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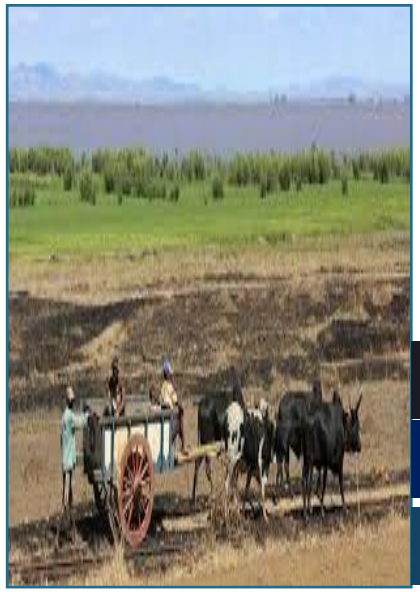
Nitrogen Management in Madagascar



ANDRIAMIARINA Faratsianontaniana

tsiantan@yahoo.fr

National focal point

6th meeting of the Group of the resolution of the sustainable Nitrogen Management

26 th of June , 2024

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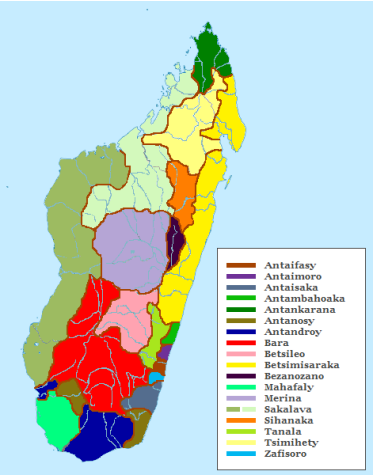
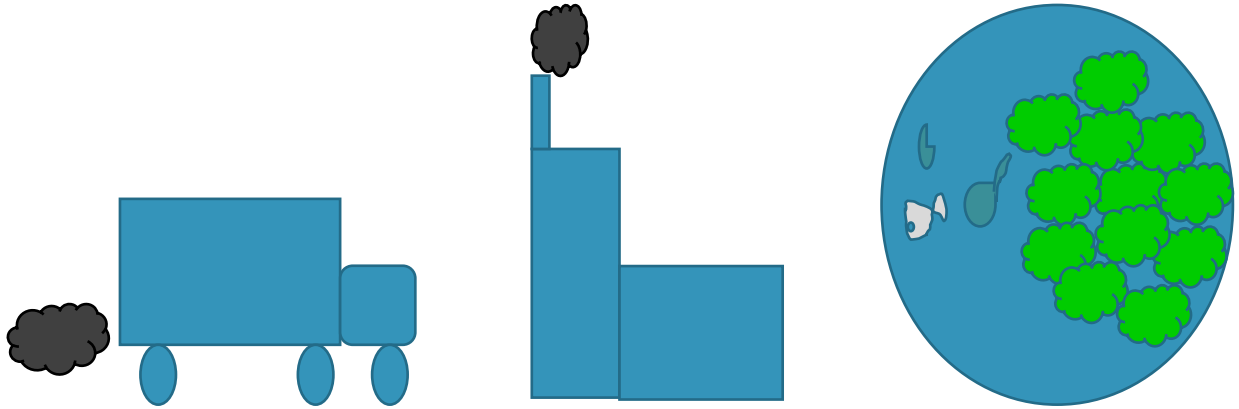
Madagascar

- Population: 25,674,196
- A surface area of 587,040 km².
- Agriculture employs around 80% of the working population



Background information

•Nitrogen is an essential nutrient for plant growth and plays a crucial role in various industrial processes.
•However, excessive nitrogen use can lead to severe environmental consequences, including **water pollution, air pollution, and eutrophication.**
•Madagascar, with its rich agricultural and industrial sectors, faces significant challenges in managing nitrogen sustainably.



The challenges:

- Nitrogen management is a major challenge in Madagascar.
- Excessive use of chemical fertilizers can lead to water and soil pollution.
- Animal dejecta can also contribute to water pollution.
- Deforestation can reduce the capacity of soils to fix atmospheric nitrogen.

Eutrophication

Air pollution

Animal waste

The main sources of nitrogen

Agriculture	**Transport**	Industrialization
• chemical fertilizers, • animal dung • atmospheric fixation. • Traditional farming practices	• fossil fuels, • public transport • NOx emissions	• Factories • Agricultural factories

Regulations, rules, codes or guidelines in linked nitrogen management and nutrient pollution, ammonia and/or nitrous oxide emissions.

International level:

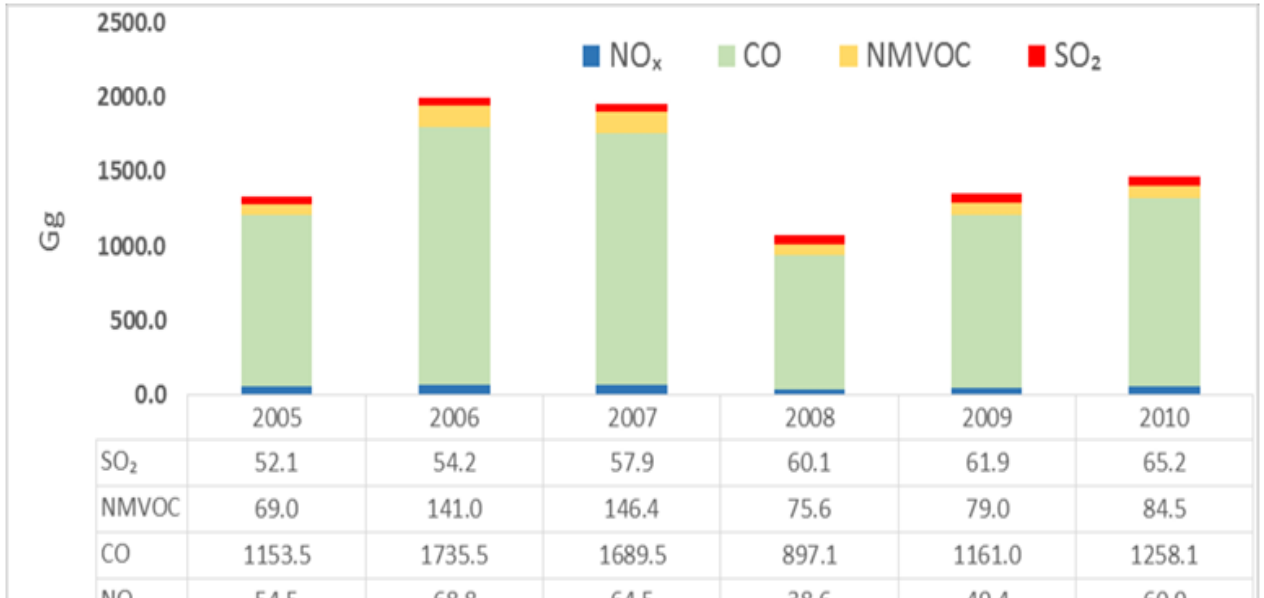
- Convention on Biological Diversity (CBD)
- United Nations Framework Convention on Climate Change (UNFCCC)
- Kyoto Protocol
- Stockholm Convention on Persistent Organic Pollutants (POPs)

National level:

- Law n°2020-003 on Organic Agriculture in Madagascar of May 12, 2020.
- Decree n°1998-029 water code
- MECIE Decree no. 99-954 of December 15, 1999 amended by decree n° 2004-167 du 03 février 2004 compatibility of investments with the environment.
- National Climate Change Strategy for Agriculture, Livestock and Fisheries (SNCCAEP)
- national action program for adaptation to climate change (PANA)
- Madagascar's national adaptation plan on climate change.
- Local development plans and strategies

Efforts already made in linked with nitrogen management

- Set up the fertilizer factories
- Air pollution standard
- Roadmap of the pollution in Madagascar
- Waste management National strategy
- Third national communication with the greenhouse gas inventories from 2005 to 2010 using the 1996



	2005	2006	2007	2008	2009	2010
SO_2	52.1	54.2	57.9	60.1	61.9	65.2
NMVOC	69.0	141.0	146.4	75.6	79.0	84.5
CO	1153.5	1735.5	1689.5	897.1	1161.0	1258.1
NO	54.5	68.8	64.5	28.6	40.4	60.9

Among the indirect greenhouse gases,

- Carbon monoxide (CO) remains the main one emitted
- Non-methane volatile organic compounds (NMVOC)
- Nitrogen oxides (NOX) varied between 54.5 Gigagram and 60.9 Gigagram respectively
- Sulfur dioxide SO2 increases from 2005 to 2010

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Existing efforts to identify stakeholders:

Government ministries	Research and teaching organizations:	Non-governmental organizations (NGOs):	Private sector
Ministry of agriculture,, Ministry of the environment, Ministry of the transportation Ministry of health, Ministry of water and sanitation, Ministry of land use planning The national assembly, Lawyers ,	• Universities, • Research centers, • agricultural technical institutes, such us the - Environmental NGOs,.	• Agricultural NGOs, • Community development NGOs, • Members of agricultural researchers, agricultural technicians, growers, collectors, industries, Project/Program	• Farmers, • Agro-industrialists , • Organic fertilizer factorie, • Transports • Agricultural and farming factories • Waste recycling recovery

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Nitrogen management Inter-ministerial committee

Volontary national action plan

Coordination sustainable nitrogen management

Provide and sharing data

collaboration, information,

Existing national research institutes:

- CNRIT (National Center for Industrial and Technological Research)
- CNRE National Center for Environmental Research
- FOFIFA/ CENRADERU(Centre National de recherche appliquée au developpement rural
- The Antananarivo university: the departement of the science , agronomy science departement (ESSA)
- GSDM (Groupement Semis Direct de Madagascar) brings together 17 organizations involved in research, training and dissemination of agro-ecology in Madagascar.

Existing monitoring system for nitrates, ammonium, ammonia, nitrogen oxides, NOx.

In Madagascar, there is no comprehensive, centralized national monitoring system for nitrates, ammonium, ammonia, nitrogen oxides and NOx.

However, ad hoc efforts and local initiatives to monitor water and air quality are carried out by various entities,

OPJ Environementaux

Inter-ministerial environmental cellule

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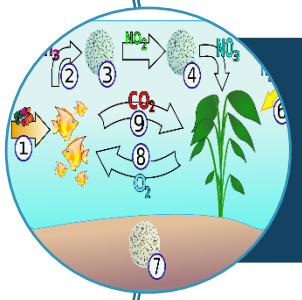
Challenges identified by policy makers

Environmentally sound management of nitrogen-related waste and promotion of circular economy



Inclusion of nitrogen waste management issues as a national priority in national development plans and national strategic documents

Reflection on legal frameworks for nitrogen waste management;