

Workplan A2.1 & 1.5

Global integrated N assessment modelling

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INMS meeting 18 April 2018, Edinburgh



Agenda

1 Presentations Work plans/agreements

- A1.5/A2.1: Modelling (Wim de Vries)
- A2.4: Scenario options: (Wilfried Winiwarter/David Kanter)

2 The ERSEM (Earth Seas Ecosystem) Model (Jason Holt)

3 Preliminary SSP scenario results (Lex Bouwman)

4 Database and modelling protocol:

- Implications for joint INMS data base: Bill Bealey
- **Modelling protocol: Wim de Vries (Agreements).**

Aim A1.5 and A2.1: Global scale Nitrogen modelling in view of benefits and threats

Global (integrated) N assessment models will be linked and applied to quantify effects of

- socio-economic drivers (SSP-RCP scenarios)
- N mitigation policies/ N management measures on
 - food, feed and fiber production (benefits)
 - quality of air and water, and related human health, climate and biodiversity impacts (threats)

With a special link to INMS demo-regions

Agreements Wageningen Workshop on modelling approach June 2017

- Include three scenario models (IMAGE, GLOBIOM, MAgPIE) that predict changes in N food chain, energy emissions, land cover, livestock and N inputs/N budgets at global scale
- Outputs of these models (three different results) will be used as inputs to global models for e.g:
 - crop growth (e.g. LPJml being part of IMAGE and MAgPIE),
 - N emissions (e.g. MITERRA-Global),
 - air concentrations and deposition (e.g. TM5-FASST and others),
 - river export (e.g. Global NEWS, IMAGE-GNM)
 - aquatic eutrophication (e.g. IMAGE-GLOBIO-aquatic).

Agreements Wageningen Workshop on modelling approach June 2017

We work on a coordinated work plan for three years with two phases of 18 months.

- Phase 1 will focus on outputs for the present (2005 base year) and future (2030, 2050 and possibly 2100) in response to a "*business as usual (BAU)*" scenario (including N interventions).
- Phase 2 will focus on future outputs in response *to various scenarios and N interventions*, where interventions
 - can be combined in storylines on the medium to long term (2030-2100)
 - evaluated separately on the medium term (2030).

Agreements New York Workshop on scenarios Jan 2018

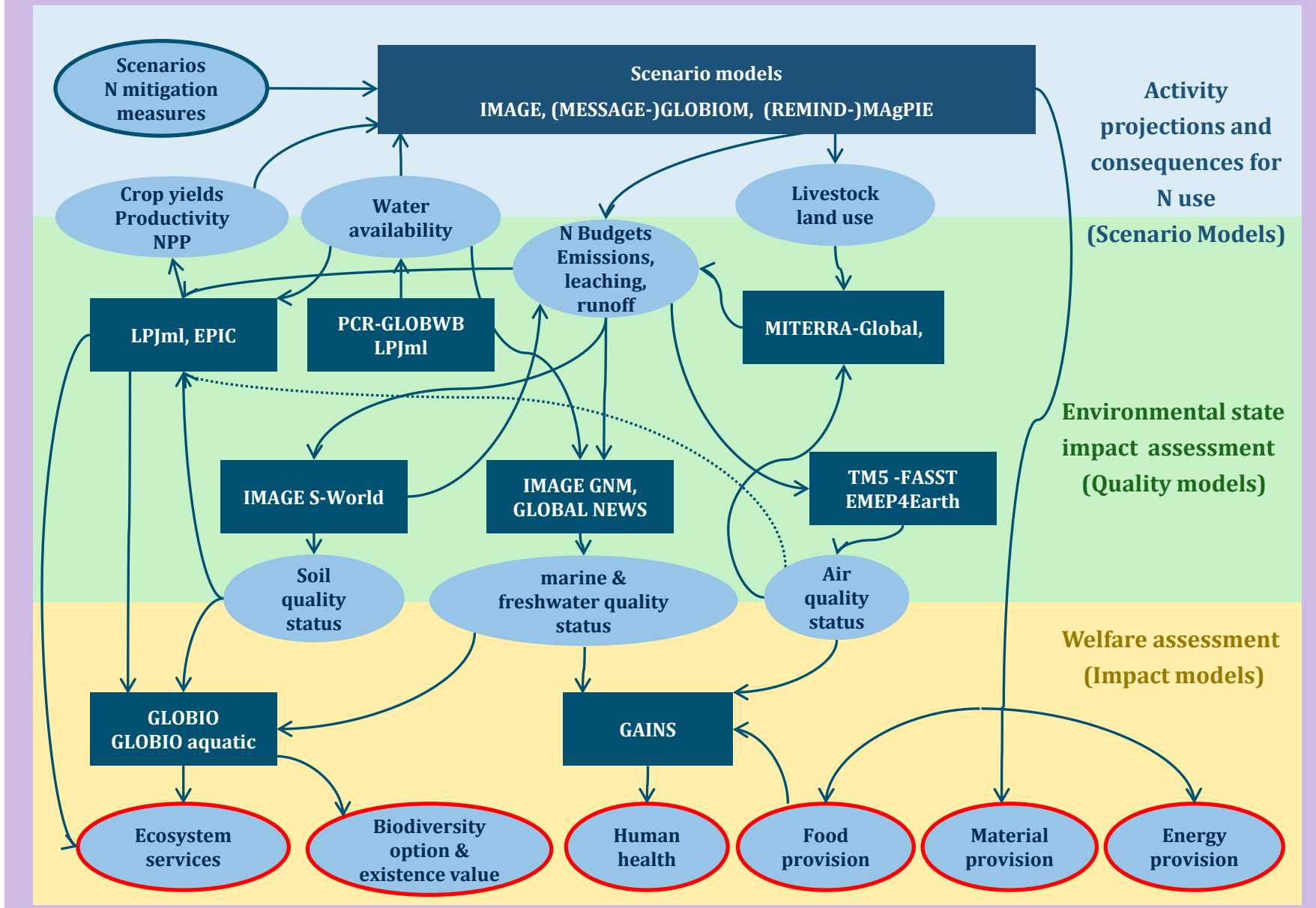
Recommended scenarios are suggested to include a

- low-N pressure SSP1 “taking the green road” with RCP4.5
- High-N pressure SSP5 “taking the highway” with RCP8.5
- with possibly one or more intermediate scenarios in addition.

N policy storylines will be superimposed on scenarios that

- cover all sectors (including energy, transport and industry)
- are regionally disaggregated to guide INMS demonstration areas
- include different levels of policy ambition/potential for transformative changes

Multi model approach: involved models and linkages



Workplan A1.5.1-1.5.3 (and A2.1.1)

- Make *integrated report* with information:
 - Aim of modelling related to INMS targets
 - Description of relevant models based on defined criteria
 - *Identification of N storylines & scenarios for shared use*
 - *Modelling protocol*
 - *Database set up for of shared input and model outcomes*
- Deliverable: updated background document for Wageningen workshop with scenario information, protocol and data base: July 2018. Leads: Wim de Vries, Wilfried Winiwarter, Benjamin Bodirsky, Bill Bayley, Lex Bouwman, Beth Boyer et al.

Workplan A1.5.4/A2.1.3 and A1.5.5/A2.1.3

- Analysis of **current** global & regional N flows, threats & benefits (**base year analysis**) and **preliminary scenario analysis**
 - Delivery of all results at end of M24: Sept 30, 2019.
 - Workshop on results: Sept 2019 in Wageningen,
 - Report on results: three months after workshop.
- Quantifying present & future N threats & benefits at global and regional scales with **final scenarios (scenario analysis)**
 - Deliverable at end of M42: March 31 2021.
 - Workshop on results: April 2021 in Wageningen,
 - Report on results: three months after workshop.

Coordination/Modelling budget A1.5/A2.1

Task	Subcontractor/work	Yr 1	Yr 2	Yr 3	Yr4	Total
1.5.1-1.5.3	IIASA (co-ord)	41	23			64
	WenR (co-ord)	41	23			64
	Modelling cluster	18	14			32
1.5.4	Modelling cluster		60	120		180
1.5.5	Modelling cluster			50		50
Total co-ordin.		82	46	0	0	128
Total modelling		18	74	170	0	262
Overall total		100	120	170	0	390

Task	Subcontractor/work	Yr 1	Yr 2	Yr 3	Yr4	Total
2.1.3	Modelling cluster	10	50	50	20	130
2.1.4	Modelling cluster	20	50	30	10	110
Total	Total for modelling cluster	30	100	80	30	240

Next steps

Coming three months: April – July 2018

- Finalize draft N policy storylines for use: Interactions between A2.4 (scenarios) & A2.3 (N measures)
- Finalize modelling protocol and data base description
- **Finalize contracts with modellers**

Sept 2018- Sept 2019

- Modelling and presentation results at dedicated workshop

Questions?

