Common International Classification of Ecosystem Services (CICES): Key issues for discussion

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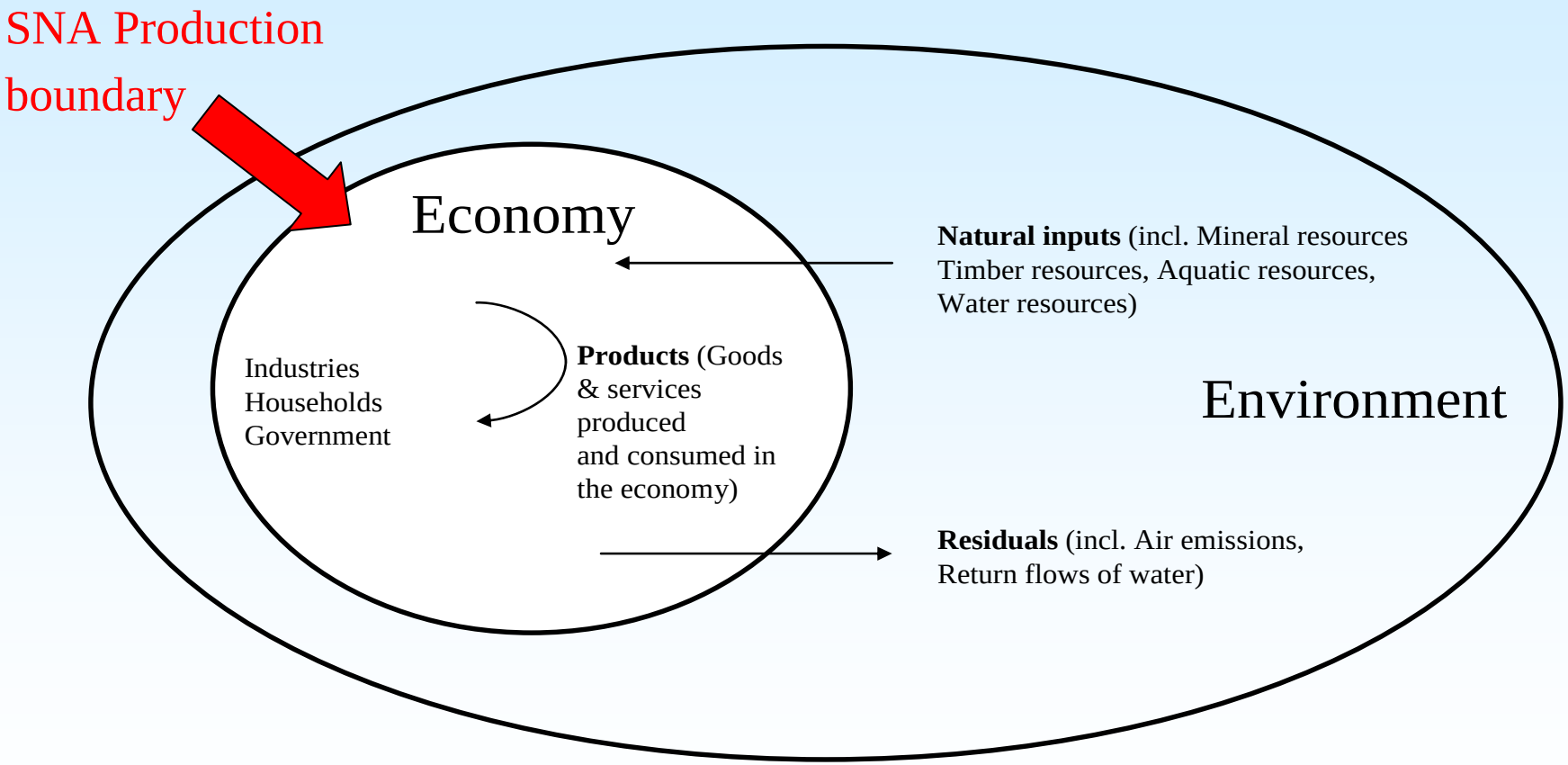
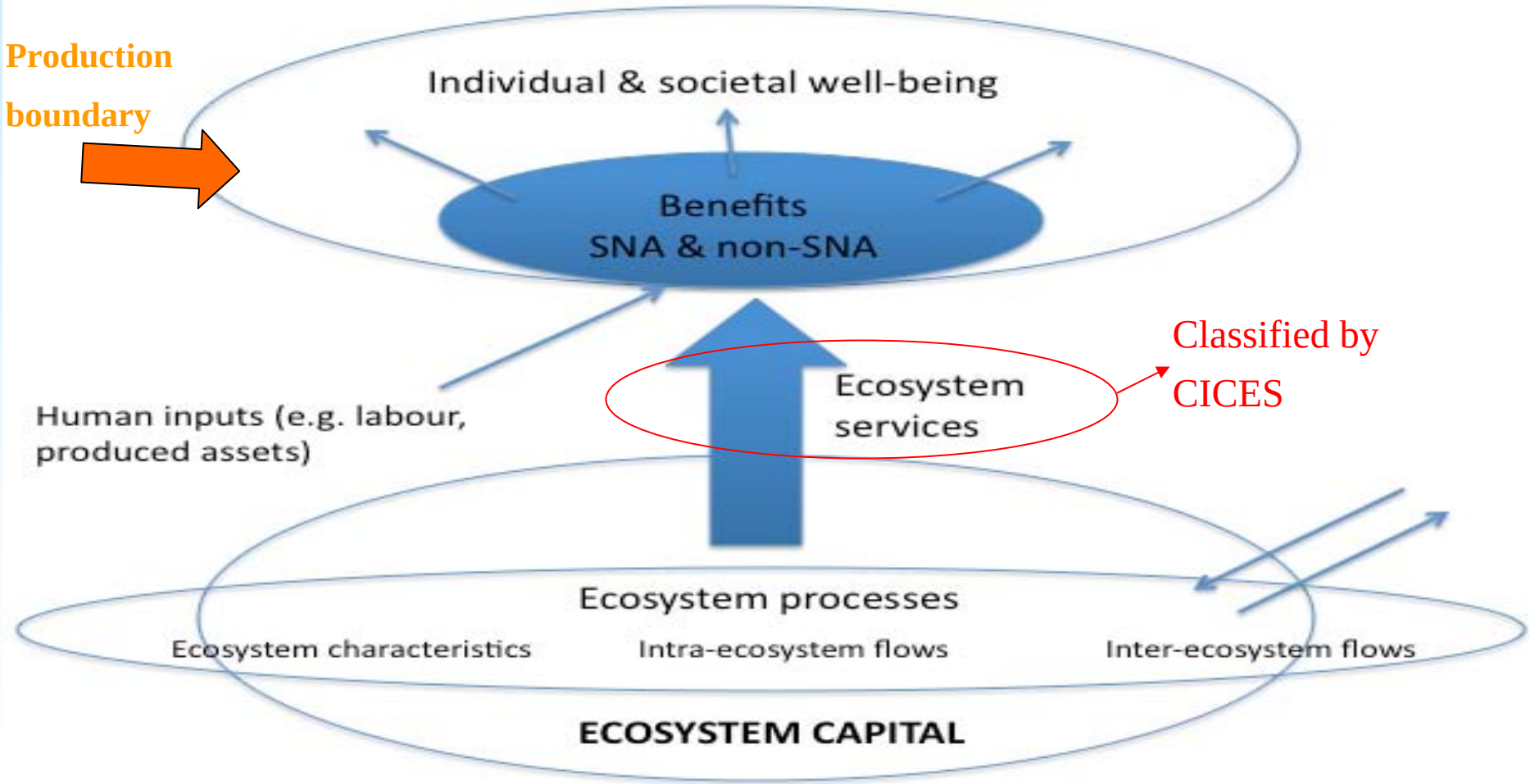
Purpose of the presentation

- Highlight several key issues in the Common International Classification of Ecosystem Services (CICES) for discussions
  - Production boundary and the treatment of cultivated biological resources in CICES
  - Treatment of abiotic services and space
    - Naming on CICES
  - Product vs functional type classification
  - Cultural services
  - Supporting services

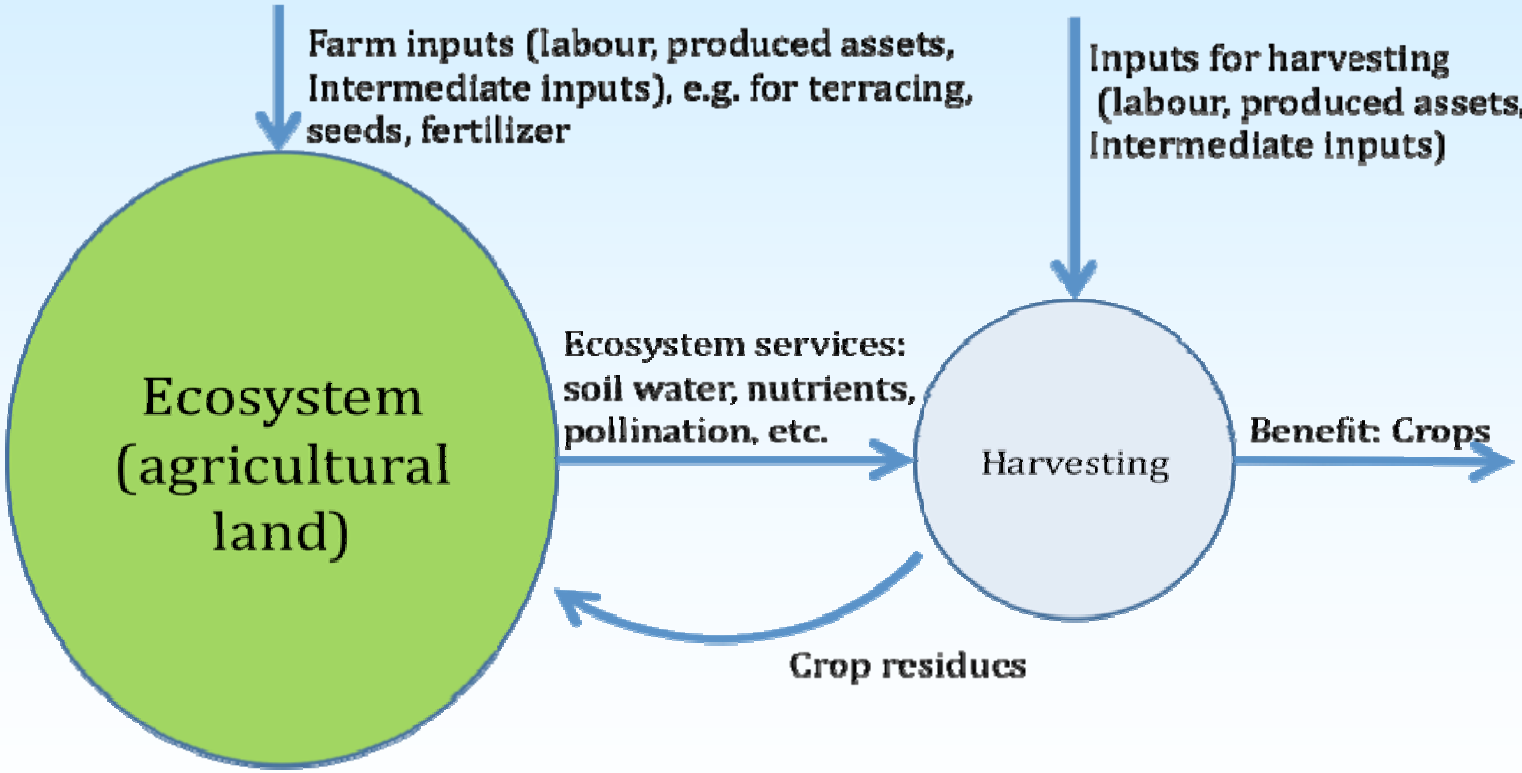
Production boundary in the SEEA Central Framework



Ecosystem services flows model



Treatment of cultivated crops



Provisioning : Case of cultivated crops in CICES

UNSD proposal - ES: Nutrients resources in the cultivated system

Group (3-digit)	*Class (4-digit)*	Description of ecosystem services	Corresponding benefits
Nutrients for cultivated biological resources	***Nutrient resources in cultivated system***	**Nutrient resources available for the uptake by crops in the crop field**	**Crops, cereals, vegetables, vines, cultivated timber, cultivated cotton, etc.**
	Fodder for livestock	Food and other natural inputs for livestock	Sheep, cattel for meat and dariy products
	Feed for aquaculture product	Food and other natural inputs for agricultural product	Fish, shrimps, cultivated watercress, cultivated algae

CICES V4.1 – ES: Cultivated crops , which is not consistent with the ecosystems flows model

Group	*Class*	Examples and indicative services, goods (products) and benefits
Terrestrial plants and animals for food	***Crops***	**Cereals, vegetables, vines etc.**
	Livestock and dairy products	Sheep, cattle for meat and dairy products
	Wild plants and animals and their products	Berries, fungi, honey, game etc.

Questions for discussion

- **Where do we draw the production boundary in CICES?**
- **How to classify ecosystem services for the cultivated crops?**
  - We are proposing the production boundary to be drawn in consistent with the SEEA Central Framework
  - In such case, the provisioning service provided by ecosystem for the cultivated system is nutrient resources available for the uptake of crops, not the cultivated crops.

Treatment of abiotic services

- Abiotic energy and materials do not come about as a result of the interaction between living and non-living organism in a human life span.
- However, it is important to include abiotic energy and material in CICES for several reasons

Argument for the inclusion of abiotic output in CICES

- CICES should be a comprehensive classification and as such it should be able to **support integrated land management decisions**
- **Assessing trade-offs** between alterative land uses
- CICES will be aligned and incorporate the **list of natural inputs in the SEEA Central Framework**
- Previous consultations on CICES have shown that a **significantly majority of respondents indicated their preference in including abiotic energy and materials in CICES** to have a comprehensive classification for evaluation of trade-offs.
- Ecosystems can provide a number of abiotic outputs (e.g. water, wind) that benefit human and it is possible that a similar classification approach can be adopted for abiotic outputs because of the practical utility purpose.

Question for discussion

- Should CICES covers abiotic ecosystem outputs?
- Our proposal
  - Recognizing abiotic flows, not calling them as ecosystem services but as other environmental services.
  - The first part of CICES cover exclusively biotic flows and the second part –"Other environmental services" would have the purpose of completing the picture thus providing a comprehensive classification.
  - Provision of space is included and treated as abiotic services

Section (1-digit)	Division(2-digit)	Group (3-digit)	Class (4-digit)
Other Environmental Services	Abiotic materials	Abiotic materials	Non-metallic mineral resources
			Metallic mineral resources
	Abiotic Energy	Abiotic non-renewable energy	Oil resources
			Natural gas resources
			Coal and peat resources
			Other abiotic non-renewable resources, n.e.c.
		Abiotic renewable energy	Solar
			Wind
			Hydro
			Wave and tidal
			Geothermal
	Space	Space	Space for human habitat and infrastructure
	Other environmental flow, n.e.c.	Other environmental flows, n.e.c.	

Question for discussion - Naming of CICES

- To balance the need
  - To maintain a tight definition of ecosystem service
  - The need of the inclusion of abiotic flows for comprehensive managerial and policy-making purpose,
- Question to discuss
  - Whether we want to rename to CICES as - Common International Classification of ***Environmental*** Services.

Product vs Functional Classification

- Product classification
  - Classification is structured according to the essential characteristic of a product
  - E.g. Central product classification (CPC)
- Functional classification
  - Classification is structured according to use, function or purpose
  - E.g Classification of the Functions of Government (COFOG)

Example – Water classified by function then by source of origin (in CICES 4.1)

Division	Group	Class	Class types
Water	**Water for human consumption**	*Drinking water*	*e.g. abstracted surface water, abstracted ground water, or via desalisation*
		Domestic water use	*e.g. abstracted surface water, abstracted ground wate, or via desalisation*
	Water for agricultural use	*Irrigation water(consumptive)*	*e.g. abstracted surface water, abstracted ground water, or via desalisation*
		Water for livestock (consumptive)	*e.g. surface water, abstracted ground water, or via desalisation*
	Water for industrial and energy uses	*Industrial water (consumptive)*	*e.g. abstracted surface water, abstracted ground water, or via desalisation*
		Industrial water (non consumptive)	*e.g. abstracted surface water, abstracted ground water, or via desalisation*

Example – Alternative way to classify water , by essential characteristics then by source of origin

Division	Group	Class	Description of ecosystem services	Corresponding benefits
Water	**Natural Water**	*Surface water (to be abstracted)*	***Water to be abstracted for the growing of crops and animals, agricultural, mining, manufacturing and household use, etc***	***Drinking water, water for crop production, livestock feed, thermoelectric power production, etc.***
		Groudwater (to be abstracted)		
		Soil water (to be abstracted)		
		Water (to be abstracted) from other sources		

	Class level, by essential characteristics (examples)	Class level, by functions (examples)
Provisioning	Genetic structure and process, Vegetal based resources, nutrients resources in a cultivated system	Domestic water use, water for livestock, etc.
Regulatory	Remediation by plants, micro-organism, animals (Bioremediation); Pollination, seed dispersal, biological control mechanism	Coastal protection (water flow regulation), erosion protection (mass flow regulation)
Cultural		Landscape for recreational; Scientific, Heritage, Educational, Existence, Bequest

Question for discussion

- Whether CICES is a product classification or functional classification
- The underlying logic and rule should be clearly stated
  - E.g. At 3-digit level, should CICES be classified according to
    - Essential characteristics
    - Source/origin
    - Function /use/purpose
    - Or other rules
  - The classification rule to separate category should be consistently applied across at the same level.

Cultural, recreational and scientific services

- Most cultural, recreational and scientific services are classified by functions in CICES. They are non-material services derived from the ecosystem.
- Question on the measurement issue. For example, how to measure “Sense of place”, “existence”
  - Number of visit to the landscape
  - Increase level of identity, creativity
  - Provision of landscape character for providing a group identity
    - The last is our recommendation, since this is the service flow provided by the ecosystem
- **Implication:** Cultural services is closely related to the provisioning of landscape and biodiversity. This should be reflected in the class title in CICES

Question on supporting services

- Supporting services are not included in CICES since they are not considered direct contributions to benefits received by society or individual
- The chained approached offer conceptual foundation for the inclusion of supporting services in CICES in the case of cultivated resources
- But some regulatory services related to uncultivated resources are supporting services.
  - E.g pollination, seed dispersal, maintenance of the soil fertility in the natural forest

Discussion questions

- How to draw the production boundary in CICES?
- How to classify the ecosystem services for the cultivated crops?
- Should CICES cover abiotic outputs (including space) taking into account of the managerial and policy making purposes
- Should the “E” in CICES stands for “environmental” rather than “ecosystem”?
- What are the criteria (e.g. by characteristics, functions) to separate category at the second, third and forth level in CICES?
- Cultural services is closely related to the provisioning of landscape and biodiversity. Should it be reflected in the class title in CICES?
- Certain regulatory services (e.g. pollination, seed dispersal in a natural forest) are not final ecosystem services. Should they be included in CICES?