

Solution: 'Nipping the Nutrient Nuisance'

Lessons from the GEF-Global Nutrient Cycle Project

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Marrakesh, Morocco



Nutrients...a challenge?

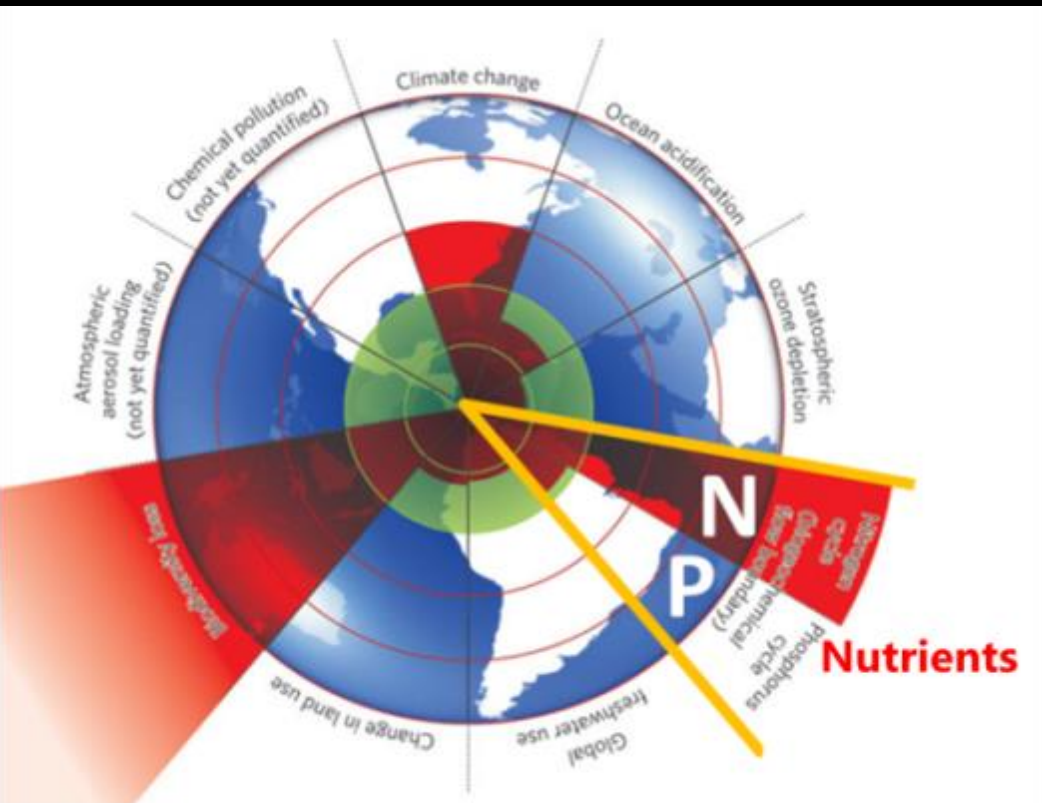


Source: <http://studentbodyuf.com>

Nutrients...a good thing!

But too much or too little...**not so good!**

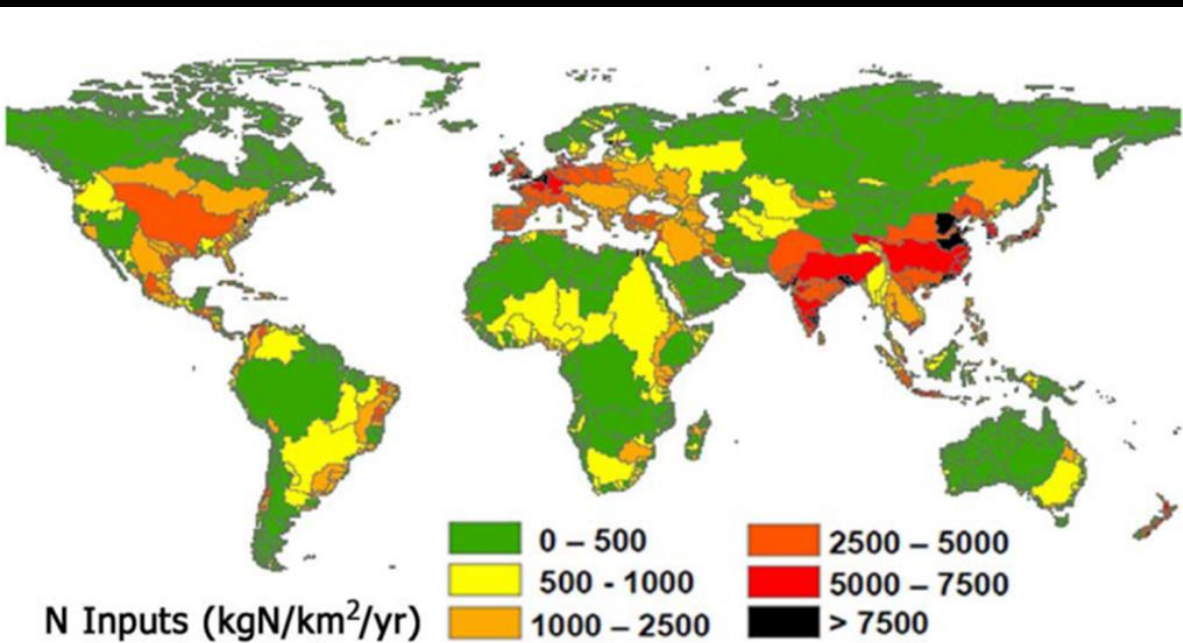
Planetary Boundary for Nitrogen is greatly exceeded;
boundary for Phosphorus is being approached



Planetary boundaries
define safe
operating space
for humanity
with respect to
the Earth
system

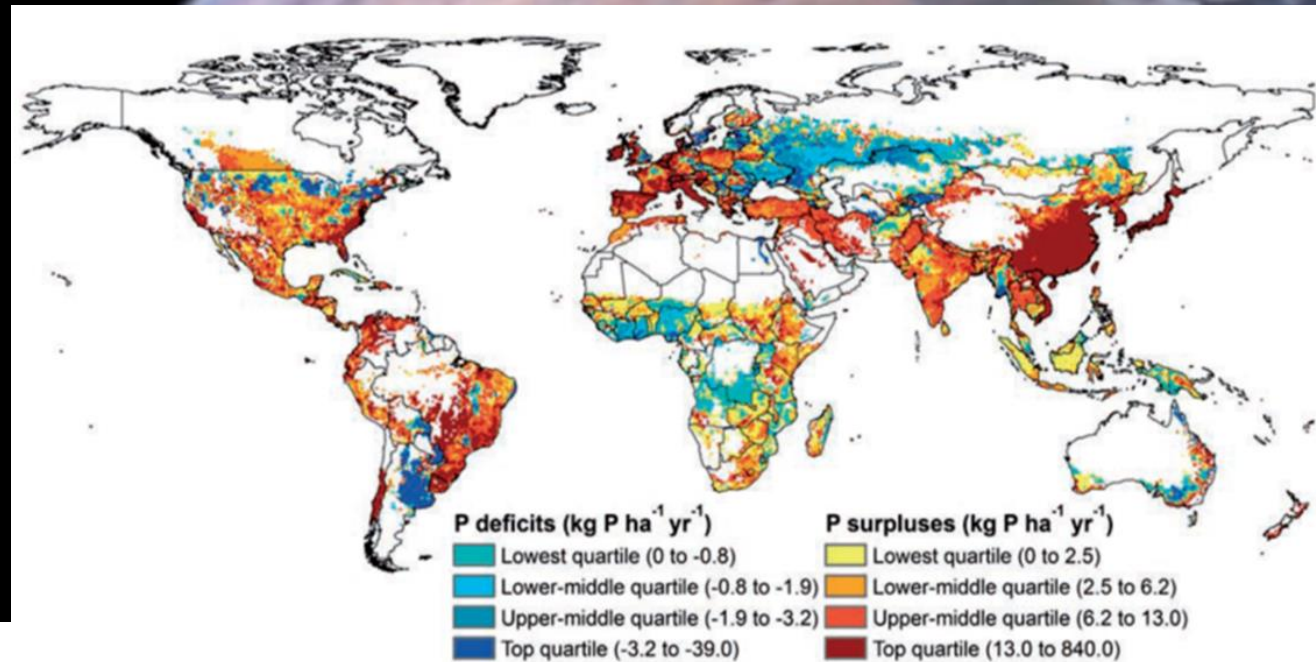


Too Much and Too Little Nutrients Where?



Estimated net anthropogenic nitrogen inputs according to the world's main river catchments (Source: Our Nutrient World 2013).

Nitrogen



Estimated global phosphorus surplus and deficit. Source: Our Nutrient World, 2013, citing (MacDonald et al., 2011)

Phosphorus

Too much nutrients....

Sources

Fertilizer excess runoff



Untreated wastewater



Livestock waste runoff



Air pollution

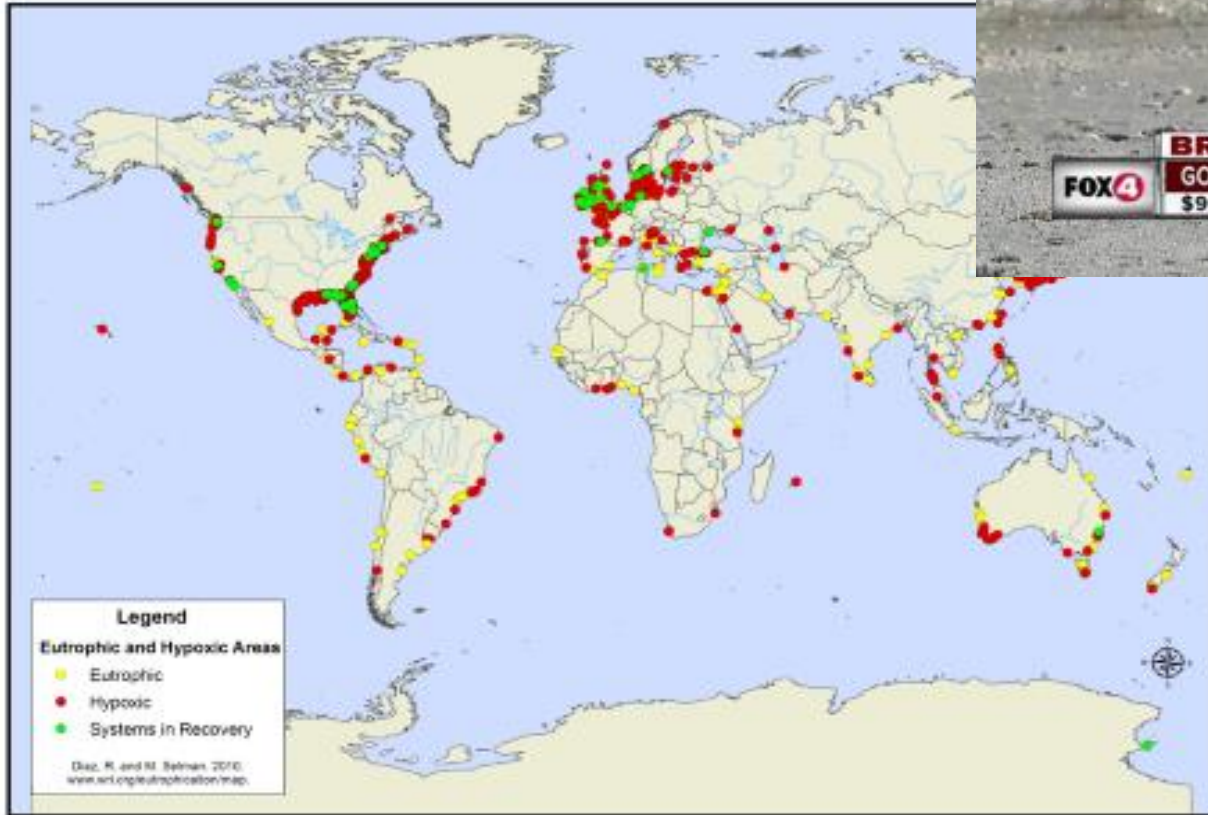


Too much nutrients....

Impacts



World Hypoxic and Eutrophic Coastal Areas



3 kids died, 64 taken ill due to red tide poisoning

THREE children have died and 64 people were taken ill by red tide poisoning, health and local officials said yesterday.

Manila's authorities said 2-year-old Catherine Ciego of Marikina, Marikina, Rizal, died of blood poisoning, 8-year-old Leila Ciego, 12, died of blood poisoning, and 10-year-old Leila Ciego died of blood poisoning.

The kids' mothers died at around 10 p.m. yesterday after they were taken to the hospital. The mothers also died of blood poisoning.

One of the mothers, along with her 10-year-old child, died at around 8 p.m. after she and 14 others from the family were taken to the hospital.

A check with various hospitals showed that 20 more victims were taken to the Jose Reyes Memorial Hospital, 17 were brought to the PCMR, two were confined at the Capital City Hospital and three were in the Capital City Hospital.

Doctors at the hospitals said the victims, who were mostly children, complained of headache and abdominal pain, dizziness and vomiting.

The doctors attributed the symptoms to red tide poisoning.

Officials of Manila, Quezon City and other areas in the metropolitan area said all residents and visitors should avoid eating shellfish and avoid swimming in the sea.

Private hospitals in Manila reported victims of red tide poisoning for the first time, including several victims in jail.

Manila's Vice Mayor, spokesperson of the Bureau of Fisheries and Aquaculture, said that the red tide in the country has been the worst of Manila and Cebu is as bad as Manila.

Vice Mayor said the spread of red tide was not contained in Manila and the spread of red tide was not contained in Manila.

Article from the *Philippine Daily Inquirer* on May 19, 1995, reporting victims who ate green mussels collected from Manila Bay. Used with permission.



Too little nutrients...

Impacts

Harvest more than is replaced by nutrients - **nutrient mining**,
reduced crop yield and failure



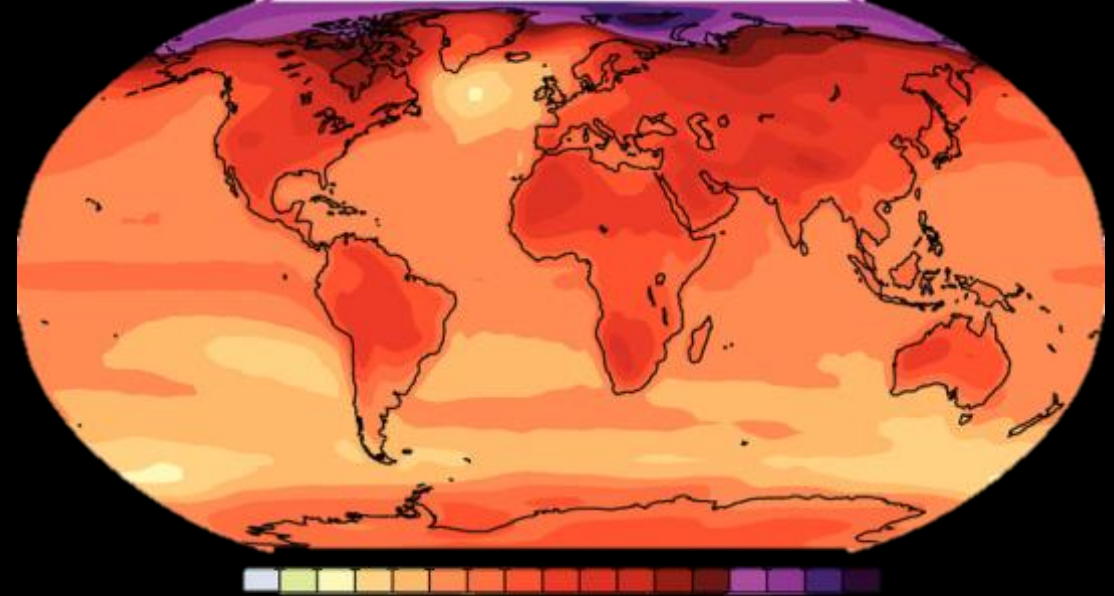
Land degradation



Poor nourishment, social conflict



And on top of all that.... **Climate change**



Bleached corals...further weakened due to nutrient pollution



Deoxygenation of marine waters



Releases of nitrous oxide

The project

Moving Nutrients Science to Policy to Action

- **Package of tools** to technical and policy enablers
- Strengthening of a **Global Partnership on Nutrient Management (GPNM)**
 - Conduit for delivery of tools to global interests



Global foundations for reducing nutrient enrichment and oxygen depletion from land based pollution, in support of the

Global Nutrient Cycle



ECN



The University of the Philippines
Marine Science Institute



International
Nitrogen Initiative



Centre for
Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL



SCOPE

WASHINGTON STATE
UNIVERSITY



University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

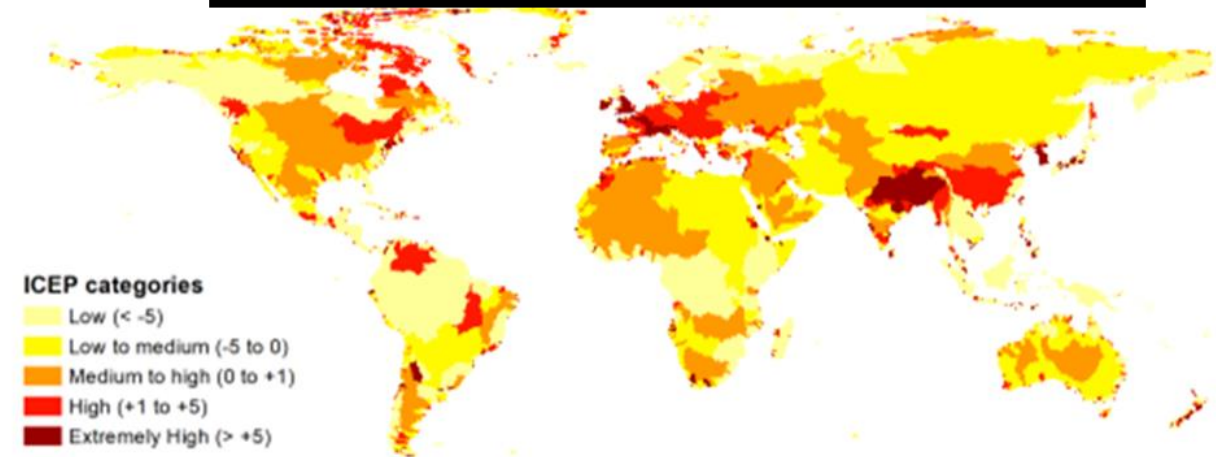
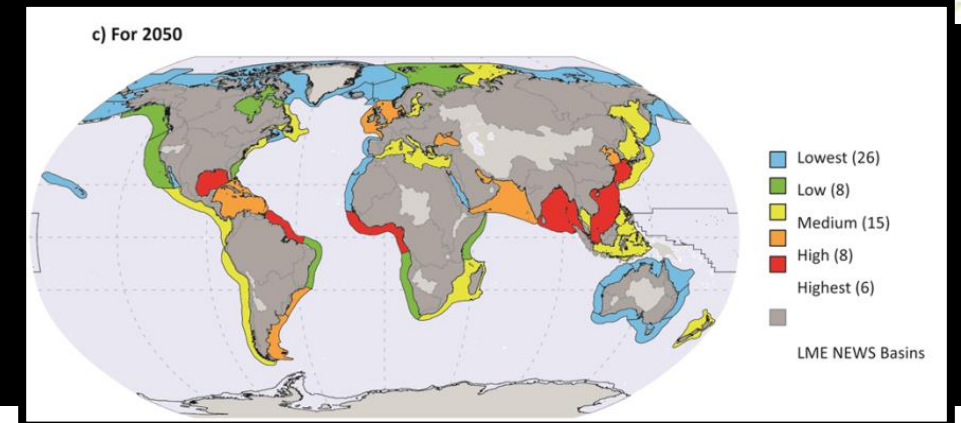
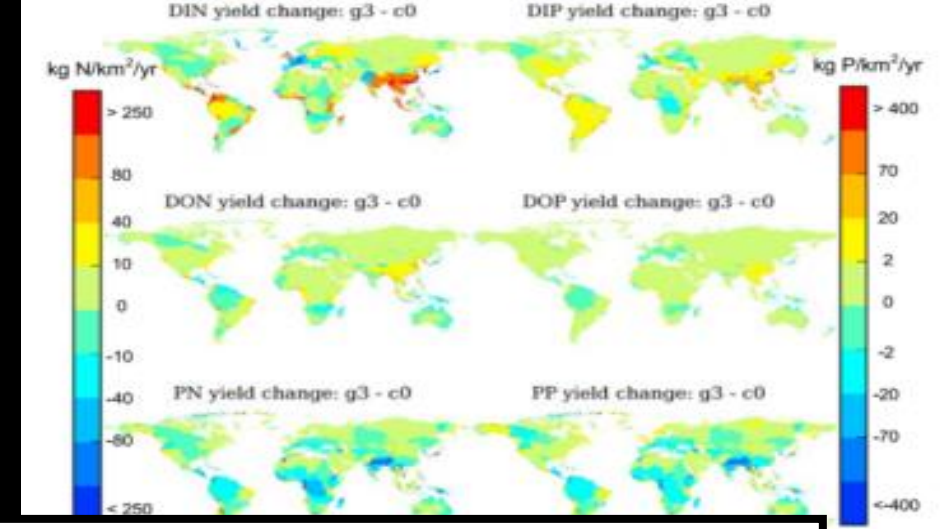


WORLD
RESOURCES
INSTITUTE

Global scenarios

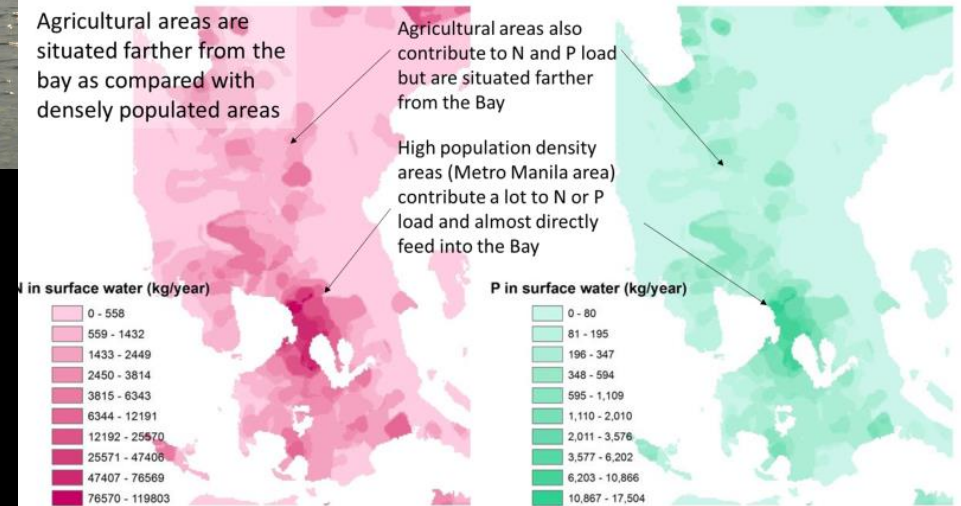
Predicting coastal eutrophication

Looking to year 2050



Better watershed planning: predicting nutrient flows and reducing risk

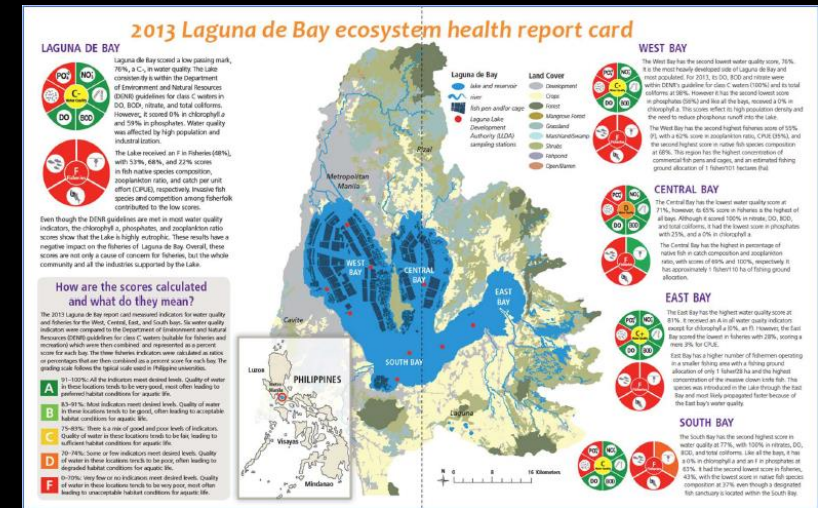
Manila Bay Philippines



Baseline results by map

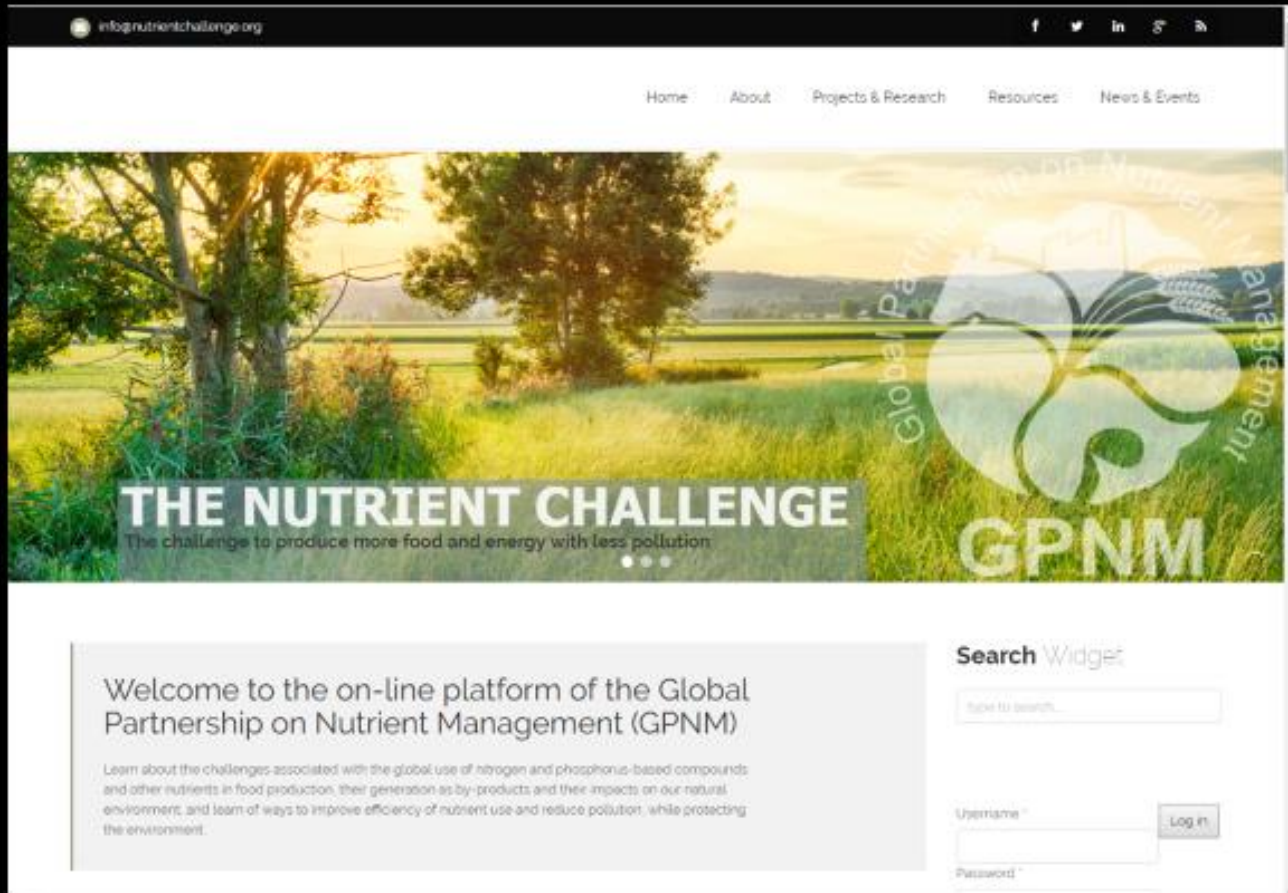
Ecosystem Health Report Cards

Measuring, Communicating, Action!



Knowledge on Nutrients to the World!

Global Nutrient Management Toolbox



Project contributes to...



**SUSTAINABLE
DEVELOPMENT**

GOALS

Core SDG targets related to sustainable nutrient management:

- Target 2.4 – sustainable food production
- Target 6.3 – good ambient water quality
- Target 14.1 – reduced nutrient pollution in the marine environment



The business of nutrients

...can we sell this?

- Taking the science talk to money talk!
- **The Green/Blue Economy**
 - Fertilizer saving – increased efficiency: **US\$23 bn/yr**
 - Environmental and human health benefits: **US\$160 bn/yr**
 - Implementation investment costs: **US\$12 bn/yr**
- **Net Benefit: US\$170 bn/yr**

Source: Our Nutrient World (2013)



**For more information
visit us at**

<http://web.unep.org/gpa/what-we-do/global-partnership-nutrient-management>

<http://www.nutrientchallenge.org/>



United Nations
Environment Programme

