

Nutrients...

Invisible and everywhere!

Both Nitrogen (N) & Phosphorous (P) are **key nutrients** for plant growth

The P in fertiliser has to be **mined** from **phosphate bearing rock** – it is a **limited** resource.

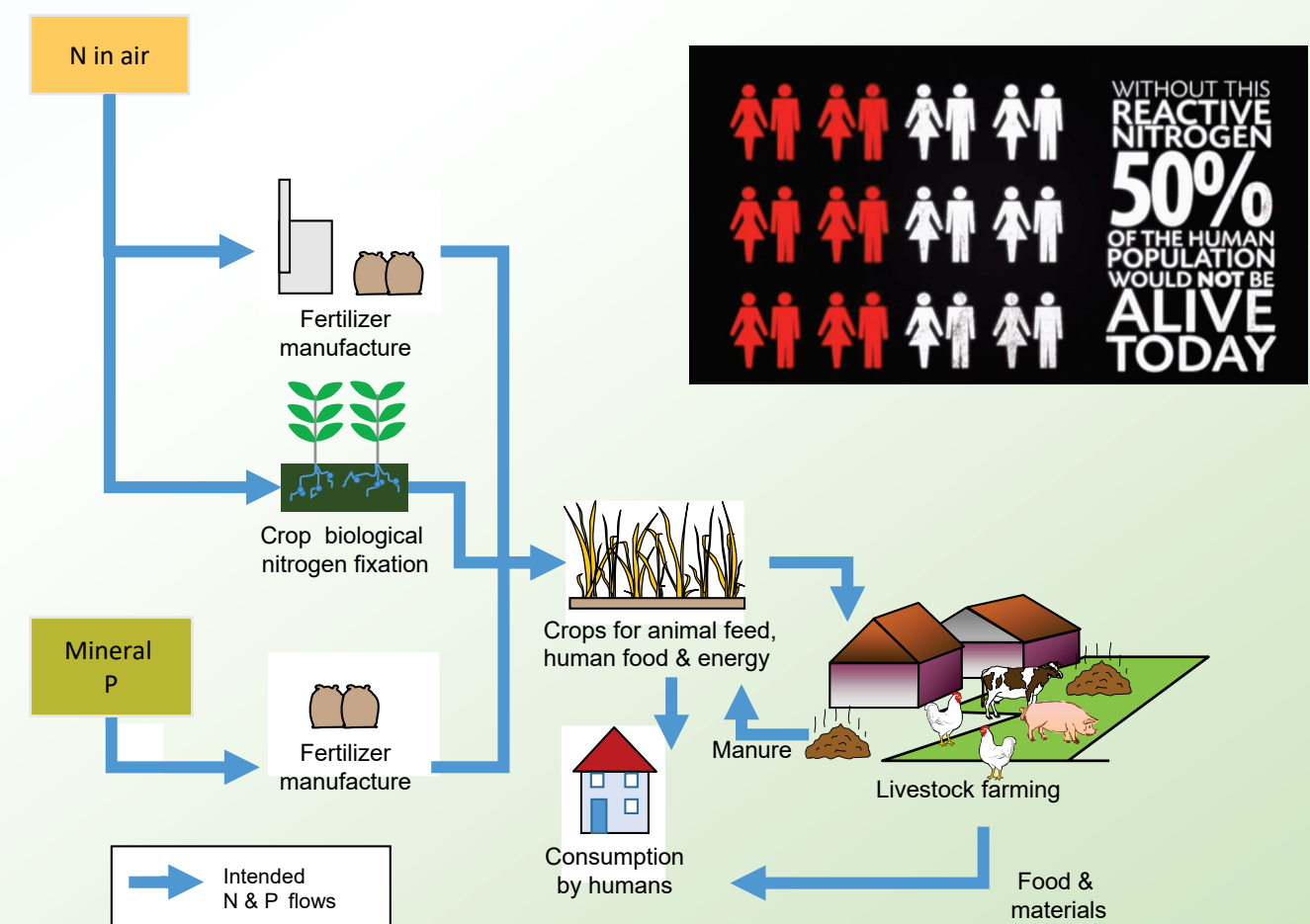
The N in fertiliser is extracted from the air we breathe – it is **unlimited**, but uses **energy**.



Morocco supplies 70% of globally mined P.

What are nutrients....?

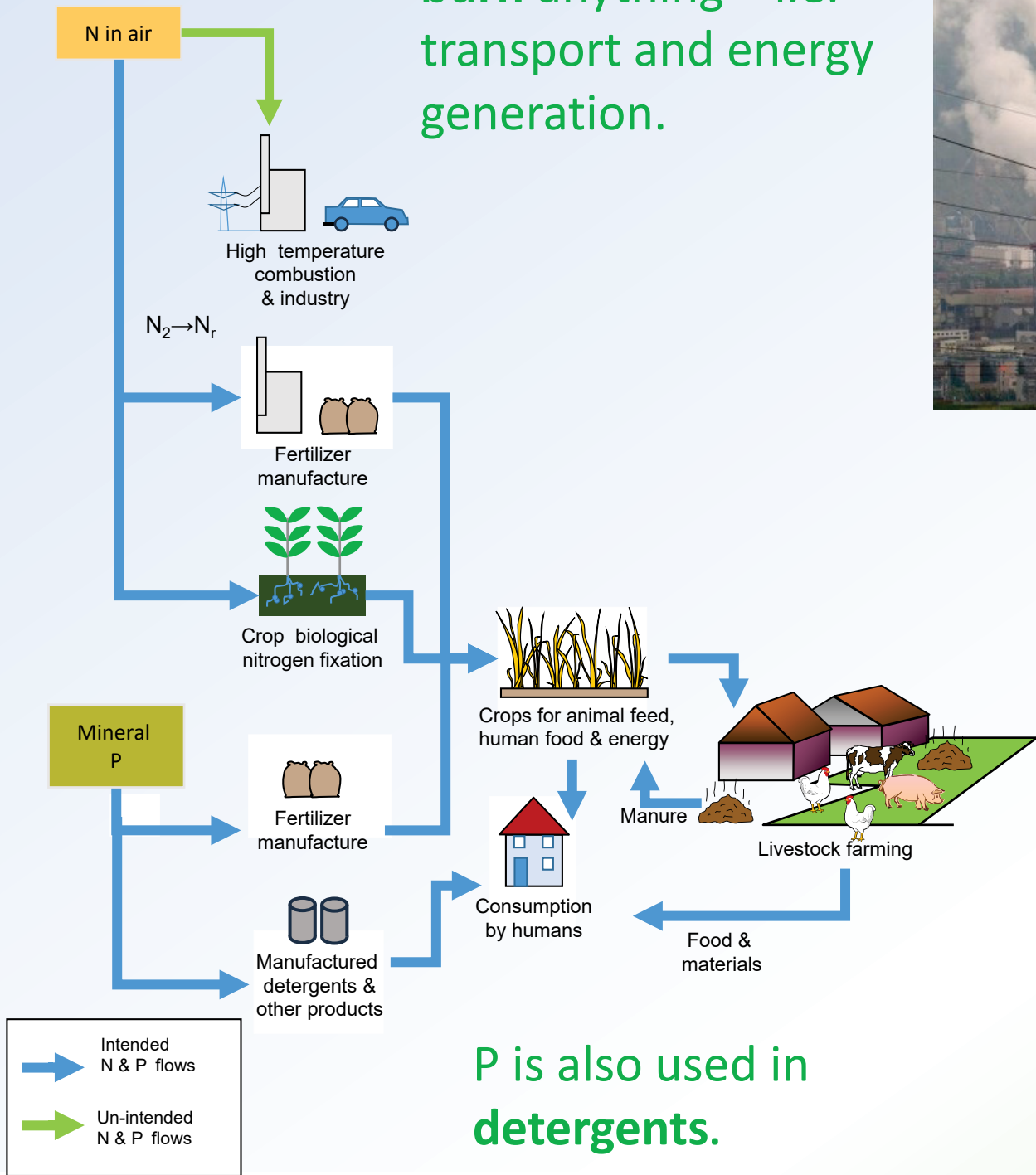
Nutrients are **essential** to feed our crops, feed our animals and to feed ourselves



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As well as intentionally using N and P to grow food, N and P enters the system in other ways – putting a greater burden on the system.

N is unintentionally created whenever we **burn** anything – i.e. transport and energy generation.



P is also used in **detergents.**



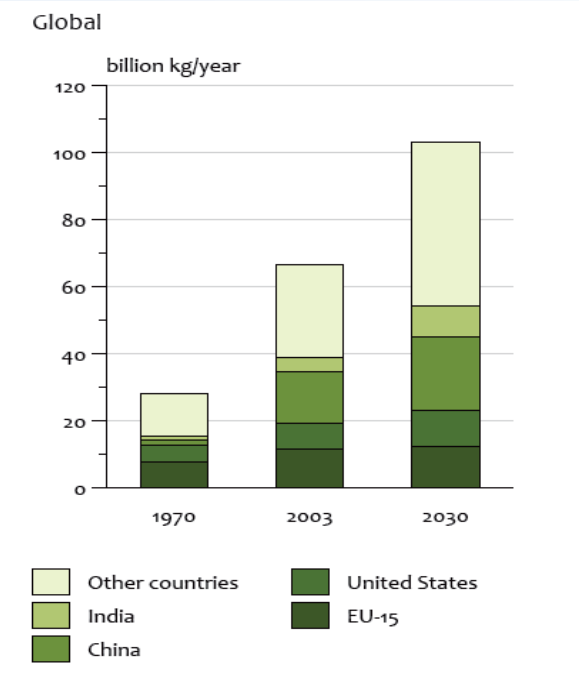
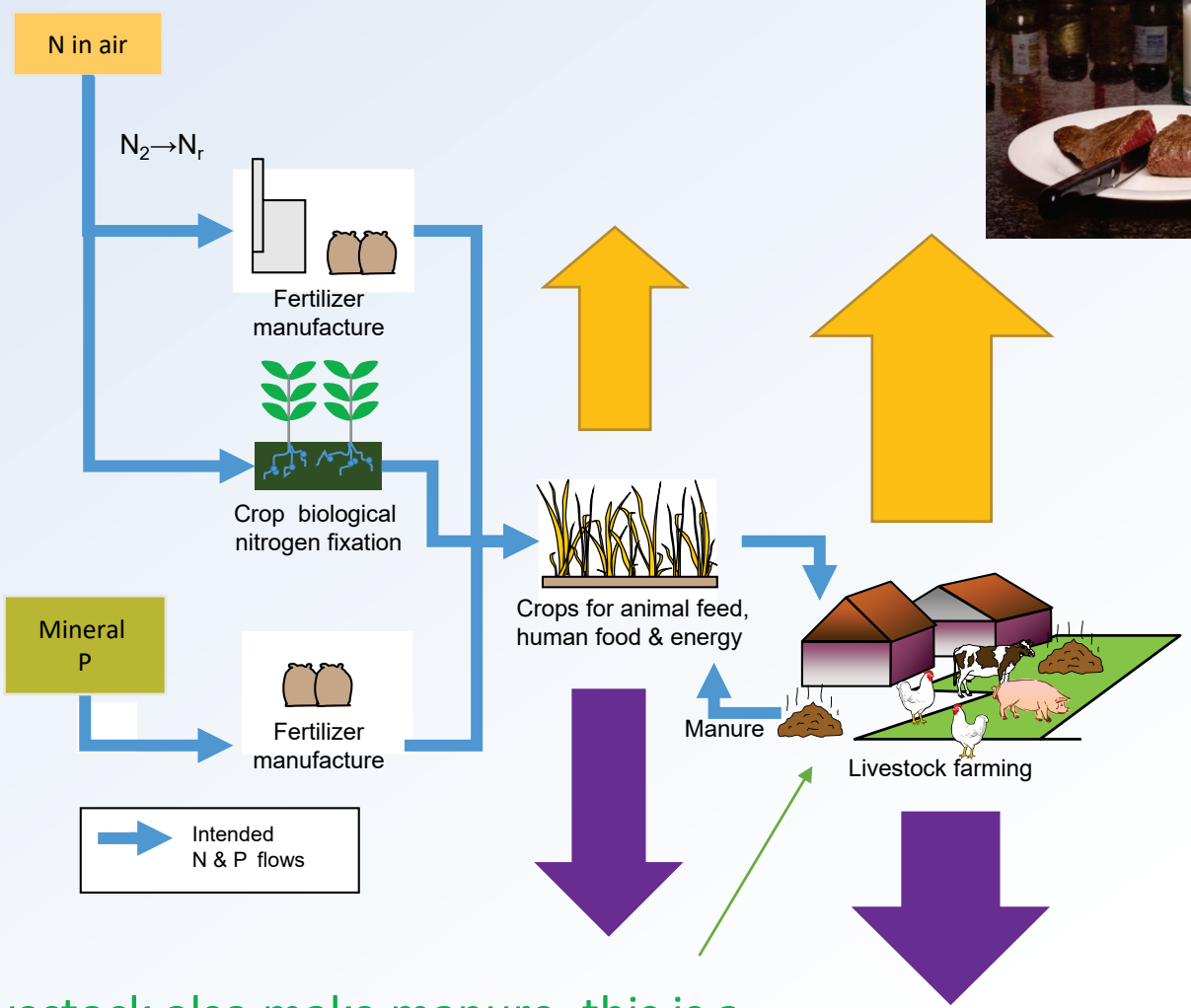
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We need N and P to feed our crops, but some N and P always escapes to air and water. When we use crops to feed our animals, even more N and P are lost. **Eating meat and animal protein puts more nutrients into ecosystems.**

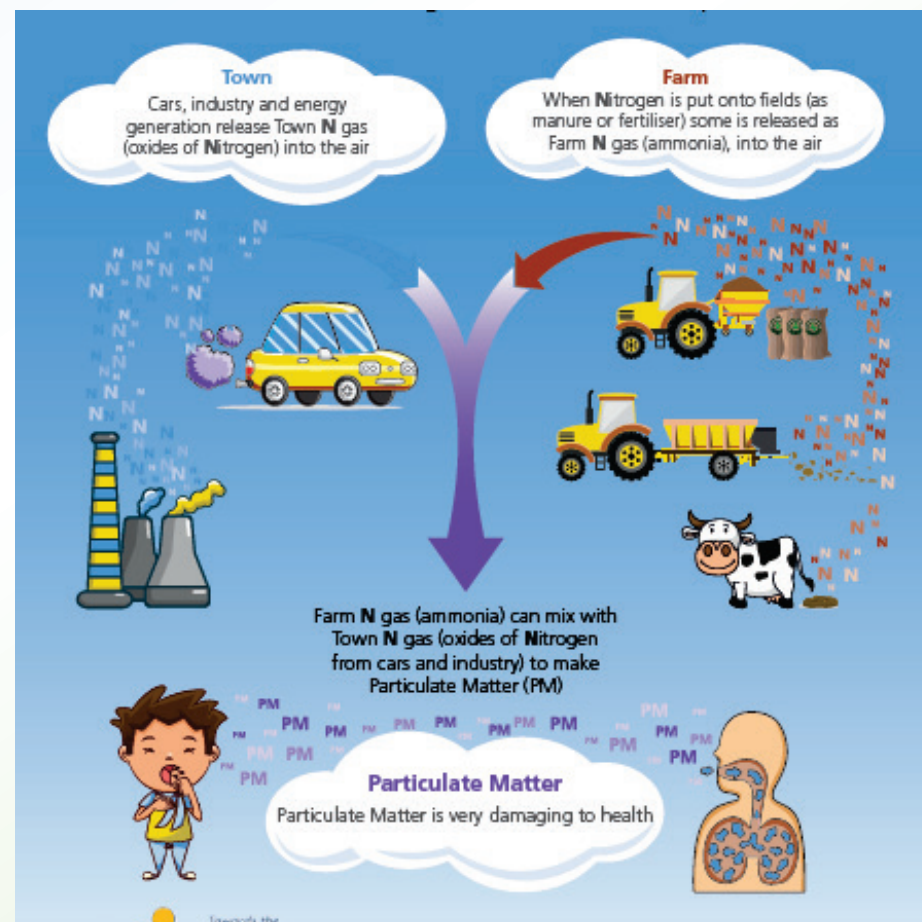
Global animal protein consumption is increasing as wealth increases.



As N and P has been invested (and released to the environment) in growing food, any **food waste** means extra pollution has been caused for no benefit.



Both agricultural and urban pollution contribute to **Particulate Matter** formation, such as PM2.5, PM10

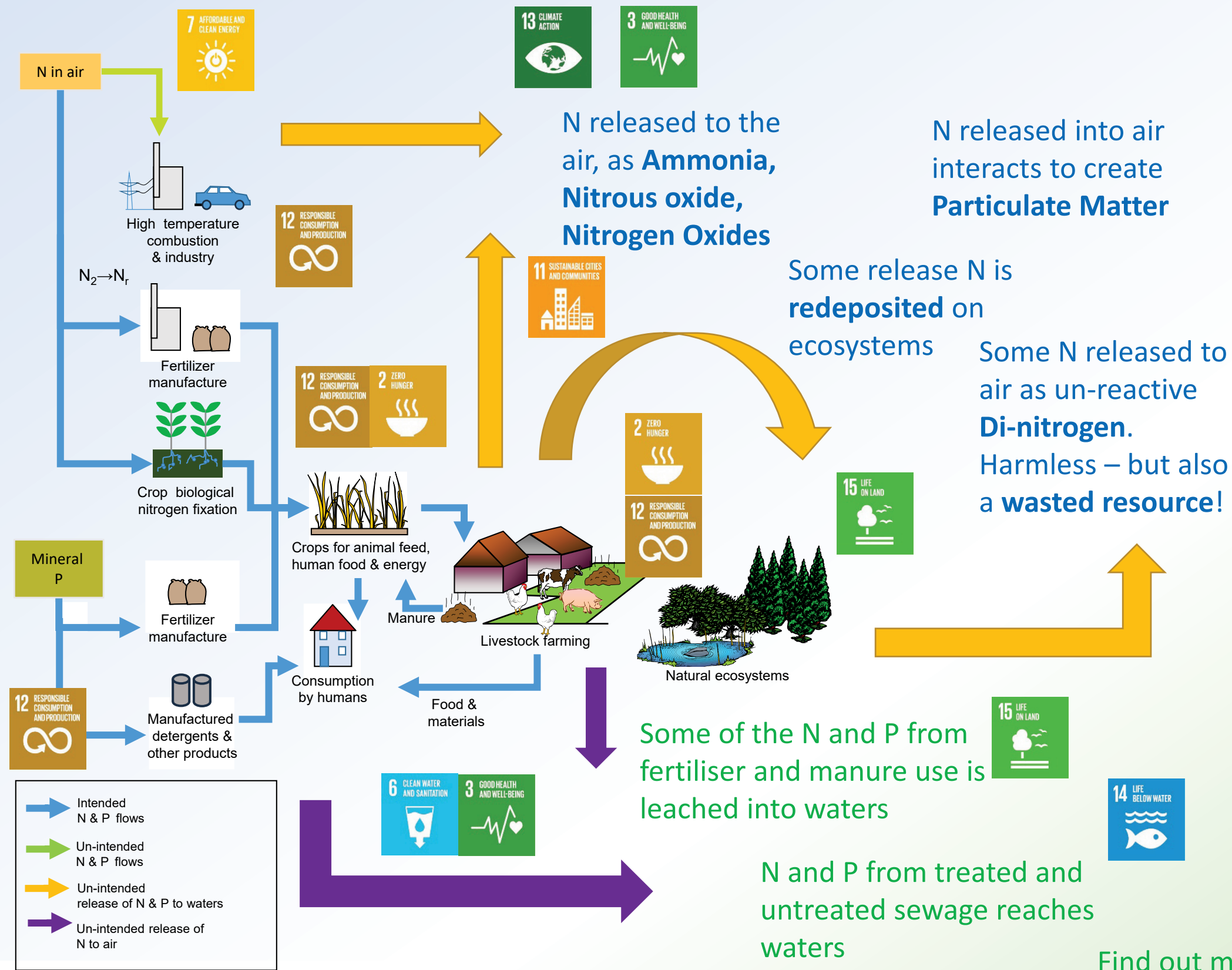


Livestock also make manure, this is a useful organic fertiliser but can lead to lots of **nutrient losses**, if not managed well!



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Addressing the Nutrient Challenge is of direct relevance to meeting several SDGs notably those related to hunger, water, responsible consumption and production, climate change, oceans and biodiversity, recognizing however the interlinkages between other goals and targets.



- SUSTAINABLE DEVELOPMENT GOAL 2**

End hunger, achieve food security and improved nutrition and promote sustainable agriculture



SUSTAINABLE DEVELOPMENT GOAL 3

Ensure healthy lives and promote well-being for all at all ages



SUSTAINABLE DEVELOPMENT GOAL 6

Ensure availability and sustainable management of water and sanitation for all



SUSTAINABLE DEVELOPMENT GOAL 7

Ensure access to affordable, reliable, sustainable and modern energy for all



SUSTAINABLE DEVELOPMENT GOAL 11

Make cities and human settlements inclusive, safe, resilient and sustainable



SUSTAINABLE DEVELOPMENT GOAL 12

Ensure sustainable consumption and production patterns



SUSTAINABLE DEVELOPMENT GOAL 13

Take urgent action to combat climate change and its impacts*



SUSTAINABLE DEVELOPMENT GOAL 14

Conserve and sustainably use the oceans, seas and marine resources for sustainable development



SUSTAINABLE DEVELOPMENT GOAL 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



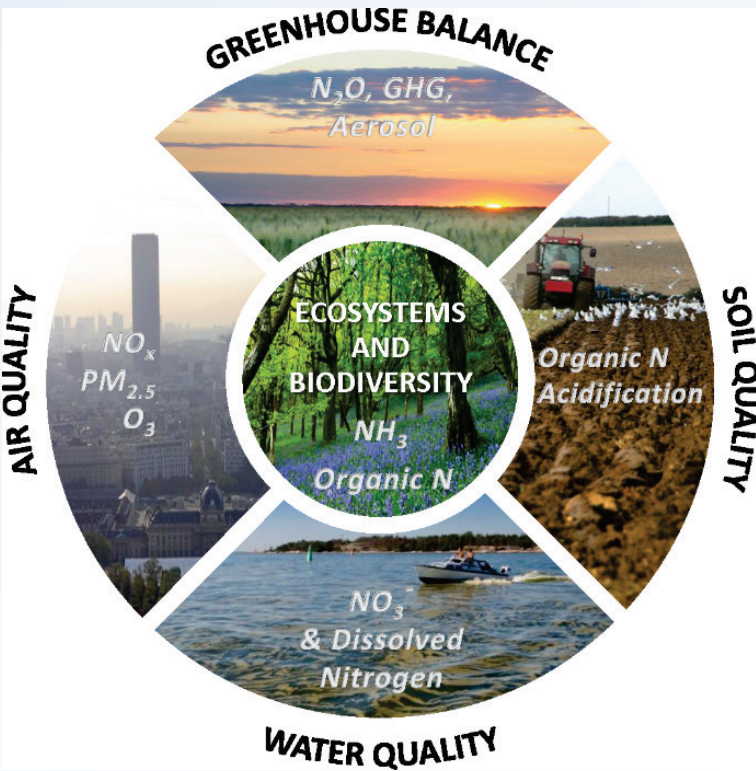
Find out more



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Water quality

Coastal and Freshwater dead zones, hypoxia, fish kills, algal blooms, contaminated aquifers and impure drinking water.



Greenhouse gas balance

N₂O Emissions, stratospheric ozone depletion, acceleration of CO₂ exchange due to atmospheric reactive N deposition.



Air quality

Increasing human morbidity and mortality by exposure to particulate matter.



Ecosystems and Biodiversity

Loss of species, land use change.

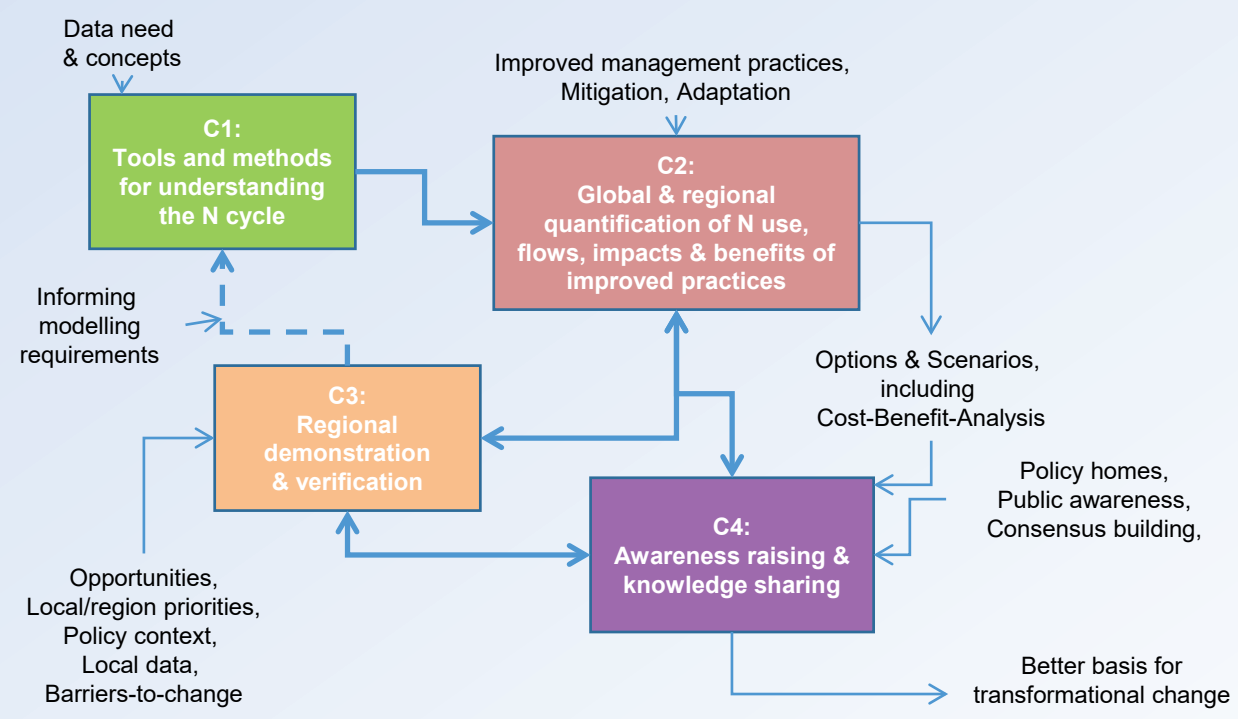


Soil Quality

Acidification of natural and agricultural soils, depletion of nutrients and organic matter, land degradation, erosion.

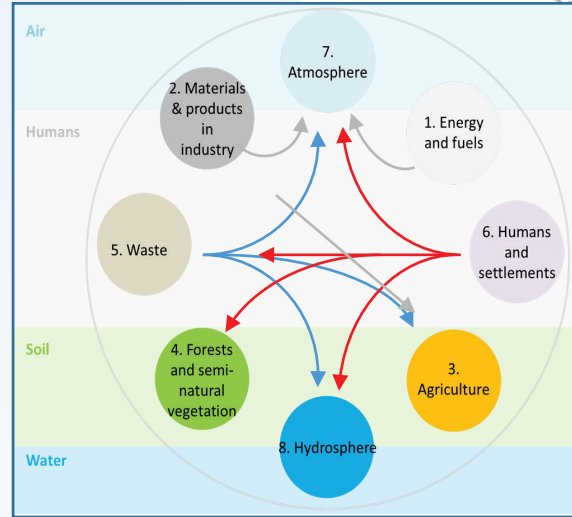
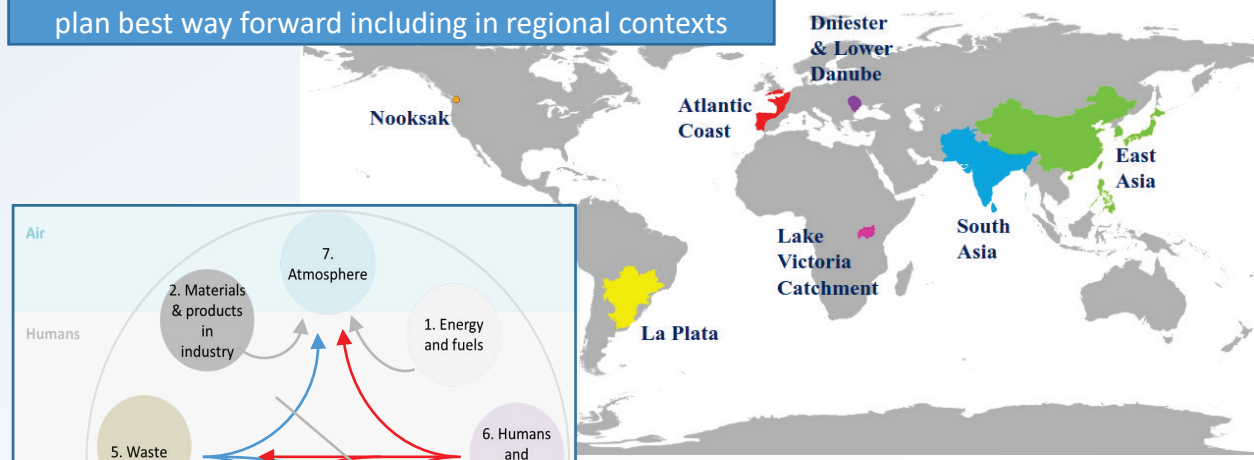


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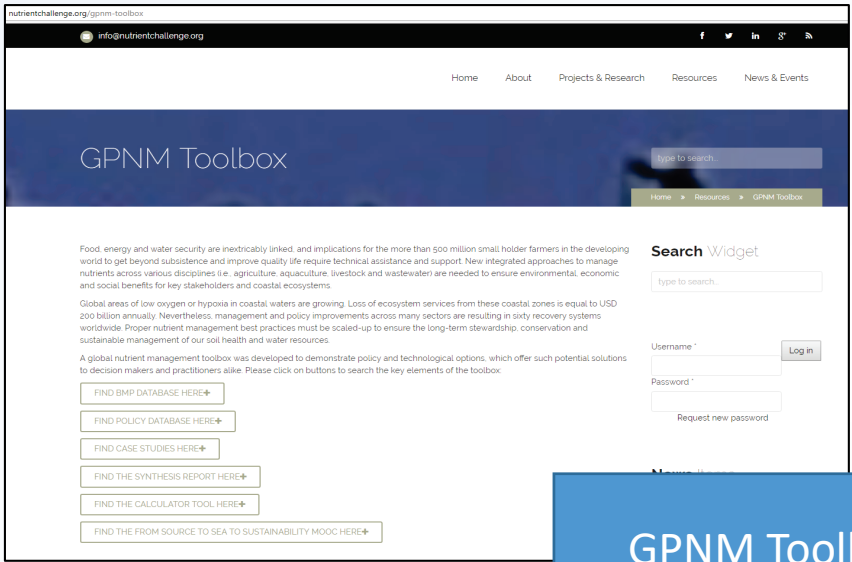
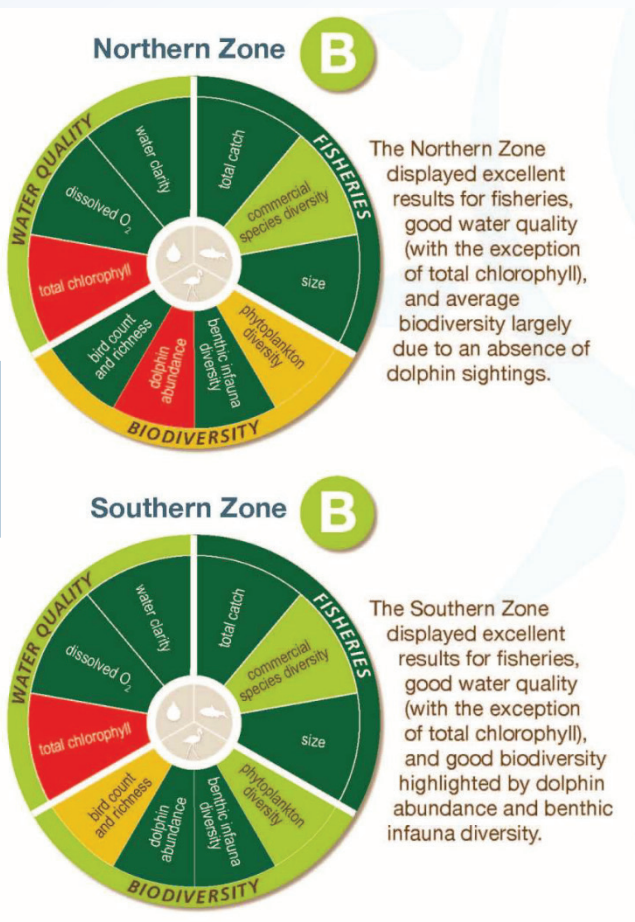
An 'International Nitrogen Management System'

Systems based approach examining issues, barriers, to plan best way forward including in regional contexts



Nitrogen budgets to inform action

Lake Chilika Report Card

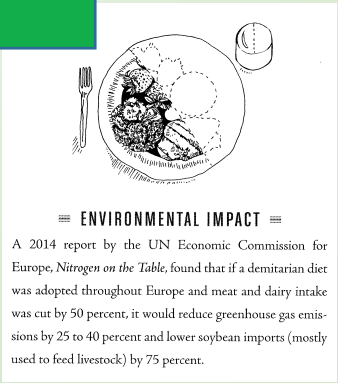


GPNM Toolbox

Food choice

DEM•I•TAR•I•AN

(*adjective*): Of or relating to a diet limiting meat consumption to half the standard portion eaten at regular meals.



Try the JRC Food Challenge!

See which dishes
have the lowest
environmental
impact!

What diet choices
can you make to
reduce your
environmental
impact?

