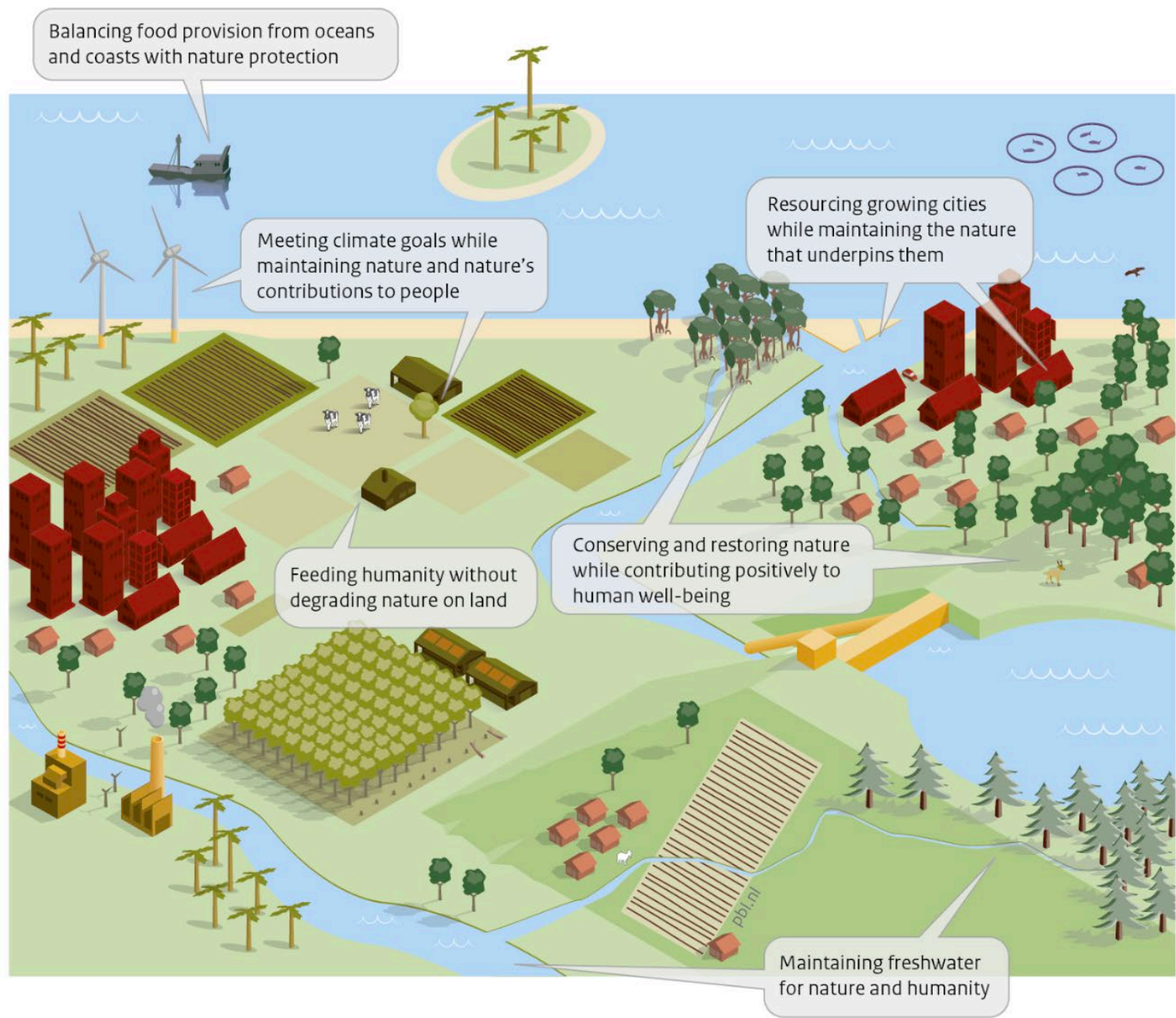


# Online conference to seek input for the scoping process of the Nexus Assessment (30 September - 2 October 2019)

## TOPIC 3 (FOOD)

Ana Paula Dutra Aguiar (SRC and INPE/CCST)

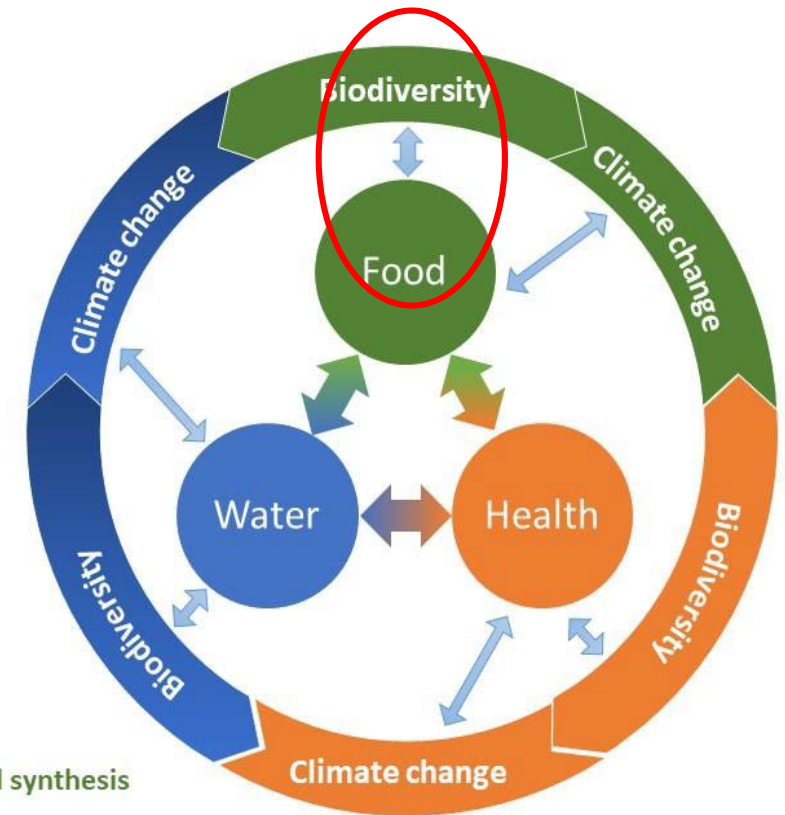


## Topics

Part I: Nexus linkages related to food production: **problems and pathways**

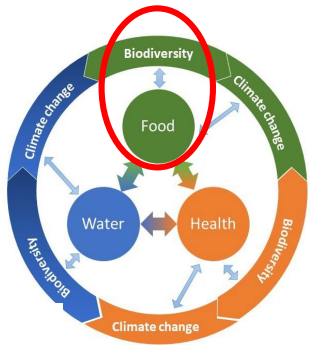
Part II - Nexus linkages related to food consumption and indirect drivers: **problems and pathways**

Part III: Synthesis and policy-relevant questions for the assessment



# Part I: Nexus linkages related to food production





## Nexus linkages: Agriculture expansion and biodiversity



### Pathway elements:

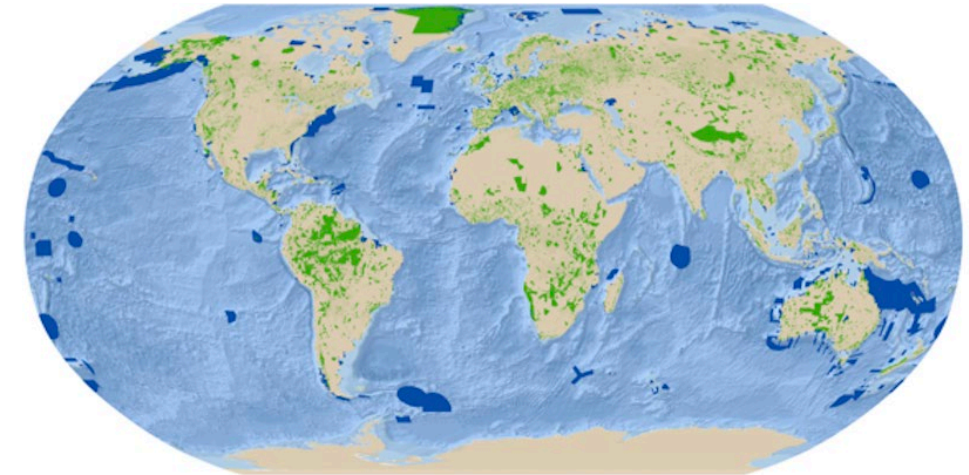
Halt deforestation

Promote restoration of degraded ecosystems

Extend and improve network of protected  
areas

Promote agriculture intensification to produce  
more food in less area

Decrease consumption and waste pressure

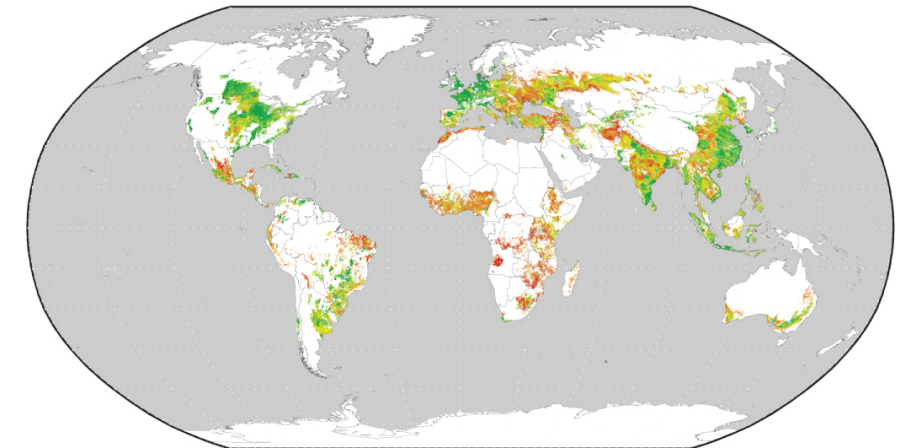


Source: IUCN and UNEP-WCMC (2016). The World Database on Protected Areas (WDPA) [On-line]. April 2016. Cambridge, UK: UNEP-WCMC. Available at [www.protectedplanet.net](http://www.protectedplanet.net)

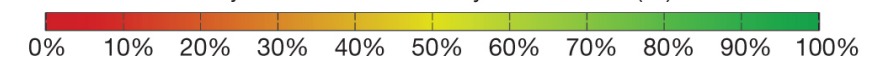


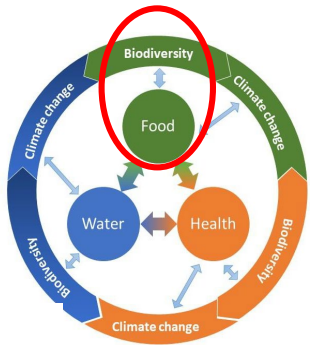
Terrestrial protected areas

Marine and coastal protected areas



Major cereals: attainable yield achieved (%)





## Nexus linkages: Agriculture expansion and biodiversity



### Pathway elements:

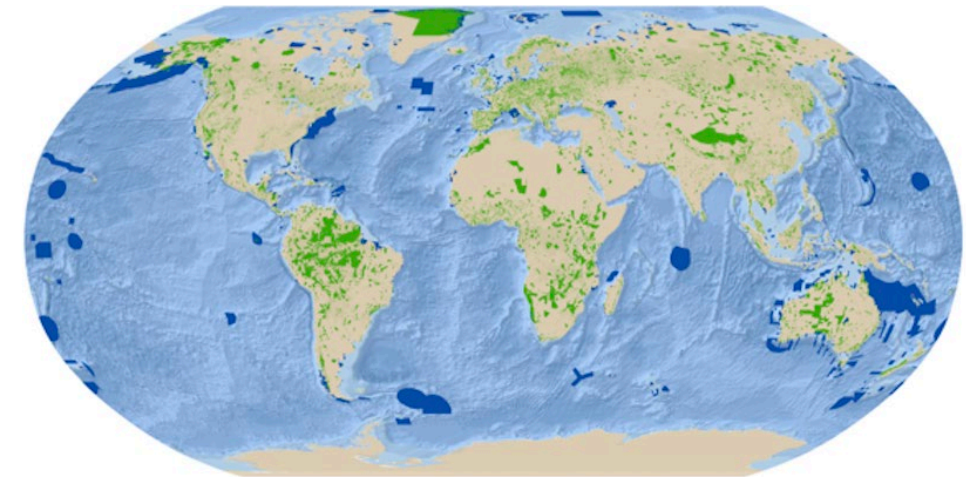
Halt deforestation

Promote restoration of degraded ecosystems

Extend and improve network of protected  
areas

Promote agriculture intensification to produce  
more food in less area

Decrease consumption and waste pressure

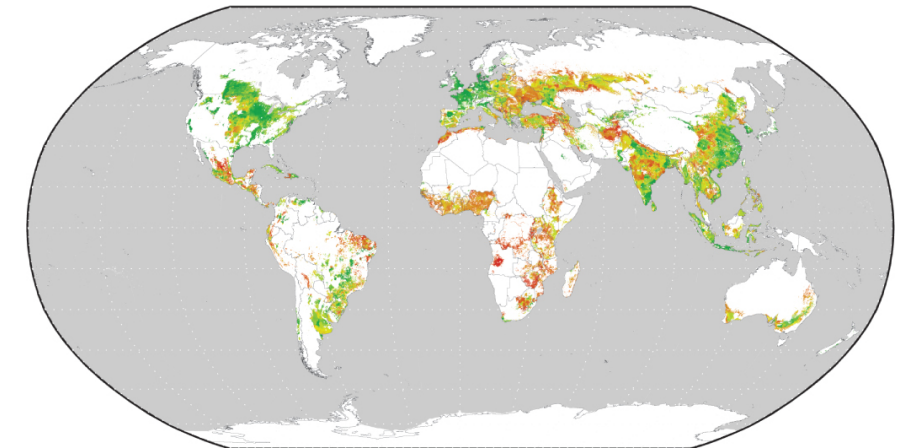


Source: IUCN and UNEP-WCMC (2016). The World Database on Protected Areas (WDPA) [On-line]. April 2016. Cambridge, UK: UNEP-WCMC. Available at [www.protectedplanet.net](http://www.protectedplanet.net)

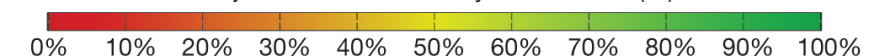


Terrestrial protected areas

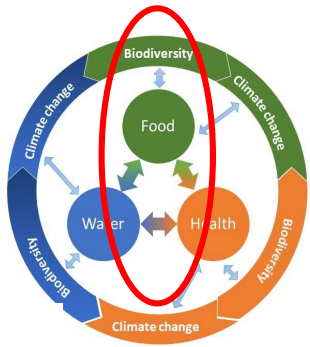
Marine and coastal protected areas



Major cereals: attainable yield achieved (%)





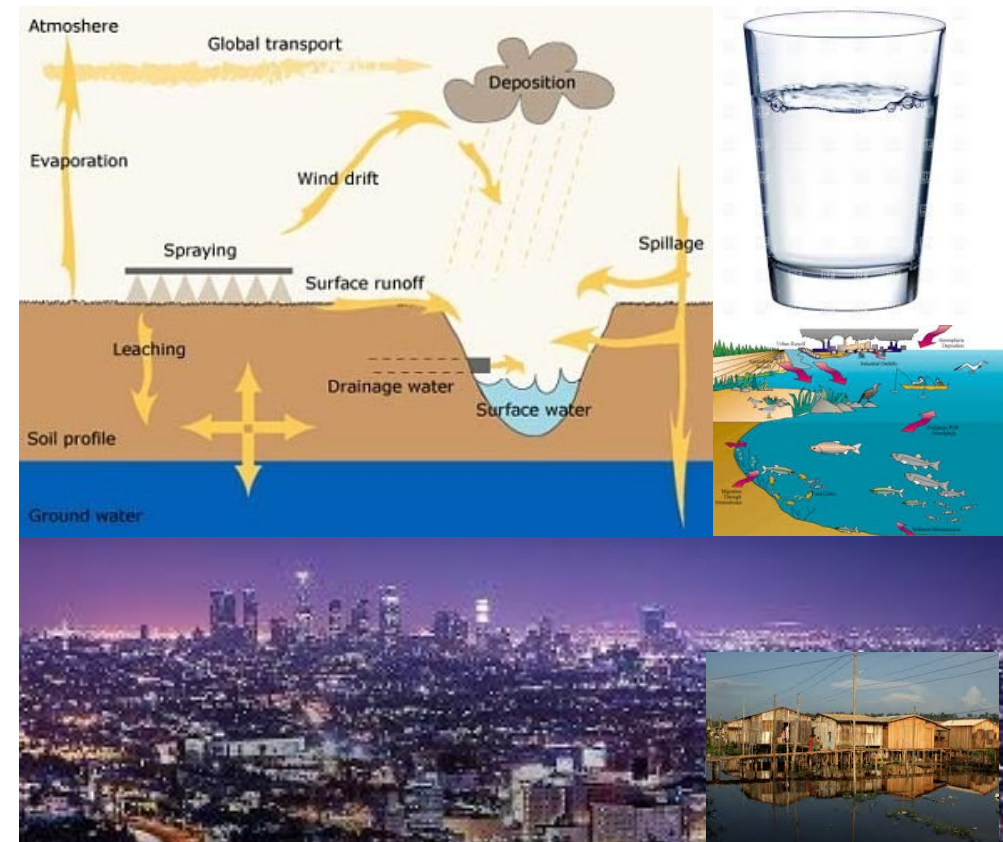
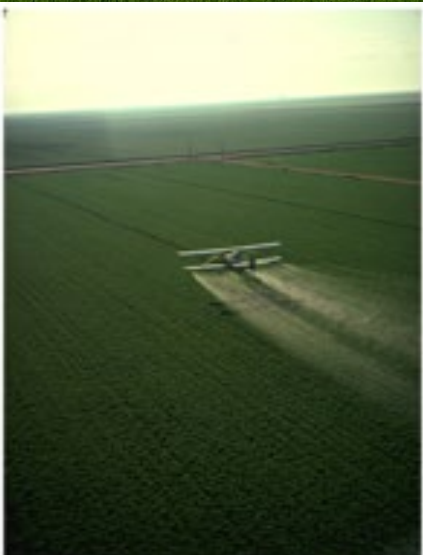


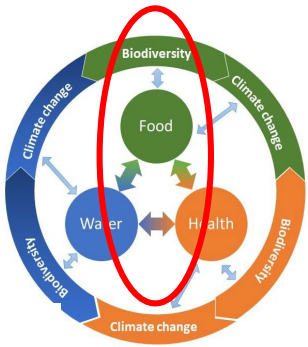
Nexus linkages:  
Agriculture  
expansion/intensification  
and biodiversity

### Pathway elements:

Halt deforestation  
Extend and improve network of protected areas  
Promote agriculture intensification to produce more food in less area  
Decrease consumption and waste  
Promote restoration

Modernize agriculture to produce without harming biodiversity, water quality and health





Nexus linkages:  
Agriculture  
expansion/intensification  
and biodiversity

### Pathway elements:

- Halt deforestation
- Extend and improve network of protected areas
- Promote agriculture intensification to produce more food in less area
- Decrease consumption and waste
- Promote restoration

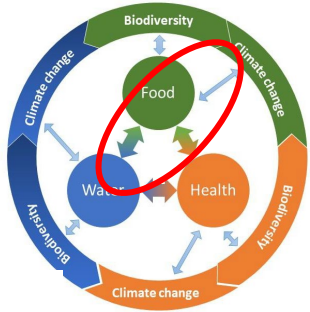
Modernize agriculture to produce without harming biodiversity, water quality and health

Integrated land and water management



Photo 1: Aerial view of Bonneville Dam on the Columbia River (USA). (Photo Larinier)





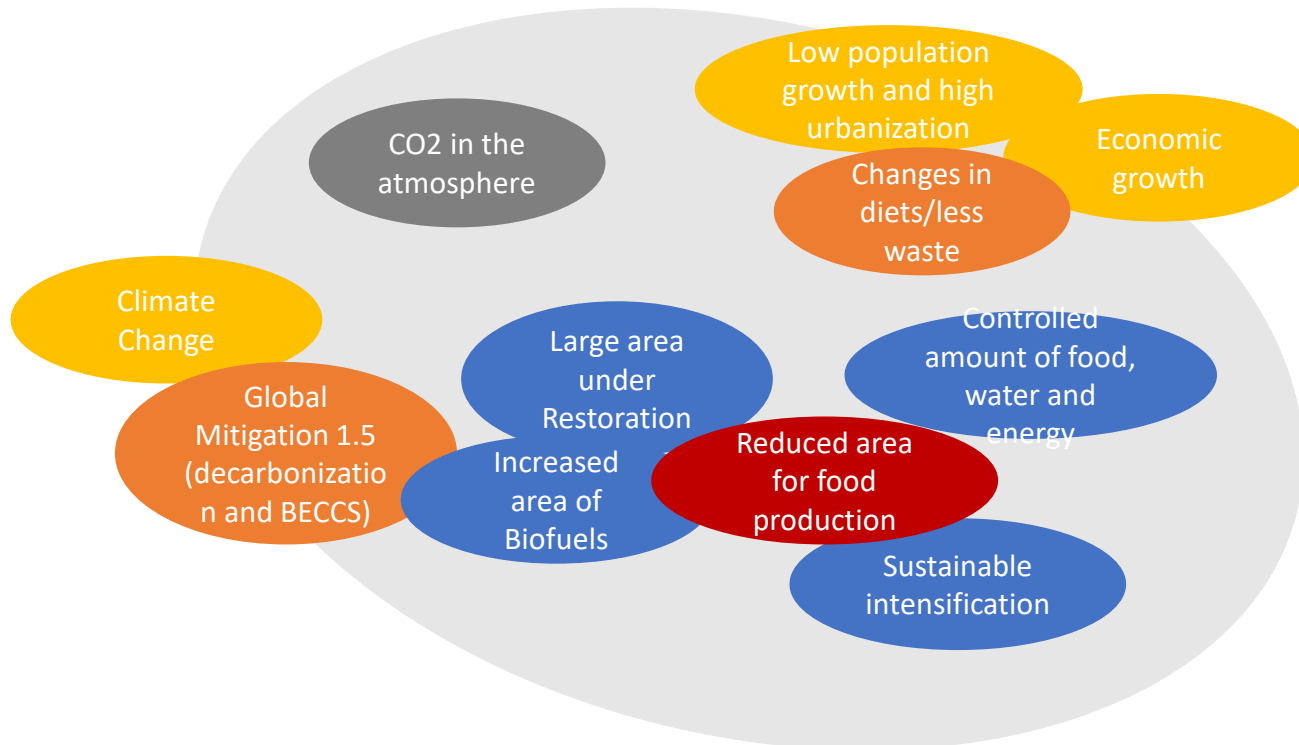
Nexus linkages: agriculture <-> climate change

CO2 emissions from agriculture and LUCC

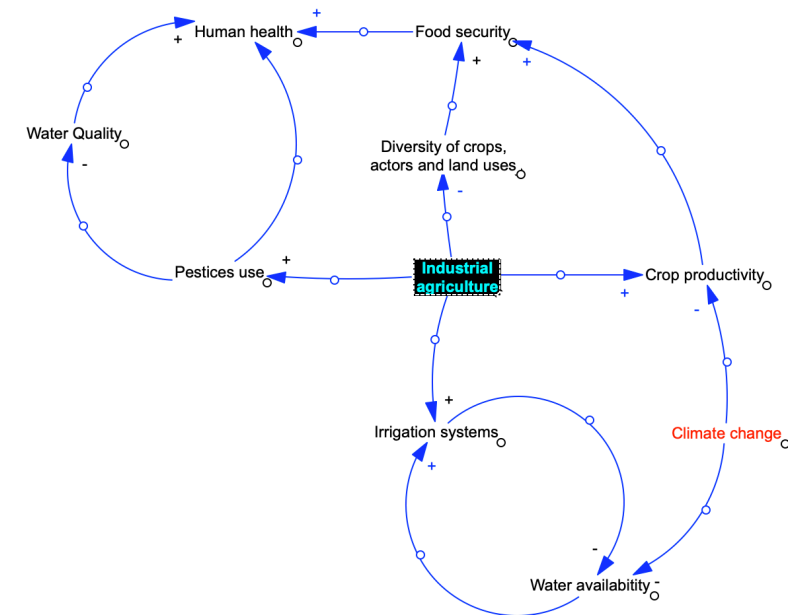


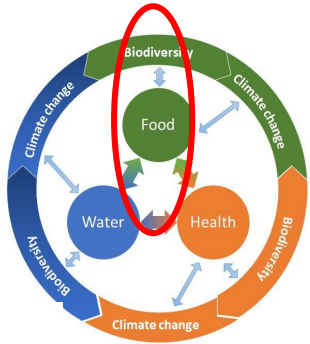
Land-based mitigation

Synthesis of SSP 1.9 scenarios



And water (irrigation and crop productivity)

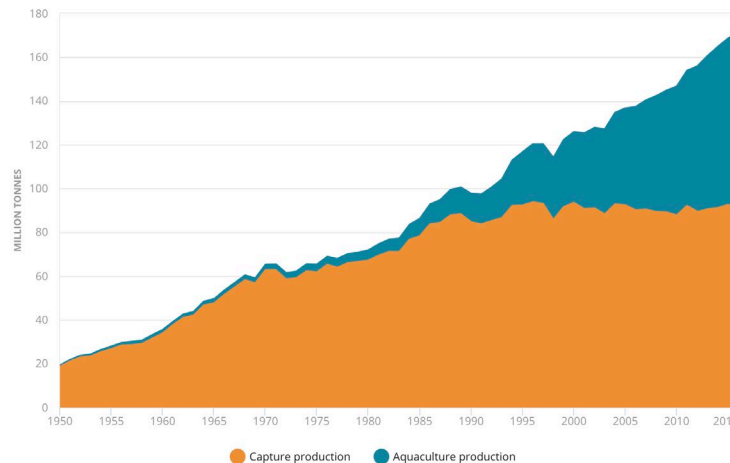




Nexus linkages: fisheries <-> biodiversity



Fish harvesting: ©FAO/Cote d'Ivoire



## Pathway elements:

Conserving and/or restoring marine ecosystems, rebuilding overfished stocks.

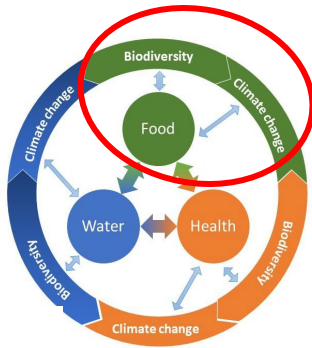
Marine protected areas and halting illegal activities.

Ecological fisheries management (short term versus long term trade-offs on livelihoods and fish stocks)

Social participation and community engagement in decision-making and implementation.

Improve aquaculture practices.

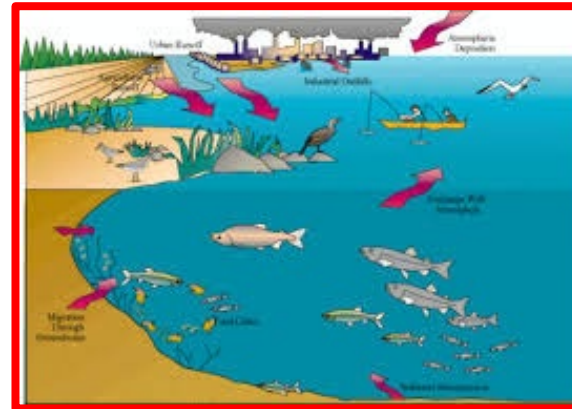




Nexus linkages: fisheries <-> climate change



Photo 1: Aerial view of Bonneville Dam on the Columbia River (USA). (Photo Larinier)



## Pathway elements:

Conserving and/or restoring marine ecosystems, rebuilding overfished stocks (short term versus long term trade-offs on livelihoods and fish stocks).

Marine protected areas and halting illegal activities.

Ecological fisheries management

Social participation and community engagement in decision-making and implementation.

Improve aquaculture practices.

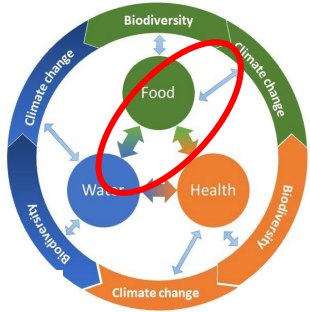
Climate change mitigation to reduce impacts.

Pollution (health impacts)

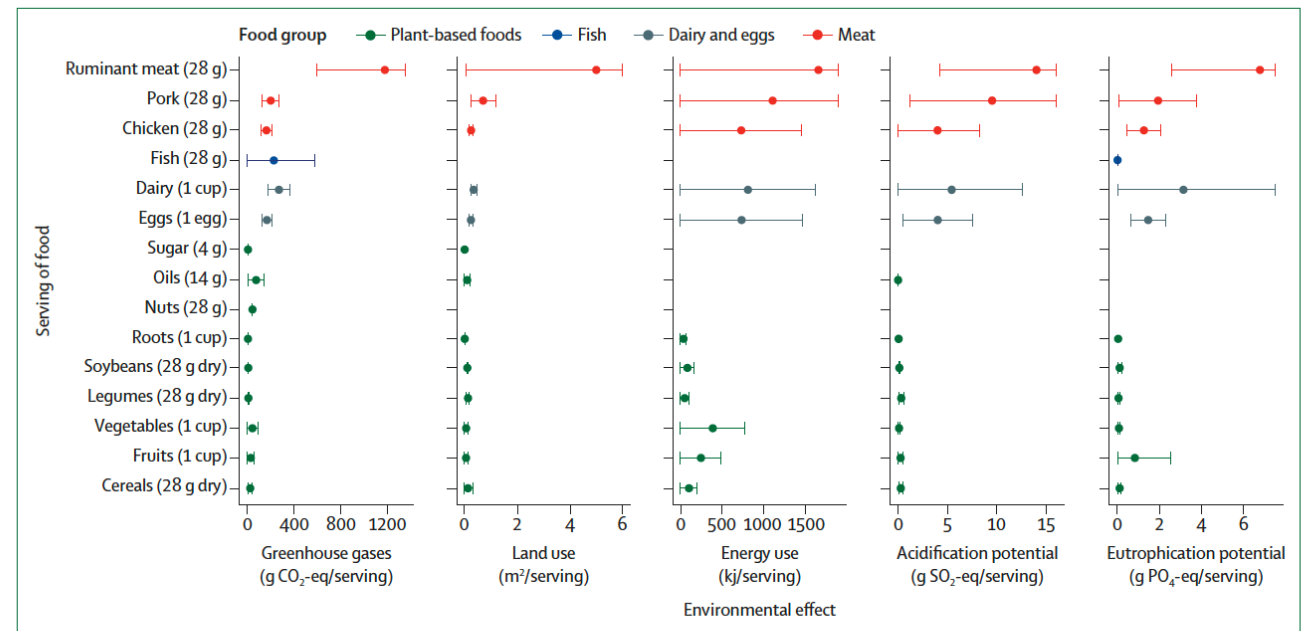
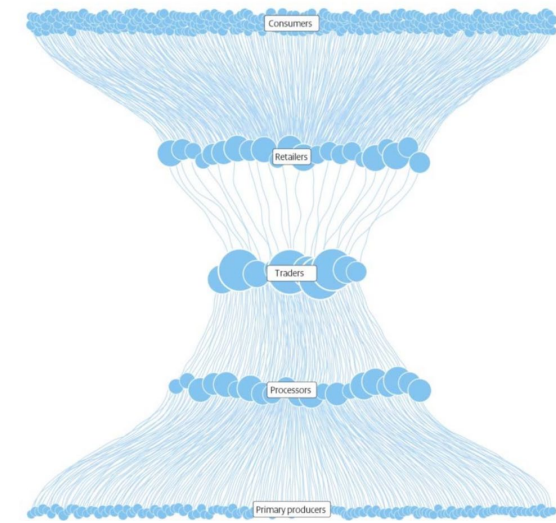
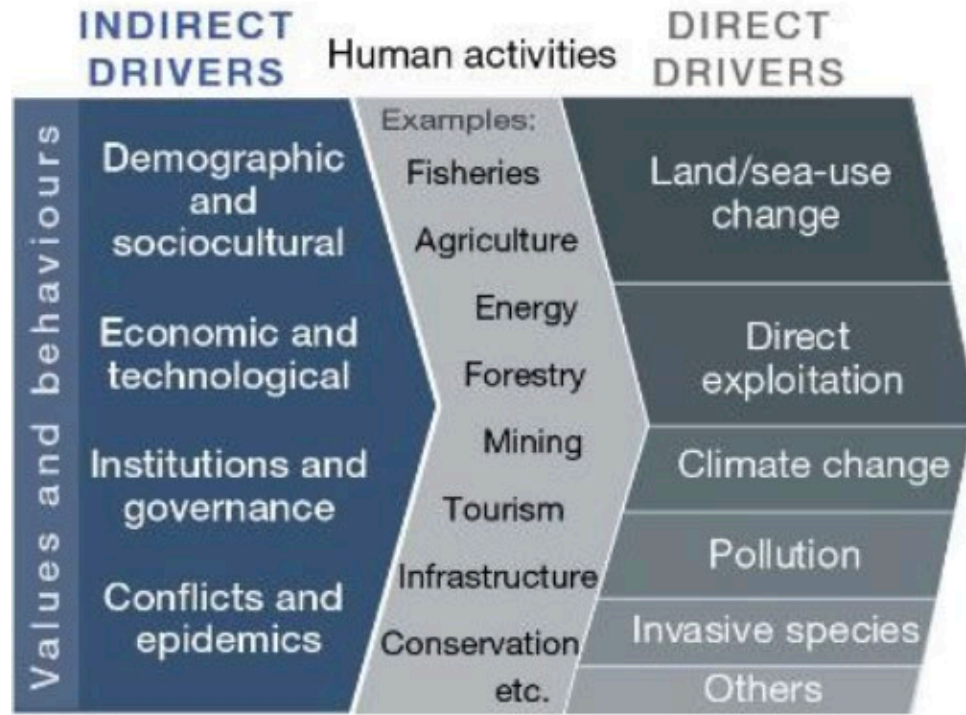




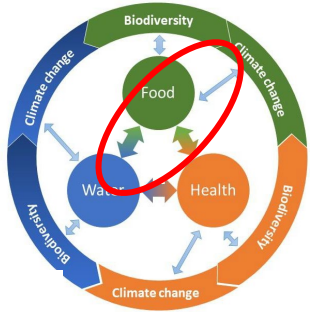
## Part II: Nexus linkages related to food consumption



**Indirect drivers** : linkages to biodiversity, health and climate change

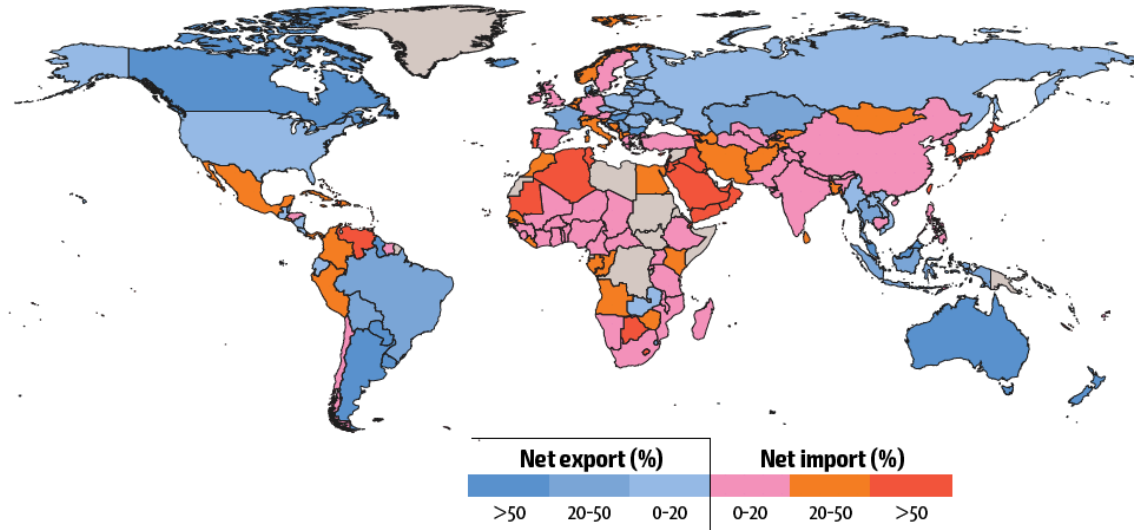


**Figure 4: Environmental effects per serving of food produced**  
 Bars are mean (SD).<sup>5,216</sup> Some results are missing for fish due to lack of data for some impact categories (eg, land use stemming from plant-based feeds in aquaculture). This was, however, accounted for in the global food systems modeling framework used in Section 3. CO<sub>2</sub>=carbon dioxide. Eq=equivalent. PO<sub>4</sub>=phosphate. SO<sub>2</sub>=sulphur dioxide.

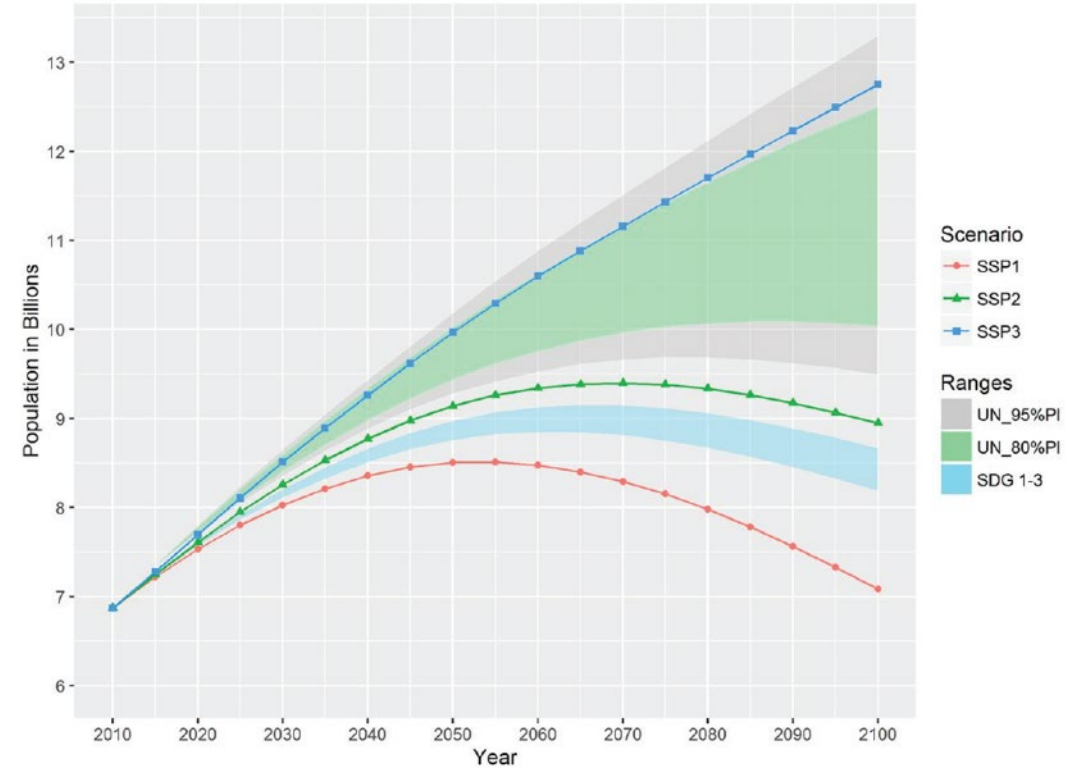


Indirect drivers to Food demand: linkages to biodiversity, health and climate change

**Figure 2.12** Percentage of net food imports in domestic food supply in total calories

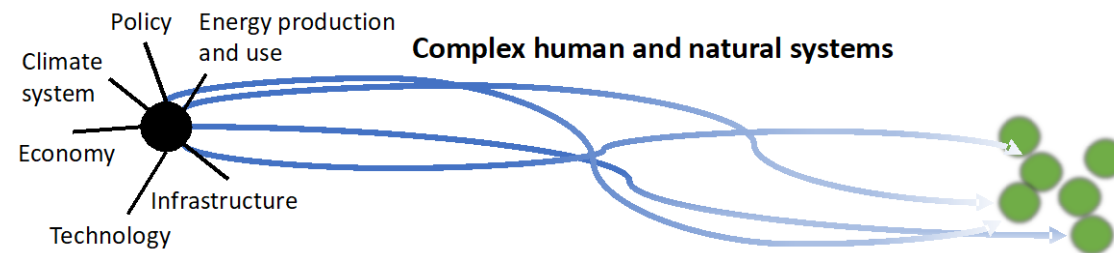


Source: FAO Global Perspectives Studies, using 2011 food balance sheets from FAO, 2016a.





# Part III: Synthesis and policy-relevant questions for the assessment



# Examples of policy-relevant questions for the assessment

Which are the options for food production in different socioeconomic and how they affect biodiversity, climate change and health? How these options affect the involved actors (farmers, fishermen, corporations)?

Which are the land-based mitigation options in different socioeconomic contexts and which are their implications for biodiversity, climate change and health? How do they compare to other mitigation options (CCS, alternative energy sources, etc)?

Which are the options for alternative diets in different socioeconomic contexts and how they affect biodiversity, climate change and health? How do the global food trade system affects biodiversity, climate change and health?

# Thank you!



Subscribe to our newsletter  
[www.stockholmresilience.org/subscribe](http://www.stockholmresilience.org/subscribe)