive nor a framework in which nations can create their own regulations.

The huge diversity in nitrogen emission sources and pathways requires an integrated approach to deal with this problem.



Thank you!

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