

Activity 1.2: Development of N threat/benefit assessment methodology

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Outline



- Purpose of the 1.2 GD (Jill/Hide)
- Overview of the GD:
 - Scope and chapter 1 (Jill)
 - Chapter 2 on integrated methods (Alley)
 - Chapter 3 on impact methods (Dan)
 - Chapter 4 on applications (Tim)
- Ties to other INMS sections (Tim)
- Timeline and take-away points (Hide)

Component 1

Tools

Assess **Multiple Impacts**
Activity 1.2

Driven by **N-flows**
Activity 1.3

Described by **Indicators**
Activity 1.1

Weights to Prioritize
Activity 1.4

Global **Models** for base yr and 2050
Activity 1.5

Solutions meet **Barriers**
Activity 1.6



Intended Audience for GD 1.2

1. Policy makers

- *international, national, regional*

2. Other INMS Components and Activities:

- *Activity 1.4 (Valuation)*
- *Component 2 (Models and Scenarios)*
- *Component 3 (Demonstration Regions)*

Purpose of GD 1.2



Development of N threat/benefit (i.e. negative and positive impacts) assessment methodology

Pressures

Indicator of potential threat/benefit

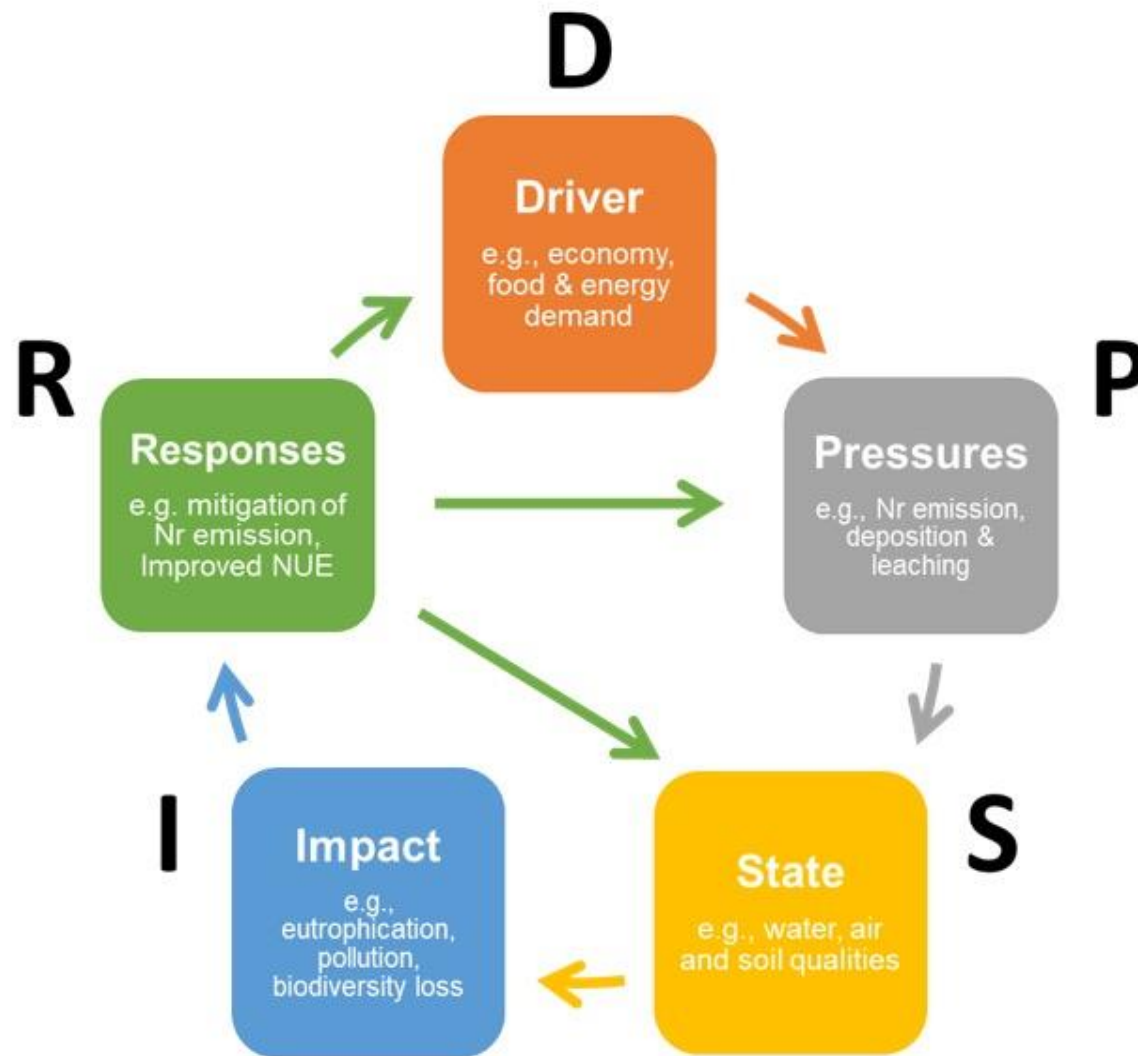
Impacts

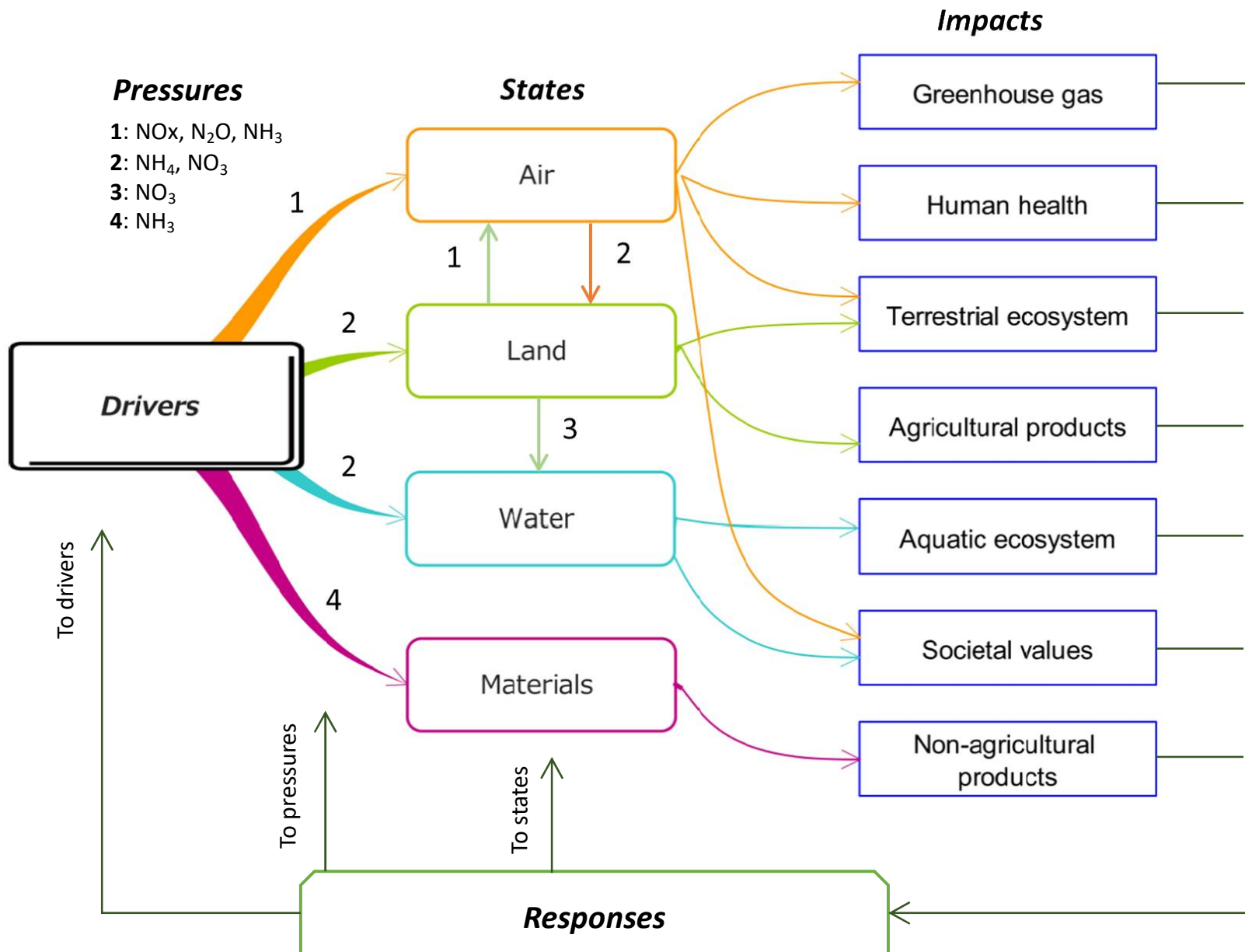
Effects to environment, health, and society

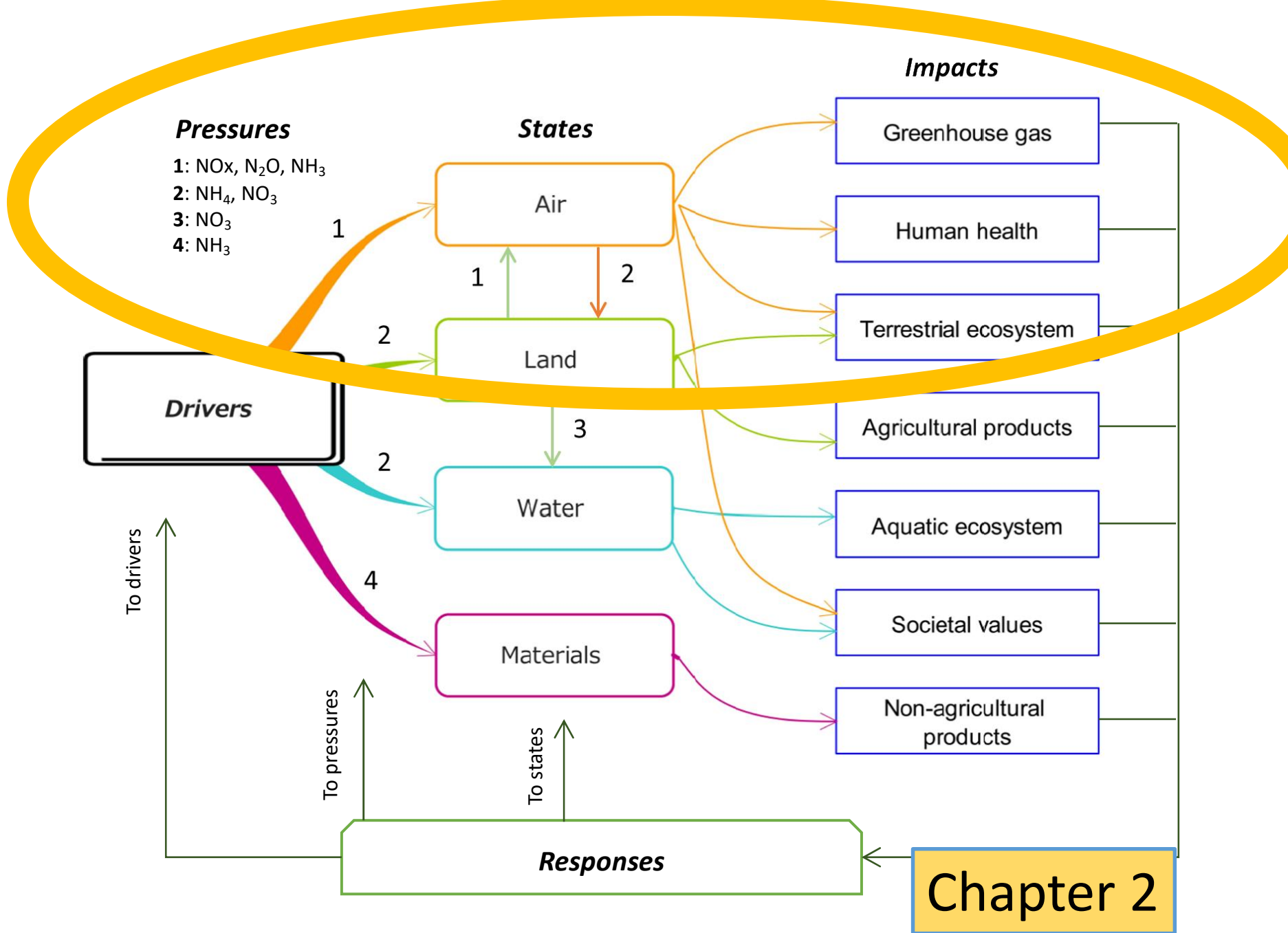
Responses

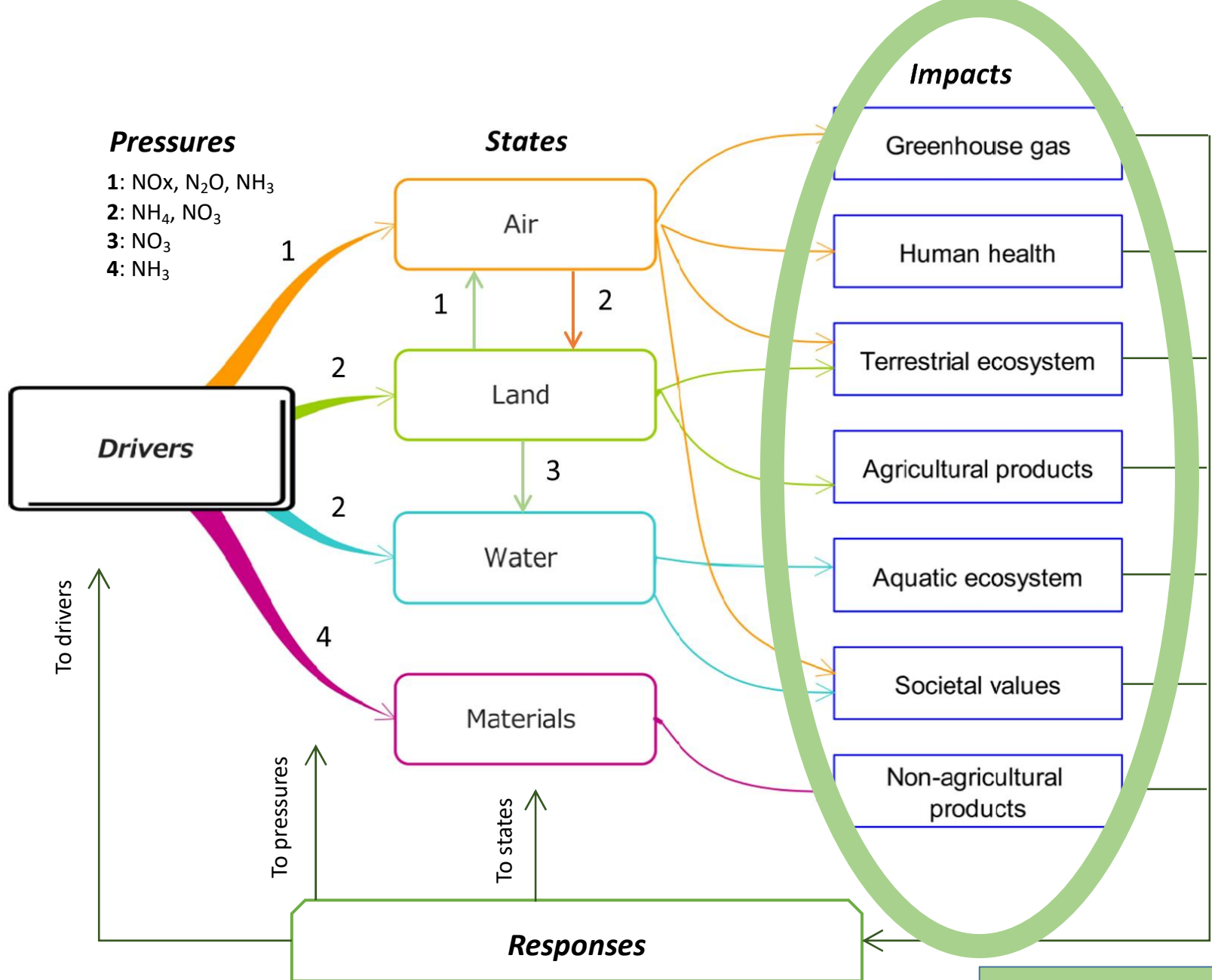
Policy and scientific applications

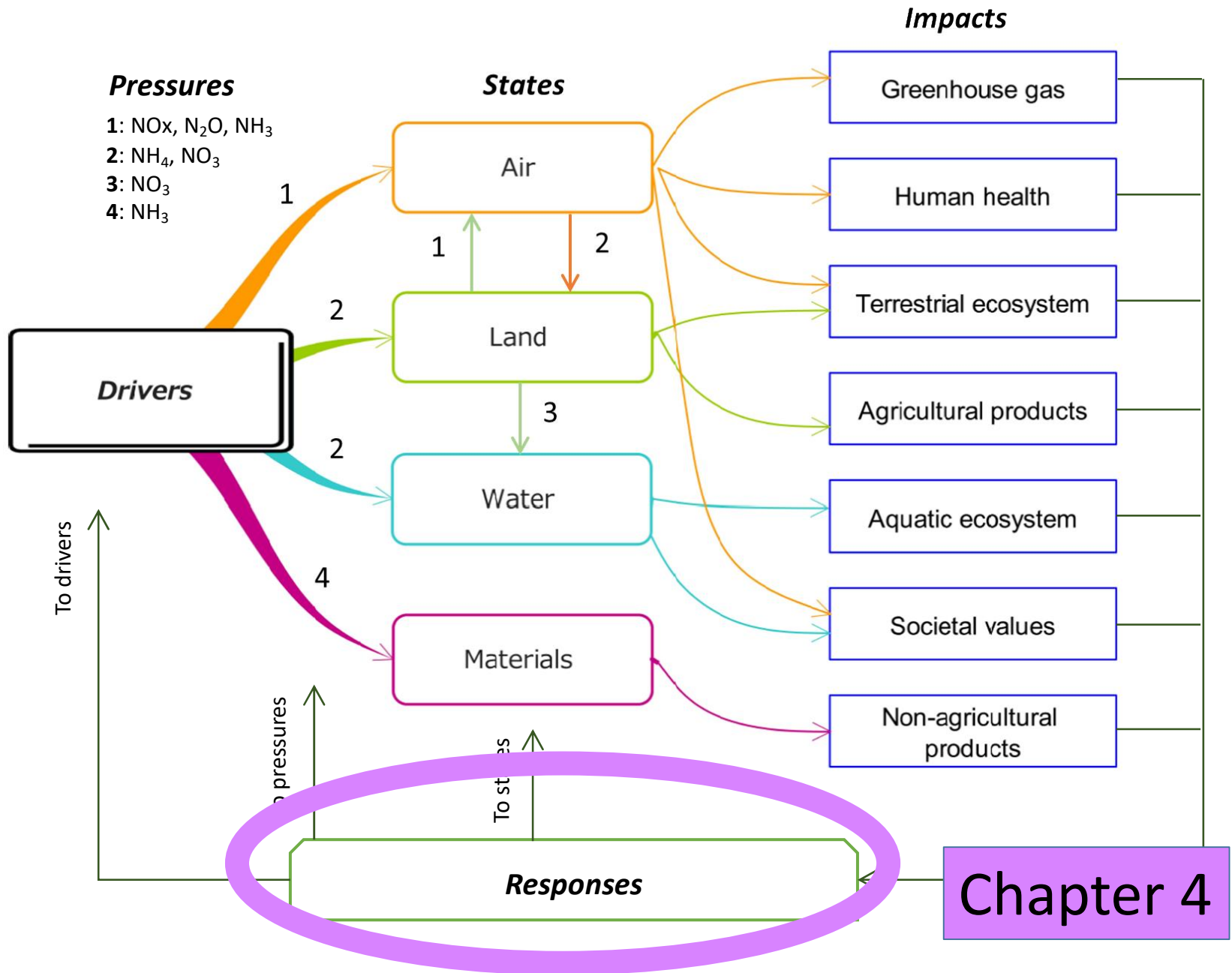
DPSIR Framework











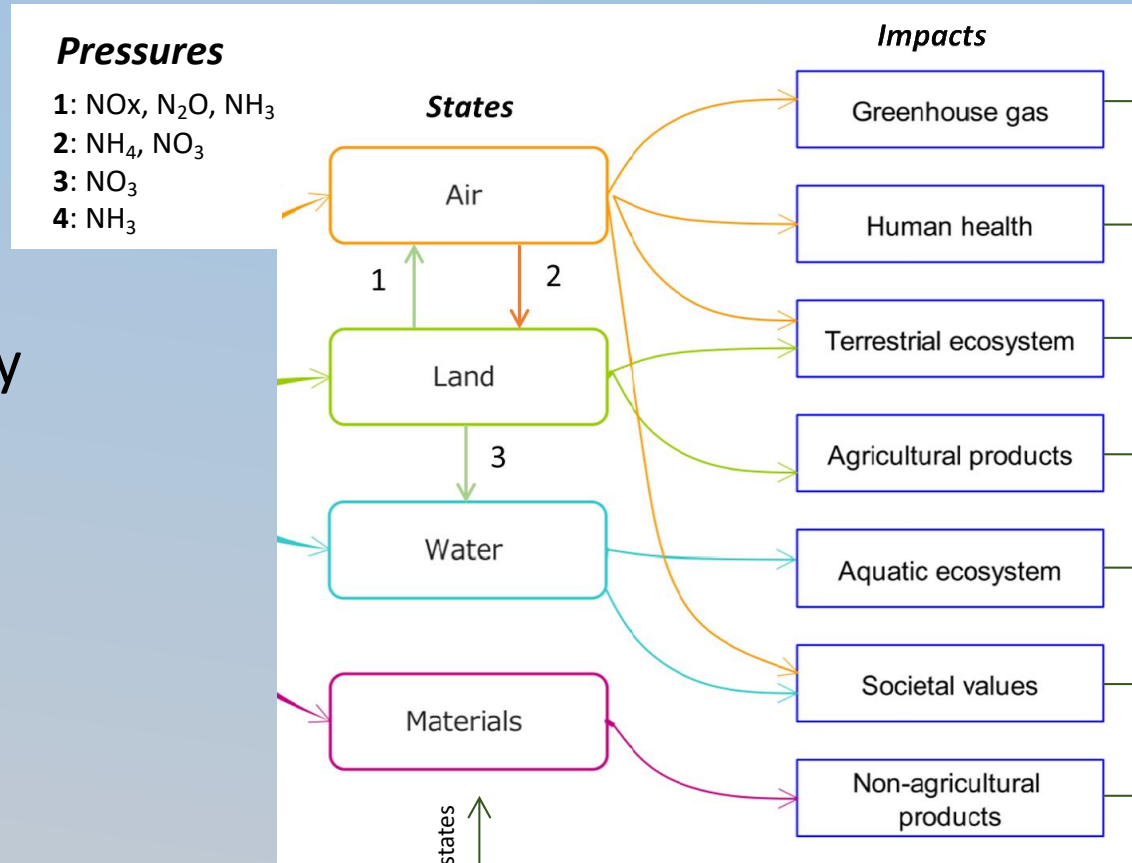
Chapter 2. Integrated methods

Integrated methods =

- >1 pressure
- >1 state
- >1 impact category

Includes methods for pressures AND impacts

N-specific or beyond N

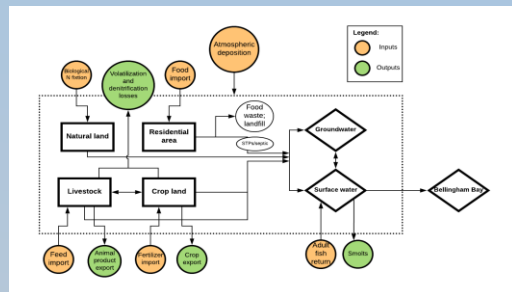


For methods specific to 1 impact category, see chapter 3: Impact methods

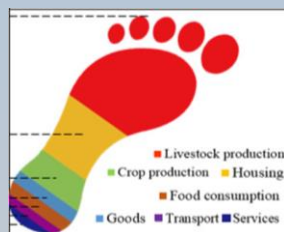
Chapter 2. Integrated methods

Focused on nitrogen:

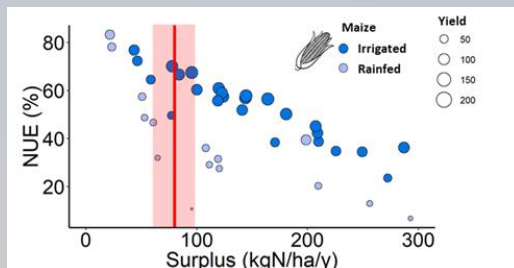
Input-Output N budgets



N footprint approaches

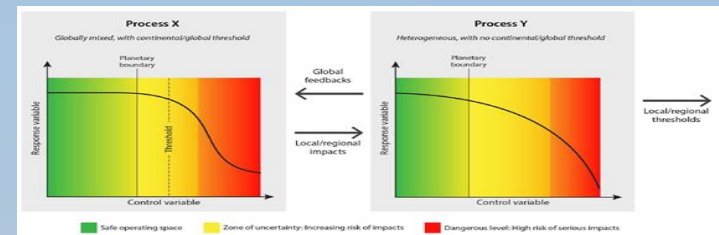


Nitrogen Use Efficiency

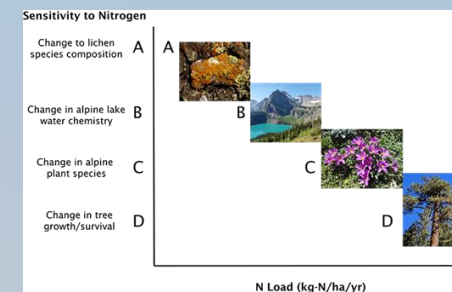


Beyond nitrogen:

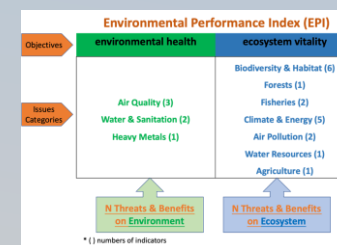
Planetary Boundaries



Critical Loads

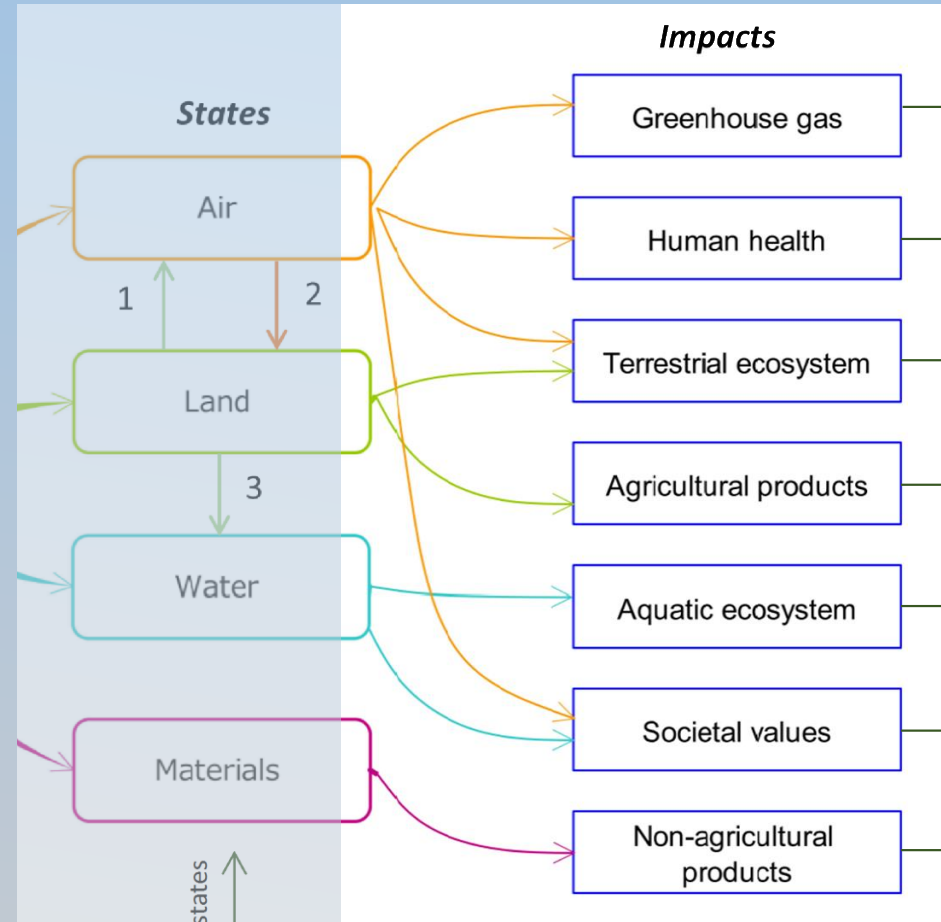


Environmental Performance Index



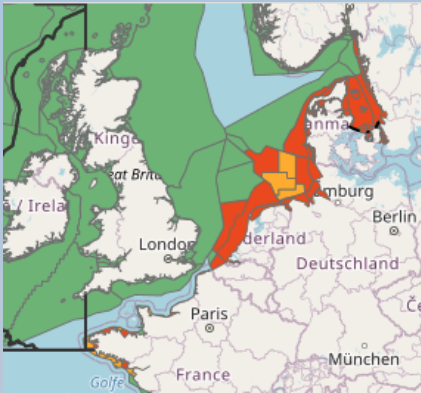
Chapter 3. Impact methods

- Effects of N use on human health and well being and the environment
- Impacts are threats and benefits from N use



Chapter 3. Impacts Methods

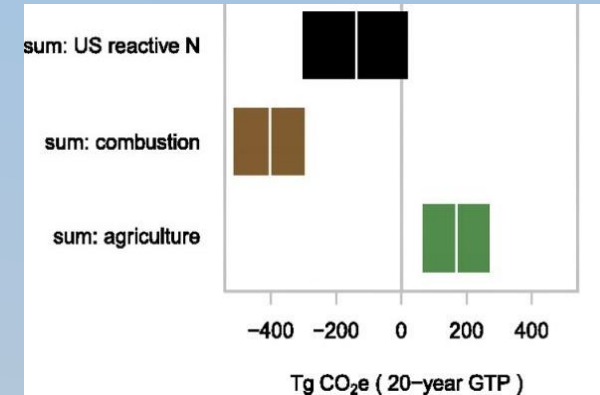
Aquatic Ecosystems



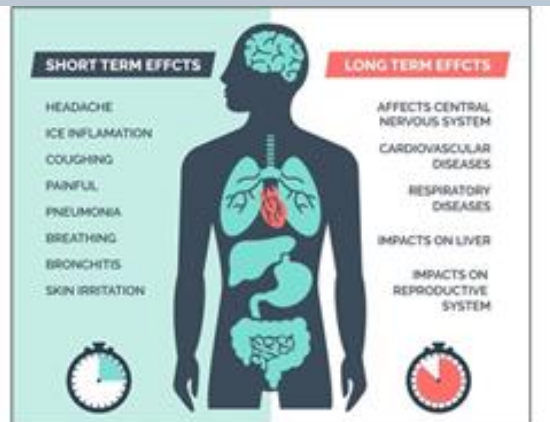
Terrestrial Ecosystems



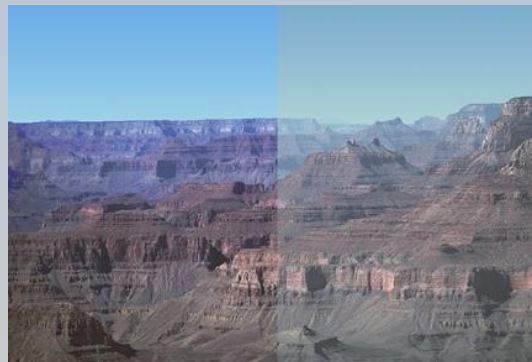
Greenhouse Gases



Human health



Societal Values

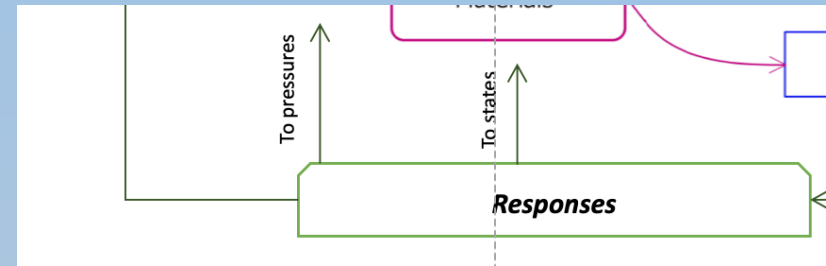


Agricultural and Non-Agricultural Products



Chapter 4

Policy Applications



Real-world Examples

Show GD users how specific methods have been translated into policy actions.

Strengths and Weaknesses

Give users a realistic roadmap from methods to policy.

Global Examples

Show users policy examples from around the world and at varied levels of policy.

Chapter 4

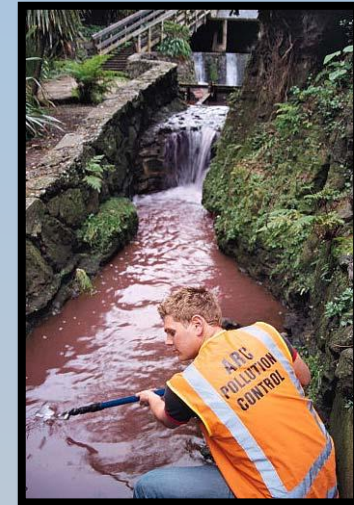
Policy Applications

Examples:

**Nitrogen Deposition
Reduction Plan for Rocky
Mountain Park, USA**



**Comprehensive N-
management policy in New
Zealand**



**100% Neem-coating
regulations for urea fertilizer
in India**



Connecting 1.2 to Other Components

Modeling (C2)

Provides foundation for model inputs, interpretation of model outputs for both base runs and scenarios

Regional Demonstrations (C3)

Lake Victoria Basin, others, represented as examples in Chapter 4.

The International N Assessment (C4)

INMS 1.2 will contribute a chapter on methods of N assessment to the INA this year.

Upcoming plan and schedule

2020 Q3

- Complete to develop the draft Guidance Document
- Critical review by internal and external stakeholders

2020 Q4

- Prepare the chapter manuscripts of the INA book
- Virtual workshop with other INMS activities

2021 Q4

- Submit the highlight paper of the GD development to a peer-reviewed journal

and more!

Summary

Guidance Documents of the Nitrogen Impact Assessment Methodology is mostly ready for the critical review. They include:

- Overall conceptual framework | e.g., DPSIR
- Integrated and specific methods of the N impact assessments | WAGES plus Food and Energy
- Application of the methods for policy
- Supplemental materials | N impact matrix

Those will be highlighted in the INA synthesis book and a specific paper to a peer-reviewed journal, and also used for the other INMS activities with close linkages each other (e.g. modeling, valuation, regional demonstration and public awareness)