Crop and Timber provisioning services application and revision: a pilot assessment for Europe

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Food and Agriculture Organization of the United Nations

European Commission

OUTLINE

- Linking the SEEA AFF and SEEA EEA: purpose of analysis
- Crop Provisioning Accounting Table – Physical Approach
- Timber Provisioning Accounting Table – Physical Approach
- Preliminary monetary results

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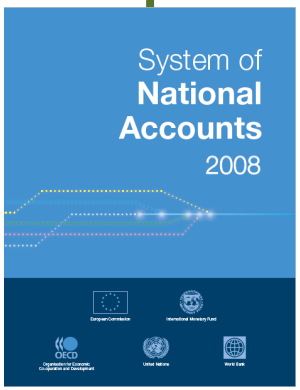
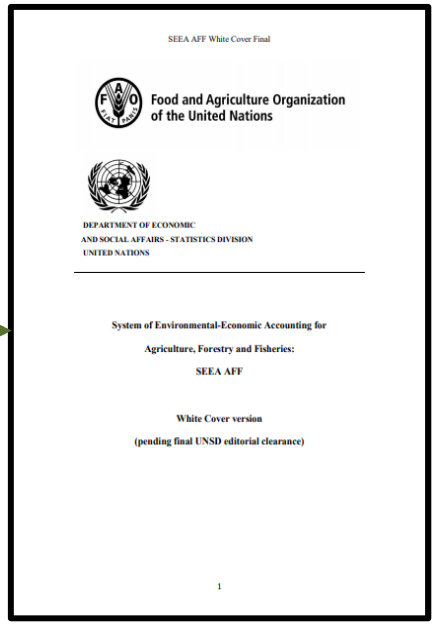
Linking the SEEA AFF and the SEEA EEA: purpose of analysis

FAO develops the **SEEA Agriculture Forestry and Fisheries (AFF)**, which applies the environmental economic structures and principles described in the **System of Environmental Economic Accounting - Central Framework (SEEA-CF)** and in the **SNA** to the activities of agriculture, forestry and fisheries




SEEA AFF White Cover Final

Food and Agriculture Organization of the United Nations

DEPARTMENT OF ECONOMIC
AND SOCIAL AFFAIRS - STATISTICS DIVISION
UNITED NATIONS

System of Environmental-Economic Accounting for
Agriculture, Forestry and Fisheries:
SEEA AFF

White Cover version
(pending final UNSD editorial clearance)

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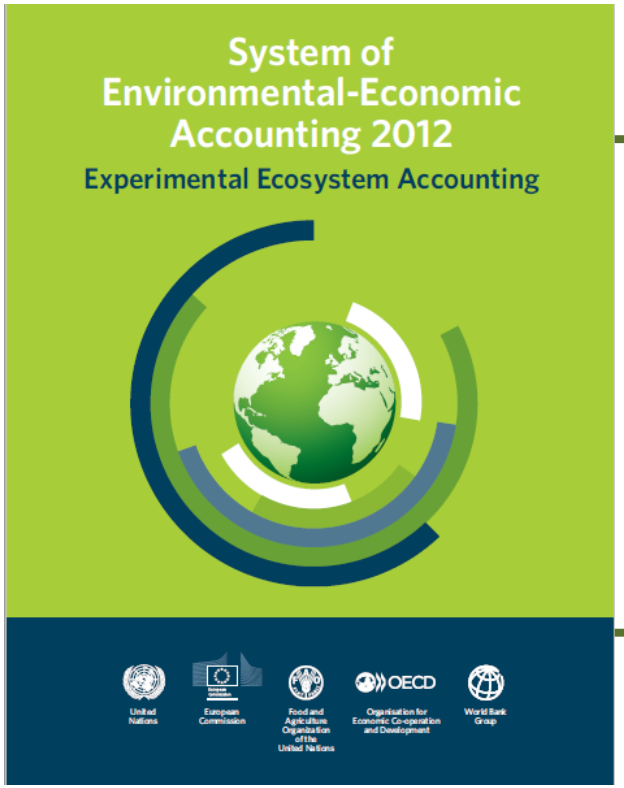
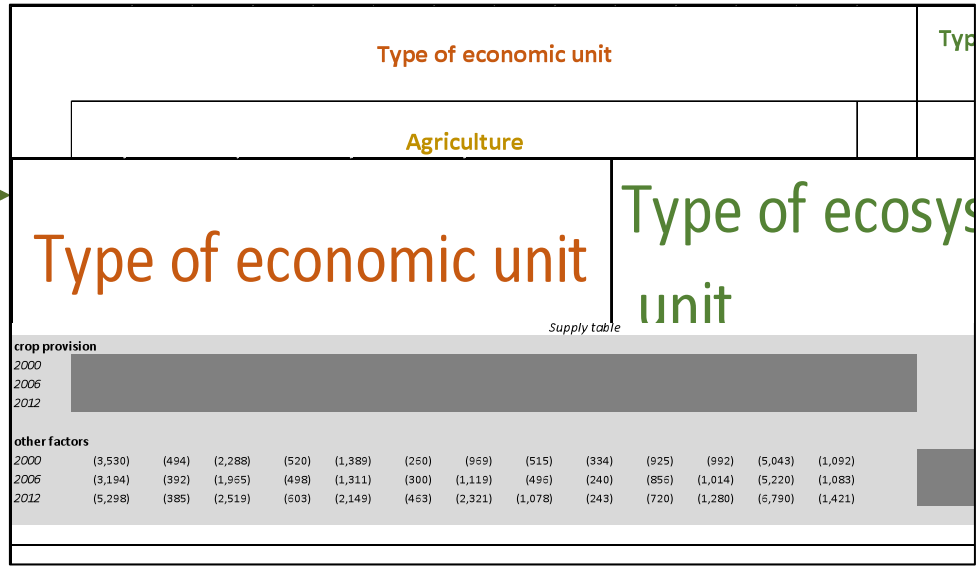
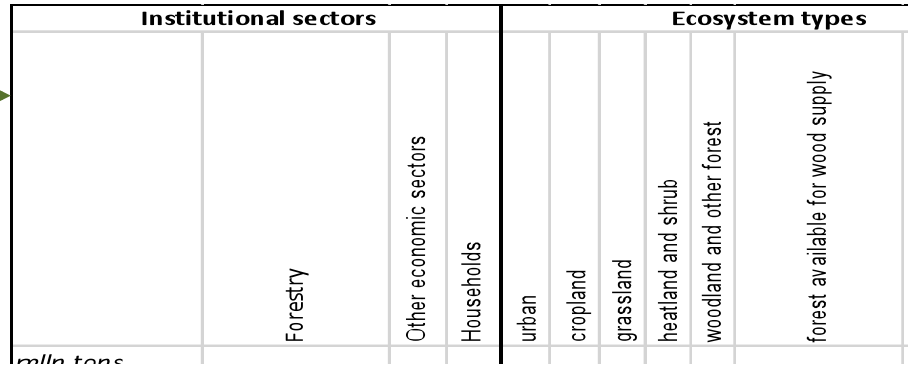
International and National Data on Crops, Livestock, Forestry Water, Land Use…

Linking the SEEA AFF and the SEEA EEA: purpose of analysis

The **JRC** (European Commission- **J**oint **R**esearch **C**entre) develops the ecosystem services supply and use tables of the SEEA 2012 Experimental Ecosystem Accounting (EEA)



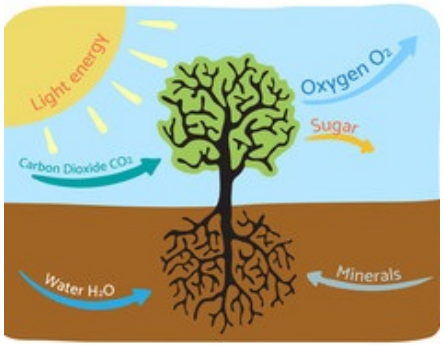




Linking the SEEA AFF and the SEEA EEA: purpose of analysis

- The tier one procedure settled by JRC and FAO assess the contribution of ecosystem types Cropland and Forest starting from the SNA products they generate and are reported and includes, trough the SEEA AFF, also the specific features that characterize agriculture, forestry.
- Scope of the analysis is to assess crop and timber provisioning services disentangling the contribution of ecosystem from the natural resource that is generated.

Crop provision



Crop provision
POTENTIAL FLOW

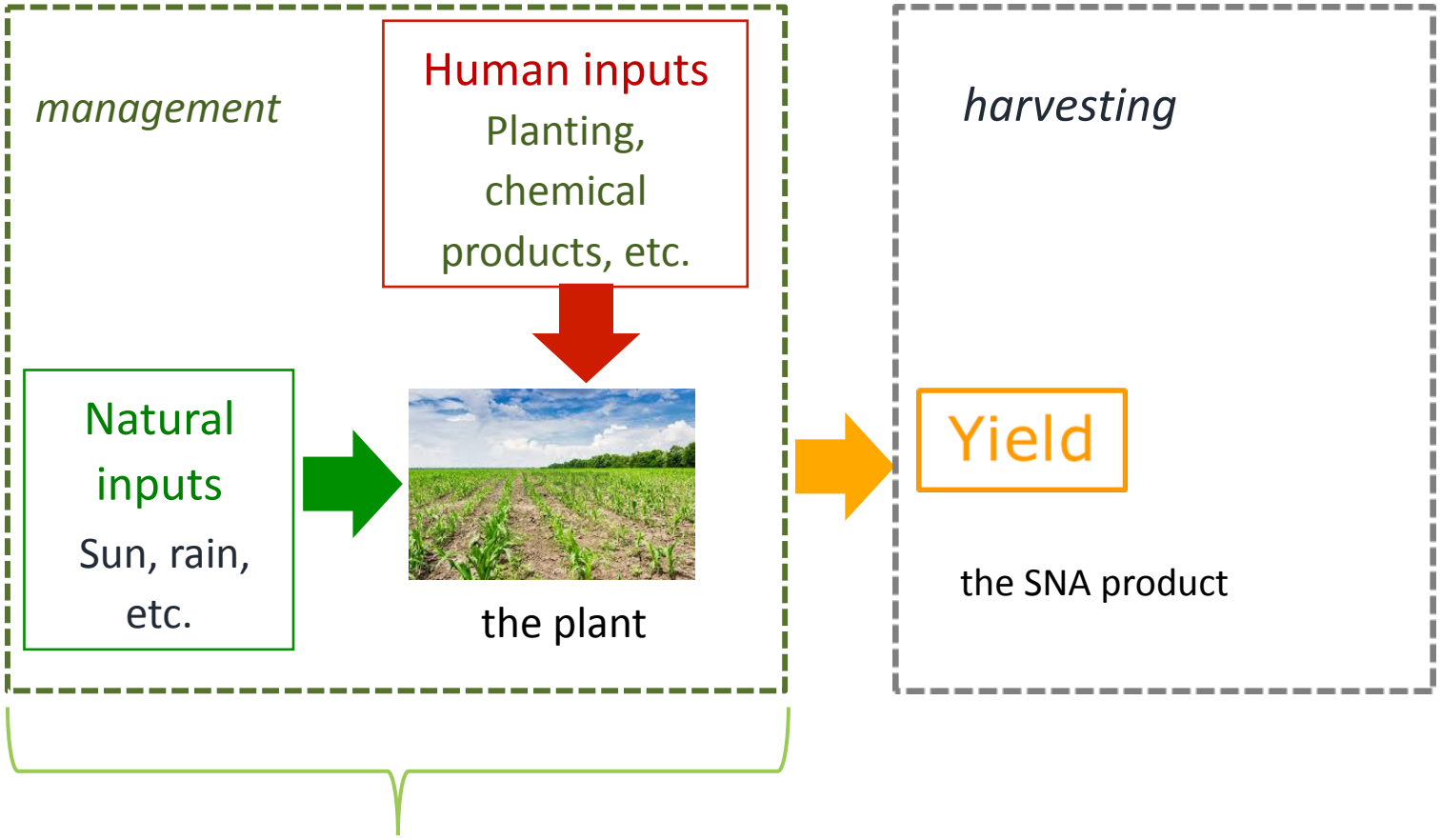
DEMAND for crop provision

SEEA EEA supply and use tables

Use (Actual flow)

BENEFIT

How to estimate Ecosystem contribution (EC)



$$EC = \frac{Natural\ Inputs}{Yield}$$

Crop Provisioning Accounting Table – Physical Approach

JRC-FAO Crop Provisioning Service

Selected products*	Ecosytem Types EC	Type of economic unit*				Flows from the rest of the world	
		Supply		Use			
	Cropland EC	Agricultural	Forestry	Energy	Crop	Imports	Exports
DK	1,203	4,059			608	83	1,042
EE	142	341			146	8	85
EL	38	336			406	70	1
ES	1,232	5,956			-	276	71
FI	467	1,581			403	4	93
FR	2,122	11,341			1,714	97	4,657
HU	368	996			639	69	295
IR	280	1,261			820	198	69
IT	178	940			1,279	498	6
LT	241	742			284	35	102
LV	111	249			149	111	114
NL	64	206			2,427	1,547	85
PL	1,330	4,180			3,961	197	321

Selected products*
Ecosytem Type
Type of econ
Supply

MU = 000 t

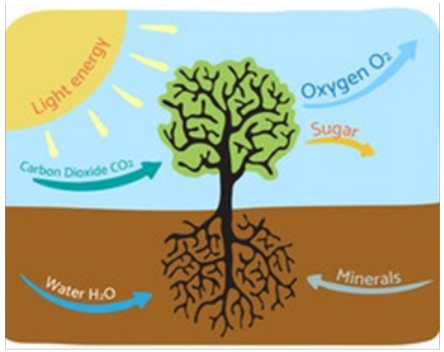
Crop Provisioning Accounting Table – relevant data extraction

From the JRC FAO Crop provisioning accounting table is possible to extract some information to compare the ecosystem contribution:

- to agricultural production
- the relative importance of the process crop across European countries,
- the trading
- and the food availability

	ecosystem contribution	*food availability (1,000 tons)*	*% of agricultural production*	*% of processed crop*
AT	0,258436815	3	1,25%	2,76%
BG	0,224964605	8	1,25%	0,00%
BLX	0,15316663	2	0,75%	5,81%
DE	0,214791841	26	19,57%	27,38%
DK	0,296427511	0	7,65%	1,88%
EE	0,414889072	7	0,64%	0,45%
EL	0,113844329	5	0,63%	1,26%
ES	0,206822656	2	11,22%	0,00%
FI	0,295250575	27	2,98%	1,25%
FR	0,187098479	62	21,36%	5,30%
HU	0,369718394	1	1,88%	1,98%
IR	0,222396792	3	2,37%	2,54%
IT	0,188949256	30	1,77%	3,96%
LT	0,325377679	25	1,40%	0,88%
LV	0,445978777	49	0,47%	0,46%
NL	0,308483527	26	0,39%	7,51%
PL	0,318083972	251	7,87%	12,25%
PT	0,258011843	15	0,04%	2,47%

Timber Provisioning



Timber provision
POTENTIAL FLOW

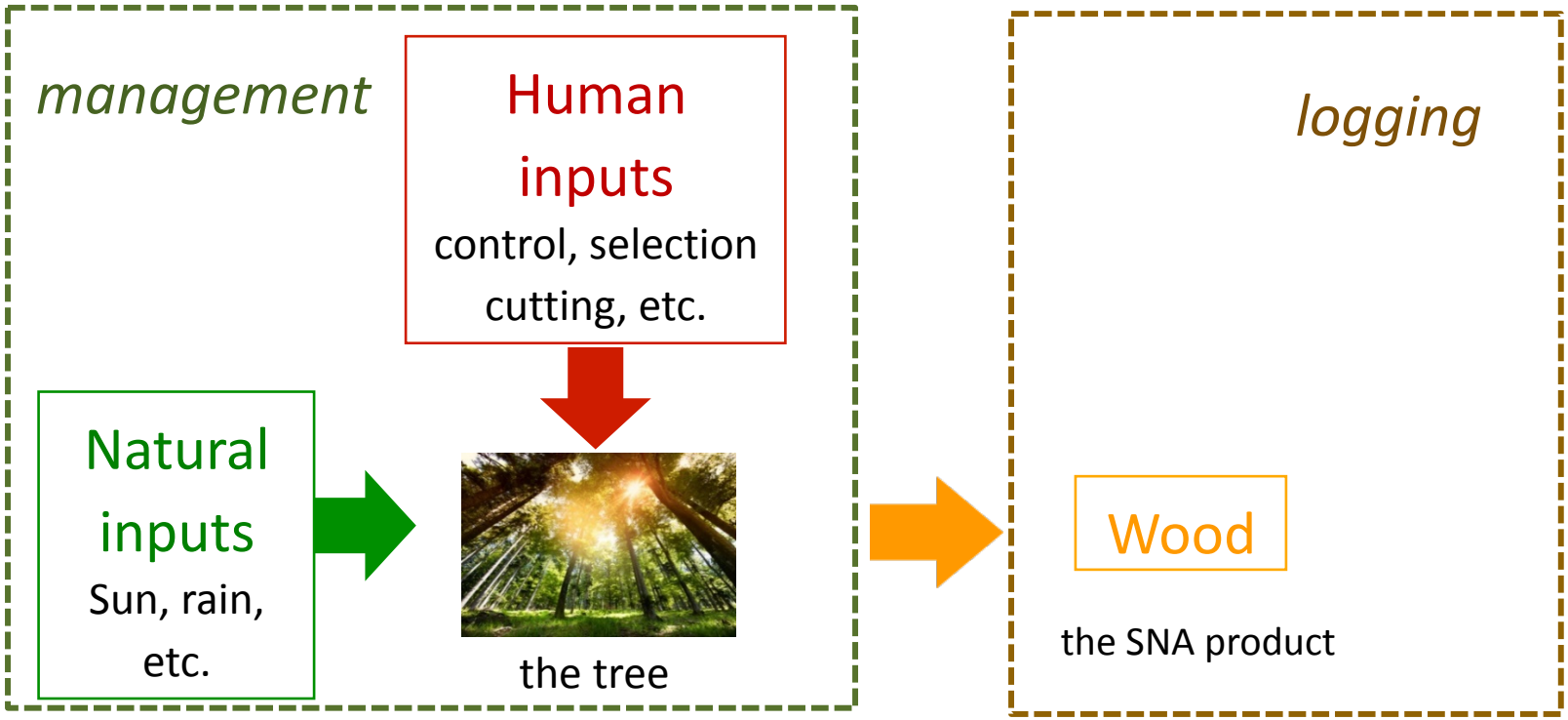
DEMAND for
timber provision

SEEA EEA
supply and
use tables

Use (Actual flow)

BENEFIT

How to assess the EC coefficient?



Calculation of ratio based on costs [1- (GFCF/Output Forestry)] and applied on NAI (Net Annual Increment)*

* NAI is defined as gross increment less natural losses

Timber Provisioning Accounting Table – Physical Approach

JRC FAO timber provisioning accounting table – aggregated values for all European countries

Mu = 000 m3

	Ecosytem T	
	Forest and Other Wooded EC	
Net annual increment	688,67	

	Logging	**Pa indu**
Net annual increment		

Timber Provisioning Accounting Table – Physical Approach

The timber provisioning accounting tables assess the contribution of the ecosystem forest as one of the production input that generates biomass accumulation.

The ecosystem contribution for timber provisioning service is estimated through cost, and specifically the relationship between the Gross Fixed Capital Formation and the Total Output is used as proxy for the human input.

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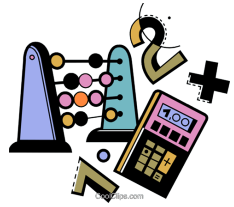
Timber provisioning service accounts: relevant data extraction



From the JRC FAO Timber provisioning accounting table is possible to extract some information on ecosystem contribution on timber provisioning:

- the importance of the ecosystem contribution is directly linked with the importance of forestry sectors in European countries

- where semi-natural management regimes the ecosystem contribution and the importance of the forestry sector is higher or equal than in countries where practices like plantation record entries

	Ecosystem contribution	Fores relative
AT	23.23	
BE	4.33	
BG	13.94	
CY	0.03	
CZ	19.67	
DE	115.02	
DK	5.64	
EE	10.82	
EL	3.29	
ES	35.12	
FI	83.24	
FR	80.02	
HR	7.66	
HU	8.90	
IE	5.94	
IT	27.93	
LT	9.47	
LU	0.63	
LV	18.30	
NL	2.66	

From physical to monetary accounts: preliminary results

- Crop and timber are SNA products. The provisioning services are assessed as the contribution from the ecosystem to generate these products. In monetary terms this implies to disentangle the ecosystem service (as one of the production input) from the final output. This process can take place in two ways:
  - by multiplying an average price to the quantity in physical terms
  - by applying the ecosystem contribution ratio directly to the monetary accounts.
- In principle the two approaches should lead to the same result. In practice this does not happen as shown by the case of crop provision

From physical to monetary accounts: preliminary results

	2000	2006	2012		2000	2(
	[euro(ratio*tonne)]*				*(ratio*	
AT	170	129	184		210	
BE	166	197	508		120	
BG	1,167	1,240	1,361		124	
CZ	235	311	537		240	
DE	2,245	1,961	3,368		2,662	2
DK	515	420	499		572	
EE	34	67	109		45	
EL	65	59	67		102	
ES	1,015	891	1,083		1,006	
FI	234	217	236		293	
FR	3,358	2,887	3,351		3,306	3
HU	335	605	891		345	
IE	85	83	105		247	
IT	929	673	794		1,167	
LT	21	42	140		23	
LV	431	747	442		112	
NL	478	380	446		359	
PL	737	1,009	1,438		657	
PT	96	76	104		82	
RO	674	789	1,571		625	

Table 4 Valuation of crop provision: two approaches

Questions for the London Group

The followings are questions for the London group:

1. How can we translate the physical analysis described in this paper for crops in monetary terms: how our preliminary results can we improve them?

2. Wow can we translate the physical analysis described in this paper for timber s in monetary terms: how our preliminary results can we improve them?

3. Which suggestions may the London group supply us for the concrete implementation of this analysis in European and non-European countries?

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Thank you!

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