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Title:

An initial set of indicators from ecosystem services accounts.

Readily available datasets from INCA ES Supply and Use tables

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Questions for the London Group

1. Do you agree with the overall framework of indicators that is here proposed? What should be modified?
2. What do you think about the set of readily available indicators calculated from INCA?
3. Which ES account-based indicators would you expect to be implemented in NSIs?

1. Introduction

From ES supply and use tables (SUT) it is possible to directly extract information that can be used to build descriptive indicators without any further processing. Extracted data can be in physical and monetary terms. If we consider ES in monetary terms, we can aggregate all ES flows using a common unit and provide relevant information about the overall flow provided by ecosystems to the socio-economic system by analysing the role played by different ecosystem types and economic units. If we consider ES in physical terms, we can go in-depth in terms of sustainability issues according to the features of different ES, and to consider additional features that can be useful from a policy perspective. Overall, there can be different types of indicators that can be extracted from SUT according to the type of information, the level of complexity, the type of use and managing needs. In this paper, we are only addressing the very first stage of descriptive analysis. Finally, one of the possible uses of indicators concerns their support to international reference frameworks. In this paper, we start exploring how INCA indicators can support Sustainable Development Goals (SGDs) and the post-2020 Biodiversity Framework.

2. Indicators from official Supply and Use Tables

At EU scale, it is possible to aggregate nine ecosystem services in monetary terms for the year 2012. From the Supply Table (Table 1), the aggregation by ecosystem type (ET) enables to rank ecosystems considering the value of services they provide.

Table 1 - Supply Table in monetary terms for the EU28, year 2012.

	Ecosystem types										
				Woodland & forest							
	Urban	Cropland	Grassland	Available for Wood Supply	Other	Wetland	Heathland and shrub	Sparsely vegetated land	Rivers and lakes	Coastal /intertidal area	Total
million Euro											
crop provision		11,407									11,407
timber provision				22,714							22,714
crop pollination		4,517									4,517
soil retention		11,512									11,512
carbon sequestration	-	-	-	9,189		-	-	-	NA	NA	9,189
flood control	89	1,015	3,129	11,388		333	357	1	NA	NA	16,312
water purification	1,105	31,041	4,128	15,374		330	312	170	3,114	NA	55,576
habitat and species maintenance*	NA	15,731	4,473	12,448		683	1,250	385	689	NA	35,660
nature-based recreation	77	4,073	7,482	30,723		2,296	3,097	1,351	1,015	279	50,393
Total value	1,272	79,296	19,212	93,862		3,643	5,016	1,907	4,818	279	217,279
Euro/km^2	6.026	49.327	37.894	64.040		37.245	27.772	32.472	44.221	14.531	49.595
% tot ecosystem types	0,6%	37,9%	9,2%	48,7%		1,7%	2,4%	0,9%	2,3%	0,1%	103,8%

* welfare value is reported for this ES

Table 1 shows that in absolute terms “Woodland and forest” is the ET providing about 49% of the total ES yearly monetary flow. It is worthwhile mentioning that the “timber provision” service is only 22% of the value of services generated by “**Woodland and forest**” and this statement endorses the important role of this ET that **goes far beyond its conventional categorization of “supplying wood”**.

In analysing data from the Supply Table, it is important to consider two elements:

- the total extent of the ET can be misleading in interpreting the importance of some ET in generating services. Let’s consider the values in relative terms (€/km^2): ETs that in Europe do not cover large extent like river and lake, sparsely vegetated land and wetlands remarkably increase their weight and importance when considered in relative terms (€/km^2) rather than in absolute terms (€);
- the importance of some ET when compared to others is based on the ES that are assessed: “Cropland” is one of the ET providing most of the ES flows (about 38%) because we assessed services such as crop provision, crop pollination, on site soil retention, water purification, where the role of cropland is absolutely leading. It is thus not surprising that its importance is so high.

From the Use Table (Table 2) the aggregation by economic units enables to rank which human activities receive most of ES flows.

Table 2 – Use Table in monetary terms for the EU28, year 2012

	Economic Units					
	Primary sector					
	Agriculture	Forestry	Secondary and Tertiary sectors	Households	Global society	**Total**
million Euro						
crop provision	11,407					11,407
timber provision		22,714				22,714
crop pollination	4,517					4,517
soil retention	11,512					11,512
carbon sequestration					9,189	9,189
flood control	799		3,786	11,726		16,312
water purification	38,615		11,307	5,653		55,576
habitat and species maintenance*					35,660	35,660
nature-based recreation				50,393		50,393
Total	66,851	22,714	15,093	67,773	44,849	217,279
% economic units	30.8%	10.5%	6.9%	31.2%	20.6%	100%

* welfare value is reported for this ES

Table 2 shows that “Agriculture” is the sector that uses about 31% of the total ES yearly provided. The same argument explained about “Cropland” also applies for “Agriculture”, i.e. the choice of ES largely determines which ET become the most important providers and which economic units become the most important users. Since we assessed services such as crop provision, crop pollination, on site soil retention, water purification, it is expected that “Cropland” provide a large flow of ES to “Agriculture”. On the other hand, we also need to acknowledge that **agriculture is one of the main activities through which the territory is actively managed and is key for the entire food system**. The choice of such ES is thus sensible and justified.

Another important economic unit that stands out is "Households" (31.2%). The ES that more than others contributes to provide "Households" such an important role is nature-based recreation. With an actual flow of € 50 blln/year, nature-based recreation records one of the highest monetary estimates wrt other ES. This outcome is not as unusual as it could appear at a first sight: nature-based recreation (as currently assed in INCA) is the opportunity hold by residents to enjoy natural attractions that are nearby. This service does not pass by the market: no transformation, no value added, no selling or trading. This service is generated by ETs and **"Households" is its final user**. In case of other services (e.g. crop and timber provision, crop pollination) the provision from ET is only the first step of a long value chain: at each step of the value chain the transformed product increases its market value. The very final user of the final product is not "Agriculture" or "Forestry" recorded in our Use Table.

Finally, there is a difference between "domestic" and "global" services: while the formers are serving economic sectors and activities that are physically located in the countries, the users of the latter are located beyond national boundaries. This is the case of overarching environmental targets such as Climate Change (addressed by carbon sequestration) and Biodiversity loss (addressed by habitat and species maintenance) whose beneficiary is the Global Society. Table 2 shows that 20.6% of yearly ES flows in EU28 is serving Global Society: this represent one reference to check over time to acknowledge whether and **how much Europe is contributing to internationally acknowledged targets**.

3. Indicators from complementary ES accounting tables

Additional useful indicators can be calculated with reference to cases where ES potential and ES demand match and to cases where ES potential and ES demand do not match. Based on the available range of ES accounts that are available, three kinds of mismatches can occur:

1. ES unmet demand;
2. ES overuse;
3. ES missed flows.

In the case of ES unmet demand, there is no possibility to provide ES because there is no presence of service providing areas for the service delivery, even if demand for those services is there. This is the case of source-suitability (e.g. crop pollination), buffer (e.g. flood control) and cultural (e.g. nature base recreation) services (ref. section 3 of La Notte et al., 2019).

Table 3 – The issue of sustainability: ES unmet demand

	ES Demand covered by ES Potential			ES Demand uncovered by ES Potential		
	2000	2006	2012	2000	2006	2012
flood control (km^2 area)		41,880	41,696		95,169	95,111
soil retention (mlln tonne/year)	7,246	7,281	7,270	798	765	771
pollination (km^2 area)	71,695	80,796	78,512	81,447	81,230	83,514
nature-based recreation (1,000 nbr inhabitants)	232,926		284,581	209,565		172,578

Ideally, the ES Demand covered by ES Potential and the ES Demand uncovered by ES Potential should have opposite signs: the higher the match between ES Potential and ES Demand, the lower their mismatch. Table 3 confirms this trend for soil retention, but not for pollination. In the case of crop pollination, a higher covered area is explained by **an increase in ES demand that is not counterbalanced by an adequate increase in the ES potential**. In fact, when looking at changes over a long period (2000-2012) we record an increase of 9.5% in pollination actual flow, but also an increase in the pollination unmet demand (+2.5%). In the case of nature-based recreation: on the one hand we record a +22% change (considering 2000-2012) in the population "covered" by nature-based recreation opportunity, on the other hand a -17% change in the population "uncovered" by nature-based recreation opportunity. This implies that changes occurring on the ES demand side may partly but not fully covered by changes in ES potential: **ES demand grows more than ES potential**, (therefore the ES unmet demand remains). A similar trend applies to flood control: on the one hand we record a -0.44% change (between 2006-2012) in the area "protected" from the risk of flooding, on the other hand a -0.06% change in the areas "unprotected" by the risk of flooding. In this case, the slight decrease (considering we are considering only 6 years) in the match and the almost no change in the mismatch suggests that modifications mainly occurred on the ES demand side: more areas that need protection are not counterweighed by more areas that provide protection.

For those ES where the actual flow can exceed regeneration and absorption rates, ES overuse can take place: this is the case of resource extraction (e.g. timber provision) or pollution emissions (e.g. water purification). Table 4 reports the example of water purification.

Table 4 – The issue of sustainability: ES overuse

	ES current use		ES use ≤ sustainability threshold	
	2006	2012	2006	2012
water purification inland water (tonne N/year)	239,378	215,900	135,293	124,357

We considered the sustainability threshold of 1 mg/l, that in the literature (Camargo and Alonso, 2006) is commonly reported with reference to the eutrophication issue. Table 7.4 clearly shows that a decrease (-9.8%) in the actual flow (less nitrogen input requires less nitrogen removal) corresponds to a decrease in water purification overuse (-8.1%).

Finally, there are ES which refer to overarching environmental issues such as Climate Change and Biodiversity Loss. In this case, users of those ES are not only the people living in once place during one year, but rather in present and future society in a global perspective. What can be measured and reported in these cases are the two sides of the total ES potential flow: the part that is provided (i.e. the actual flow) and the part that is missed.

Table 5 – The issue of sustainability: ES missed flows

	ES reaching Global Society		ES missed by Global Society	
	2000	2012	2000	2012
carbon sequestration (mlln tonne/year)	291,554	306,308	180,678	173,770
habitat and species maintenance (mlln €/year)	34,574	35,660	56,857	60,485

Table 5 shows for carbon sequestration (that address the issue of Climate Change mitigation) the expected trend of an increase in the ES actual flow (+5.1%) and a decrease in ES missed flow (-3.2%). However, trends work differently for habitat and species maintenance (that address the issue of Biodiversity loss): although we record an increase in the ES actual flow (+3.1%) we also record an even higher increase in the ES missed flow (+6.4%). This is explained by the increase in one of the variables (i.e. population) that has no impact on the ecological side. Both indications are useful for the policy maker: one the hand it is possible to keep track of changes over time, on the other hand it's possible to measure the gap wrt what could actually be achievable but is not achieved.

To deal with the issue of food system resilience, the ecosystem contribution to agricultural production can be an interesting indicator to be monitored. Table 6 shows the difference of European countries wrt EU average of ecosystem contribution ratio in crop provision. Only those countries where the difference is < -0.05 and > +0.05 are reported.

Table 6 – Ecosystem contribution ratio in crop provision: difference with the EU average, year 2012.

	High ecosystem contribution		Medium ecosystem contribution		Low ecosystem contribution	
	oilseed crops	fodder crops	cereal crops	pulses	tuber crops	sugar crops
Belgium	0,11	0,01	0,06	0,11	-0,03	0,01
Denmark	0,09	0,06	0,02	0,09	-0,06	0,06
Estonia	0,04	-0,07	0,00	0,04	0,00	-0,07
Greece	0,03	0,01	0,06	0,03	0,01	0,01
France	0,01	-0,06	0,03	0,01	-0,02	-0,06
Hungary	-0,09	-0,04	-0,08	-0,09	-0,04	-0,04
Ireland	0,08	0,05	0,06	0,08	-0,01	0,05
Lithuania	0,04	0,06	-0,01	0,04	0,05	0,06
Netherlands	0,10	0,03	0,04	0,10	-0,01	0,03
Portugal	0,06	-0,05	-0,01	0,06	0,00	-0,05
Sweden	0,07	-0,03	0,01	0,07	0,04	-0,03
Slovenia	0,07	0,07	0,06	0,07	0,02	0,07
Slovakia	-0,07	0,03	-0,04	-0,07	0,02	0,03

Table 6 shows that Hungary has for all crops an ecosystem contribution ratio that is lower than the EU average; on the other hand, Greece and Slovenia have ecosystem contribution that is always higher than the EU average. Countries such as Denmark, Ireland and the Netherlands record higher than EU average for those crops that in turn have higher and medium ecosystem contribution. Not all crops in fact have the same level of ecosystem contribution: one the one hand, Belgium has a higher than EU average (+0.11) ecosystem contribution ratio for fodder crops (a high ecosystem contribution crop) and a lower than average (-0.03) ecosystem contribution ratio for tuber crops (a low ecosystem contribution crop); on the other hand Slovenia has a lower than EU average (-0.07) ecosystem contribution ratio for fodder crops and a lower than average (+0.03) ecosystem contribution ratio for tuber crops. In the analysis of the overall ecological contribution, the role of Belgium and Slovenia will be different.

Climate change is an overarching environmental issue. The ecosystem service that mostly relate to this issue is carbon sequestration. The CO_2 mitigation by ecosystem does not consider anthropogenic emissions (i.e. emissions by economic sectors and households) but ecosystems uptake and ecosystem emissions. However, by combining air emission accounts (from the SEEA CF) with carbon sequestration accounts (by ecosystems) it is possible to "allocate" the mitigation action to the most polluting economic units. The "allocation" is not ecologically real, but it is policy relevant: in fact, it is not possible to establish which anthropogenic emissions are sequestered by what ecosystems in which countries. However, **the most polluting (in terms of CO_2 emissions) sectors, may be the ones responsible for most of offset action** (e.g. in terms of woodland and forest restoration and tree planting).

Table 7 – Carbon sequestration allocation to polluting sectors

	Economic Units						
	primary sector	manufacturing & construction	electricity, gas supply	transport	waste management	other tertiary sector	households
Allocation of CO_2 to polluting sectors							
2000	5,979	67,630	95,566	56,335	154	11,617	54,271
2006	5,254	64,457	95,036	61,241	190	11,638	54,397
2012	5,766	61,272	98,732	68,297	181	11,727	60,334
allocation coefficients							
2000	0.021	0.232	0.328	0.1932	0.001	0.040	0.1861
2006	0.018	0.221	0.325	0.2096	0.001	0.040	0.1862
2012	0.019	0.200	0.322	0.2230	0.001	0.038	0.1970

Table 7 shows that electricity remains the most polluting sector (with a coefficient of about 0.32) followed by transport (with a coefficient of about 0.22) that increased from 2000 to 2012, and by manufacturing (with a coefficient of about 0.20) that decreased from 2000 to 2012. To interpret the (policy rather than ecological) meaning of allocation: ecosystems (mostly woodland and forest) are working to mitigate CO_2, whose main anthropogenic emitters are electricity, transport and manufacturing sectors.

Halting biodiversity loss is another overarching environmental target. To find out whether species are at risk, it is important to compare the presence of habitats in good condition with the presence of target species (species hotspots). In fact, **where the presence of target species is not supported by suitable habitats, then species may be at risk of extinction in the medium and long term**.

Table 8 shows that suitable habitats have declined from 2000 to 2012 (-0.4%). In fact also the presence of species supported by suitable habitats declined (-1.1%) and eventually the species at risk (in the medium and long run) increase (+0.3%). Although the magnitude of changes at EU level is almost insignificant (although locally may be larger), the sign of the changes can be relevant for an early warning of the need of ecosystem restoration measures.

Table 8 – Presence of habitat suitable for species hotspots

	2000	2012	Absolute changes	Relative changes
Suitable habitats (1,000 km^2)	1,705	1,698	-7	-0.4%
Species hotspots (1,000 km^2)	2,282			-
Species supported by suitable habitats (1,000 km^2)	812	803	-9	-1.1%
Species not supported by suitable habitats (1,000 km^2)	1,476	1,480	4	0.3%

4. Possible linkages with international reference frameworks

The SEEA EA is addressing the issue of indicators in Chapter 14 of the handbook (UN, 2021). The work on this topic is still in progress, however it is possible to identify few sensitive areas where to focus attention and drive applications based on INCA available experience. An important sensitive issue in SEEA EA concerns the “links to reporting framework” such as SDG, post-2020 biodiversity, climate change (UNFCCC) and land degradation (UNCCD) frameworks. Special emphasis is paid to Post-2020 Global Biodiversity Framework (GBF) and Sustainable Development Goal (SDG) indicators. This is indeed an important link to be established because those frameworks increasingly become the common ground of international policy discussion, agreements and compelling initiatives. We now attempt to find out **how the INCA indicators can contribute to two international reference frameworks such as the post-2020 Global Biodiversity Framework and the Sustainable Development Goals**.

Table 9 shows a first proposal to use indicators extracted from INCA to support the post-2020 Global Biodiversity Framework. The EU Biodiversity Strategy is largely aligned to the Global Biodiversity Framework: if INCA indicators can support the Global Biodiversity Framework, they can also support EU Biodiversity strategy. The table is divided in two parts: the first part refers to the descriptive statistics indicators reported in this paper, and the second part refers to what could be done with further processed information.

Table 9 – INCA indicators for the post-2020 Biodiversity Framework

INCA indicators already available	**Post-2020 Biodiversity Framework**
Habitat and species maintenance: ES actual flow to monitor changes wrt species supported by suitable habitats (ref. Table 8)	Target 3. By 2030, ensure active management actions to enable wild species of fauna and flora recovery and conservation, and reduce human-wildlife conflict by [X%]
Water purification: ES overuse wrt sustainability thresholds (ref. Table 4)	Target 6. By 2030, reduce pollution from all sources, including reducing excess nutrients [by x%], biocides [by x%], plastic waste [by x%] to levels that are not harmful to biodiversity and ecosystem functions and human health.
Carbon sequestration: ES actual flow and missed flow by ecosystems wrt the role of uptake and emissions (ref. Table 5)	Target 7. By 2030, increase contributions to climate change mitigation adaption and disaster risk reduction from nature-based solutions and ecosystems based approaches, ensuring resilience and minimizing any negative impacts on biodiversity
Crop provision: ES actual flow wrt ecosystem contribution ratio (ref. Table 6)	Target 9. By 2030, support the productivity, sustainability and resilience of biodiversity in agricultural and other managed ecosystems through conservation and sustainable use of such ecosystems, reducing productivity gaps by at least [50%]
Flood control: ES actual flow wrt Ecosystem Potential to monitor the increase of NBS (ref. Table 3)	Target 10. By 2030, ensure that, nature-based solutions and ecosystem approach contribute to regulation of air quality, hazards and extreme events and quality and quantity of water for at least [XXX million] people
Nature-based recreation: ES actual flow wrt Ecosystem Demand, i.e. resident households (ref. Table 3)	Target 11. By 2030, increase benefits from biodiversity and green/blue spaces for human health and wellbeing, including the proportion of people with access to such spaces by at least [100%], especially for urban dwellers
INCA indicators potentially available	**Post-2020 Biodiversity Framework**
Bridging ES accounts and Economic models to assess economic impacts of changes in ES flows *	Target 5. By 2030, manage, and where possible control, pathways for the introduction of invasive alien species, achieving [50%] reduction in the rate of new introductions, and control or eradicate invasive alien species to eliminate or reduce their impacts, including in at least [50%] of priority sites.
Urban accounts:	Target 10. By 2030, ensure that, nature based solutions and

ES accounts for Functional Urban Areas	ecosystem approach contribute to regulation of air quality, hazards and extreme events and quality and quantity of water for at least [XXX million] people
Urban accounts: ES accounts for Functional Urban Areas	Target 11. By 2030, increase benefits from biodiversity and green/blue spaces for human health and wellbeing, including the proportion of people with access to such spaces by at least [100%], especially for urban dwellers
Bridging ES accounts and Economic models to assess economic impacts of changes in ES flows *	Target 13. By 2030, integrate biodiversity values into policies, regulations, planning, development processes, poverty reduction strategies and accounts at all levels, ensuring that biodiversity values are mainstreamed across all sectors and integrated into assessments of environmental impacts
Scenario analysis on ES accounts wrt bridged ES accounts and Economic models to assess economic impacts of changes in ES flows *	Target 17. By 2030, redirect, repurpose, reform or eliminate incentives harmful for biodiversity, including [X] reduction in the most harmful subsidies, ensuring that incentives, including public and private economic and regulatory incentives, are either positive or neutral for biodiversity
ES accounts linked to the EU Taxonomy (**)	Target 18. By 2030, increase by [X%] financial resources from all international and domestic sources, through new, additional and effective financial resources commensurate with the ambition of the goals and targets of the framework and implement the strategy for capacity-building and technology transfer and scientific cooperation to meet the needs for implementing the post-2020 global biodiversity framework.

* examples available in https://publications.jrc.ec.europa.eu/repository/handle/JRC120571
** check annex XX in …
*** example available in (REGIO factsheet tbc)
**** example available in https://www.tandfonline.com/doi/full/10.1080/20964129.2019.1634979

Table 10 shows a first proposal to use indicators extracted from INCA to support the Sustainable Development Goals. Table 11 too is divided in two parts: the first part refers to the descriptive statistics indicators reported in this chapter, and the second part refers to what could be done with further processed information.

Table 10 – INCA indicators for the Sustainable Development Goals

INCA indicators already available	Sustainable Development Goals
Crop provision: ES actual flow (wrt ecosystem contribution ratio) (ref. Table 6) Synergies (trends over time) b/w crop provision and other ES (ref. Table1)	2.4 by 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality
Water purification accounts: ES overuse (wrt specific sustainability thresholds) (ref. Table 4)	6.3 by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse by x% globally
Water purification by the Urban ET (ref. Table 1)	11.6 by 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management
Nature-based recreation by	11.7 by 2030, provide universal access to safe, inclusive and accessible,

the Urban ET (ref. Table 2)	green and public spaces, particularly for women and children, older persons and persons with disabilities
Carbon sequestration: Combined presentation with CO_2 emission by economic units (ref. Table 7)	13.2 integrate climate change measures into national policies, strategies, and planning
Monitor over time the Supply table by ET (ref. Table 1)	15.1 by 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
Monitor over time the ET “Woodland and forest” on the Supply table (ref. Table 1)	15.2 by 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and increase afforestation and reforestation by x% globally
ES unmet demand for: Flood control and Soil retention (ref. Table 3)	15.3 by 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world
Habitat and species maintenance: ES potential flow wrt species not supported by suitable habitats (ref. Table 8) Synergies b/w HSM and other ES (ref. Table 1)	15.5 take urgent and significant action to reduce degradation of natural habitat, halt the loss of biodiversity, and by 2020 protect and prevent the extinction of threatened species
INCA indicators potentially available	**Sustainable Development Goals**
Crop and timber provision: ES overuse (wrt specific sustainability thresholds) Sustainability scoreboard*	12.2 by 2030 achieve sustainable management and efficient use of natural resources
Processed variables from INCA to be bridged with MRIO tables*	8.4 improve progressively through 2030 global resource efficiency in consumption and production, and endeavour to decouple economic growth from environmental degradation in accordance with the 10-year framework of programmes on sustainable consumption and production with developed countries taking the lead
ES accounts linked to the EU Taxonomy (**)	8.10 strengthen the capacity of domestic financial institutions to encourage and to expand access to banking, insurance and financial services for all
Urban accounts: ES accounts for Functional Urban Areas	11.a support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning
Urban accounts: ES accounts for Functional Urban Areas	11.b by 2020, increase by x% the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement in line with the forthcoming Hyogo Framework holistic disaster risk management at all levels
Ranking MS value/km^2 wrt EU average ***	15.1 by 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
Crop pollination:	15.8 by 2020 introduce measures to prevent the introduction and

Processed variables from INCA to bridge Economic models *	significantly reduce the impact of invasive alien species on land and water ecosystems, and control or eradicate the priority species
Vulnerability accounts Monetary unmet demand	15.a mobilize and significantly increase from all sources financial resources to conserve and sustainably use biodiversity and ecosystems
Vulnerability accounts Monetary unmet demand	15.b mobilize significantly resources from all sources and at all levels to finance sustainable forest management, and provide adequate incentives to developing countries to advance sustainable forest management, including for conservation and reforestation
Bridging ES accounts and Economic models to assess economic impacts of changes in ES flows*	17.14 enhance policy coherence for sustainable development
Environmentally Adjusted NVA ****	17.19 by 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement GDP, and support statistical capacity building in developing countries

** examples available in https://publications.jrc.ec.europa.eu/repository/handle/JRC120571*
*** check annex XX in …*
**** example available in (REGIO factsheet tbc)*
***** example available in https://www.tandfonline.com/doi/full/10.1080/20964129.2019.1634979*