

The ecosystem service approach to make protection goals operational

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Robust and efficient environmental risk assessment procedures require clear protection goals specifying **what** to protect, **where** to protect it and **over what time period**.

Regulation (EC) No 1107/2009

“shall have no unacceptable effects on the environment, having particular regard to the following considerations where the scientific methods accepted by the Authority to assess such effects are available:

- (i) its fate and distribution in the environment, particularly contamination of **surface waters**, including estuarine and coastal waters, **groundwater**, **air** and **soil** taking into account **locations distant from its use** following long-range environmental transportation;*
- (ii) its impact on **non-target species**, including on the ongoing behaviour of those species;*
- (iii) its impact on **biodiversity** and the **ecosystem**.”*



Scientific Committee on Health and Environmental Risks

SCHER

Scientific Committee on Emerging and Newly Identified Health Risks

SCENIHR

Scientific Committee on Consumer Safety

SCCS

Making Risk Assessment More Relevant for Risk Management

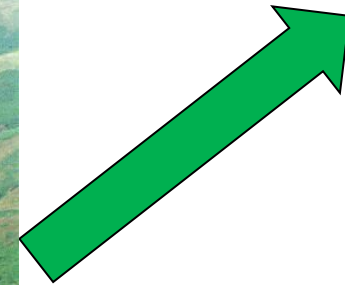
Scientific Committees adopted this opinion via written procedure in March 2013

“risk assessment should relate to the protection goals that are important for management. One aspect of this is making risk assessment relevant for socio-economic assessments. ... this means using criteria such as changes in ecosystem services.”



Provisioning

Food
Fibre
Fuel



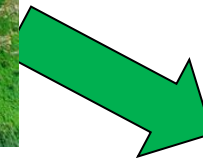
Cultural

Recreation
Heritage
Aesthetic



Regulating

Carbon sequestration
Flood attenuation
Water purification

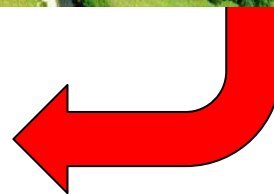
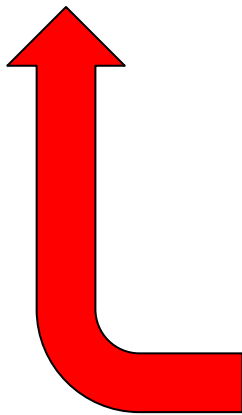


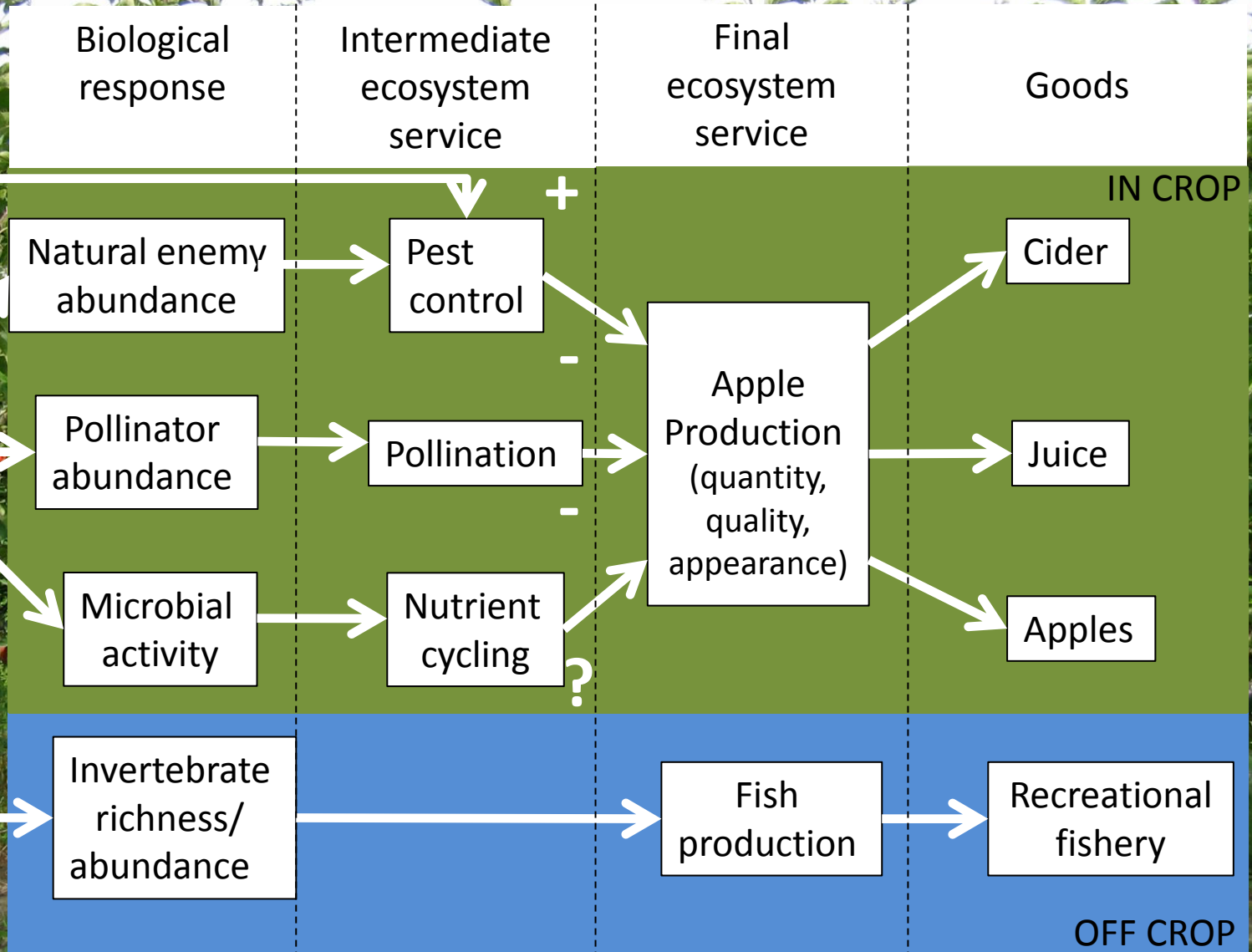
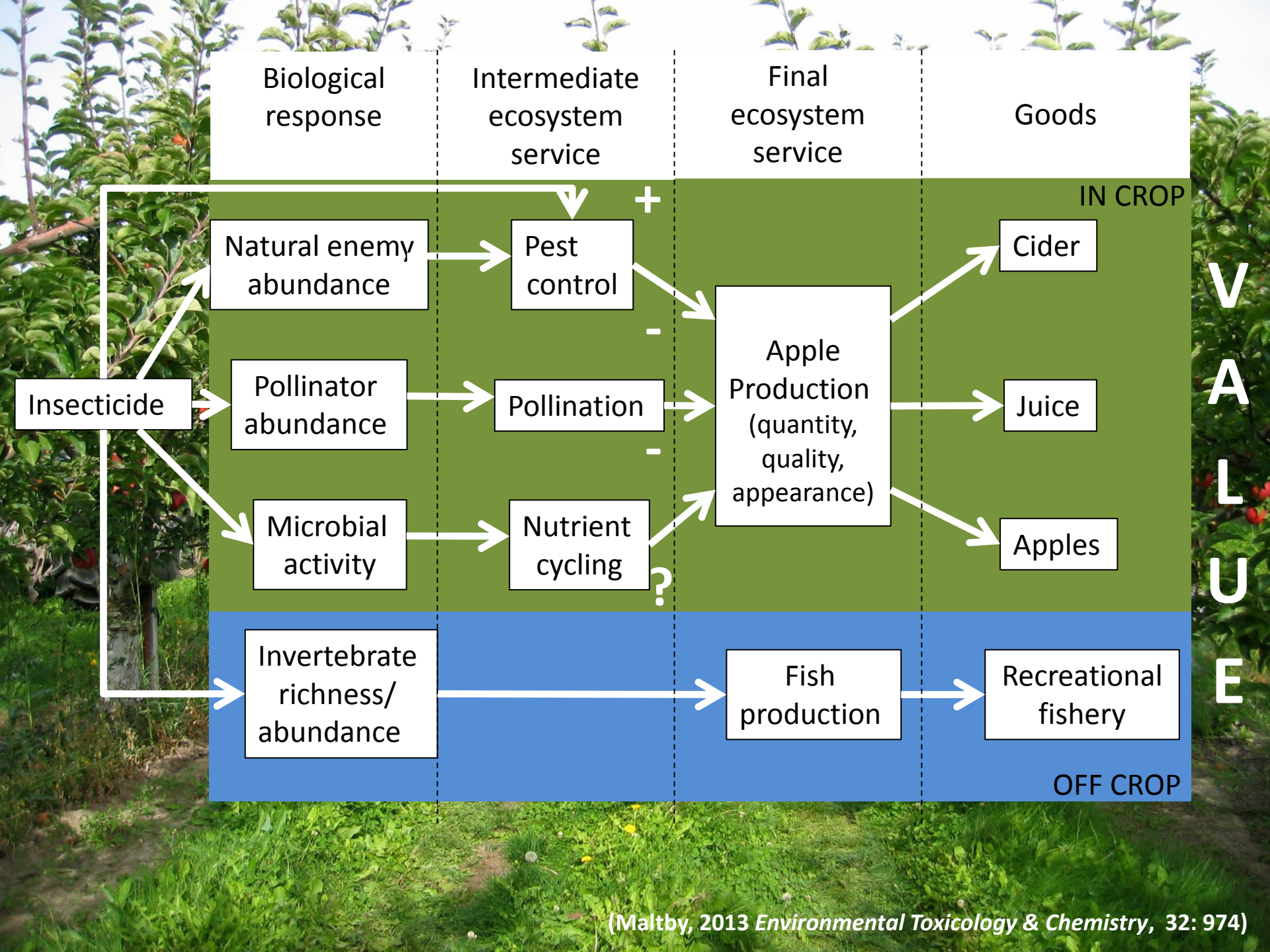
Regulating

Pollination
Pest control
Dung burial
Soil retention



Habitat loss
Nutrient runoff
Pesticide poisoning





Assessing ecological risk within an ecosystem services framework

- What portfolio of services are required from a particular landscape and by whom?
- Which ecological components provide the services demanded and how are they related to service provision?
- What is the relationship between product exposure and key service provider attributes?
- What are the interactions (synergies, trade-offs) between ecosystem services?

EFSA approach

Ecosystem services affected



Provisioning Service
FOOD PRODUCTION
Population abundance
/biomass, internal
concentration

Identify key drivers (SPU)
(i.e. taxa, functional groups)



Regulating Service
POLLINATION
Population abundance
and foraging behaviour

Specify dimensions
(Ecological entity & attribute,
impact magnitude & scale)



Cultural Service
INSPIRATION/RECREATION
Individual behaviour and
fitness

Comments

- Maintenance of a diverse range of ecosystem services in the landscape/watershed.
- Short-term effects at local scale only.
- Ecological entities to be protected are generally populations or higher.
- Protecting populations protects species.
- Approach enables a systematic and transparent assessment of all specific protection goal options.

DRAFT Guidance Document

Guidance to define protection goals for environmental risk assessment in relation to biodiversity and ecosystem services¹

Scientific Committee^{2, 3}

European Food Safety Authority (EFSA), Parma, Italy

EU Biodiversity Strategy

“Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.”

US Administration : 7 Oct 2015

Incorporating Natural Infrastructure and Ecosystem Services in Federal Decision-Making

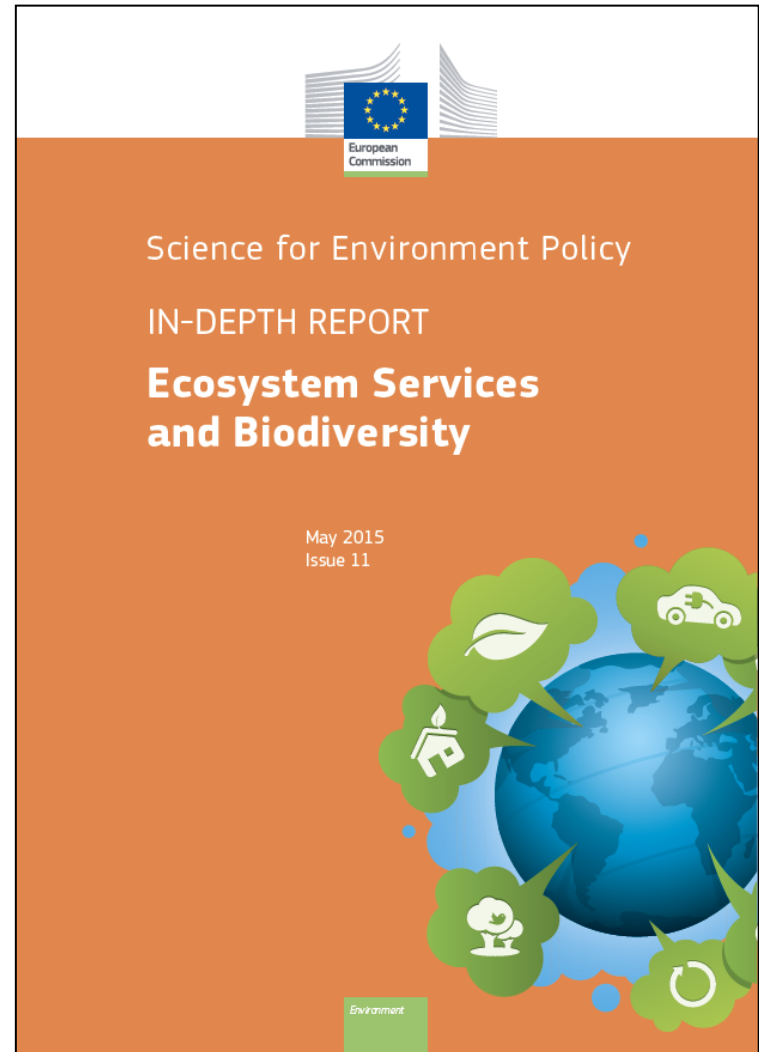
New memorandum directing Federal agencies to factor the value of ecosystem services into Federal planning and decision-making.

Biodiversity and ecosystem services

- Biodiversity of what, measured how?
 - Taxonomic diversity v functional diversity
 - Genetic diversity, species diversity (local, regional), habitat diversity
 - All taxa or specific groups.
- Equating biodiversity with ecosystem services
 - “Ecosystem services perspective”
 - Managing one will automatically enhance the other.
- Biodiversity as an ecosystem service
 - “conservation perspective”
 - Intrinsic value for biodiversity.
- Biodiversity can be a:
 - regulator of intermediate services, final ecosystem service, good

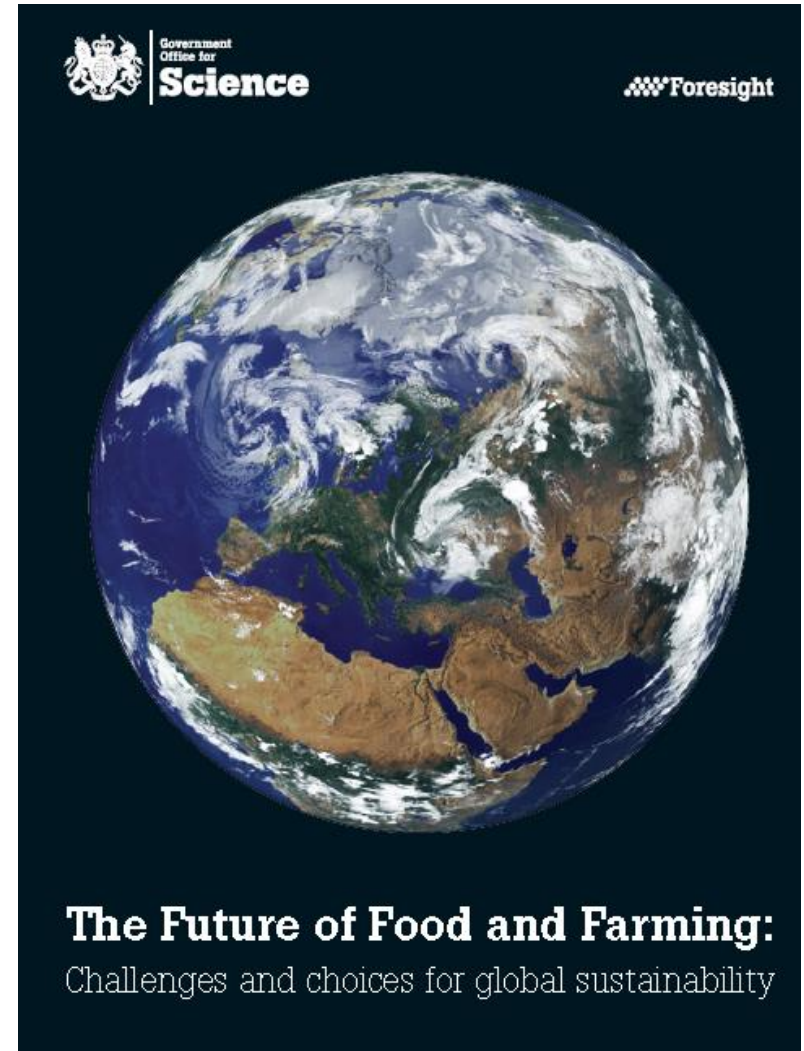
Will the use of the ecosystem services approach protect biodiversity?’

- the answer is “likely to be a qualified yes”.
- The qualifiers being that “the approach is implemented via policies based on sound evidence, and in conjunction with strategies that recognise the intrinsic value of biodiversity”.

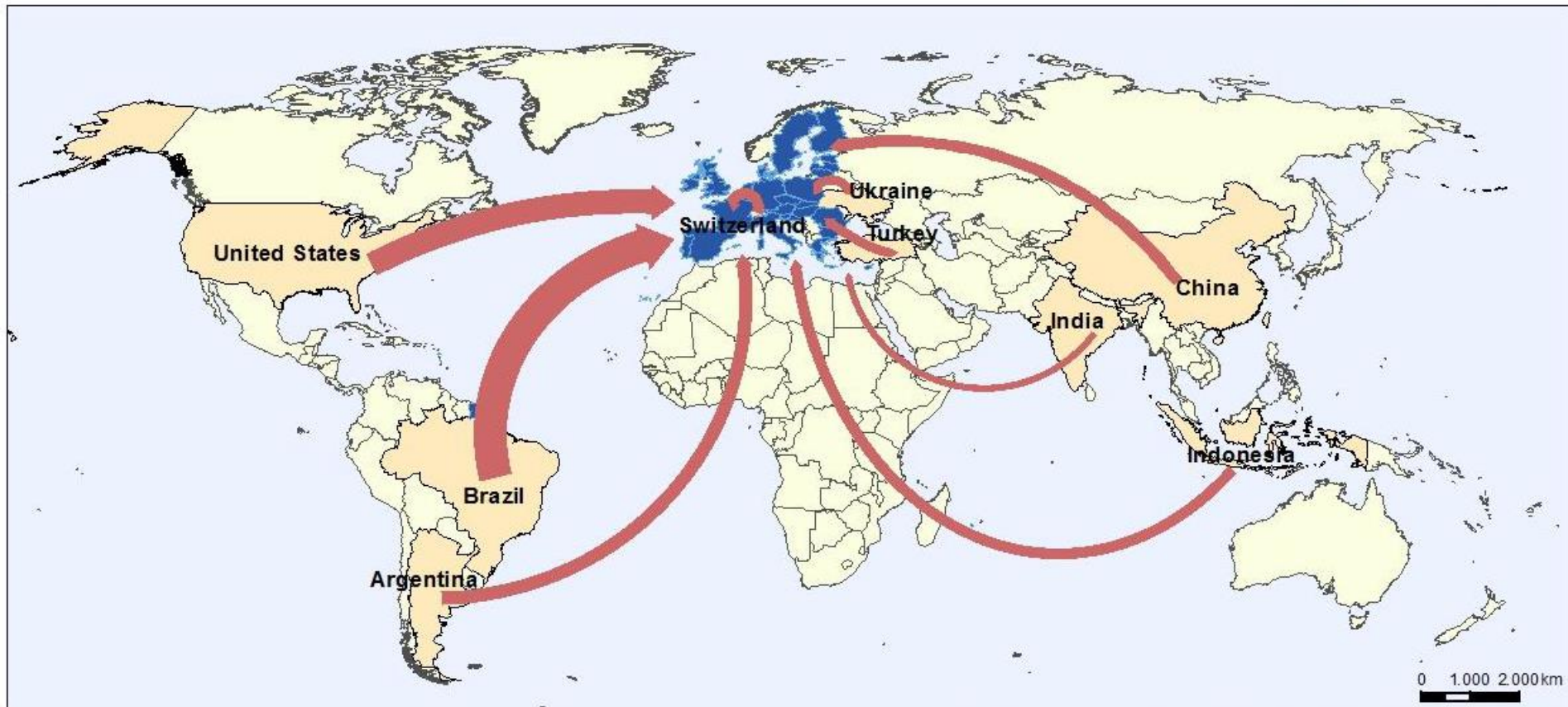


Food production and multifunctional landscapes

- Integrate food production and other services (e.g. biodiversity).
- “a sustainable food system would: not erode the natural capital of the agro-ecosystem; limit the release of substances that may compromise ecosystem services from other habitats; prevent the further loss of biodiversity.”

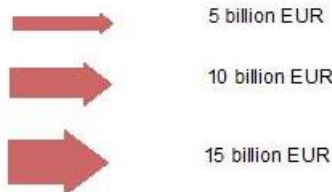


EU-28 IMPORTS OF AGRICULTURAL PRODUCTS 2013



0 1.000 2.000 km

Value of EU-28 imports from the main import partners



Source: Comext
 Cartography: DG AGRI GIS-Team 03/2014
 Map Projection World: Eckert III - Map Scale 1:160.000.000
 © EuroGeographics Association for the Administrative Boundaries
 Note : The borders of the map does not necessarily represent the official position of the EU. The map has only a statistical value.

EU28: Top Origins 2013	Value (million Euro)	Percentage
Brazil	13 315	13%
United States	9 751	10%
Argentina	5 356	5%
China	4 604	5%
Indonesia	4 419	4%
Switzerland	4 347	4%
Turkey	3 845	4%
Ukraine	3 818	4%
India	2 765	3%
Extra-EU28	101 501	
Rest of the World	49 281	

Summary

- Protections goals: what to protect, where and for how long.
- General protection goals: biodiversity
 - “everything, everywhere.”
 - No qualification of acceptable risk or effects.
- Inherent trade-off between agriculture and biodiversity
- Specific protection goals: ecosystems services
 - Makes trade-offs in multifunctional landscapes transparent
 - Provides a mechanism for protecting species diversity
 - Enables socio-economic assessments
 - Makes risk assessment more relevant for risk management
 - Provides a framework for assessing spatial disconnects and environmental consequences of global food trade.