

# **From FOREST LANDSCAPE TOTAL INCOME to ECOSYSTEM ENVIRONMENTAL INCOME**

## **RECAMAN project in Andalusia, Spain**

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Forum of Experts in SEEA Experimental Ecosystem Accounting (SEEA EEA)

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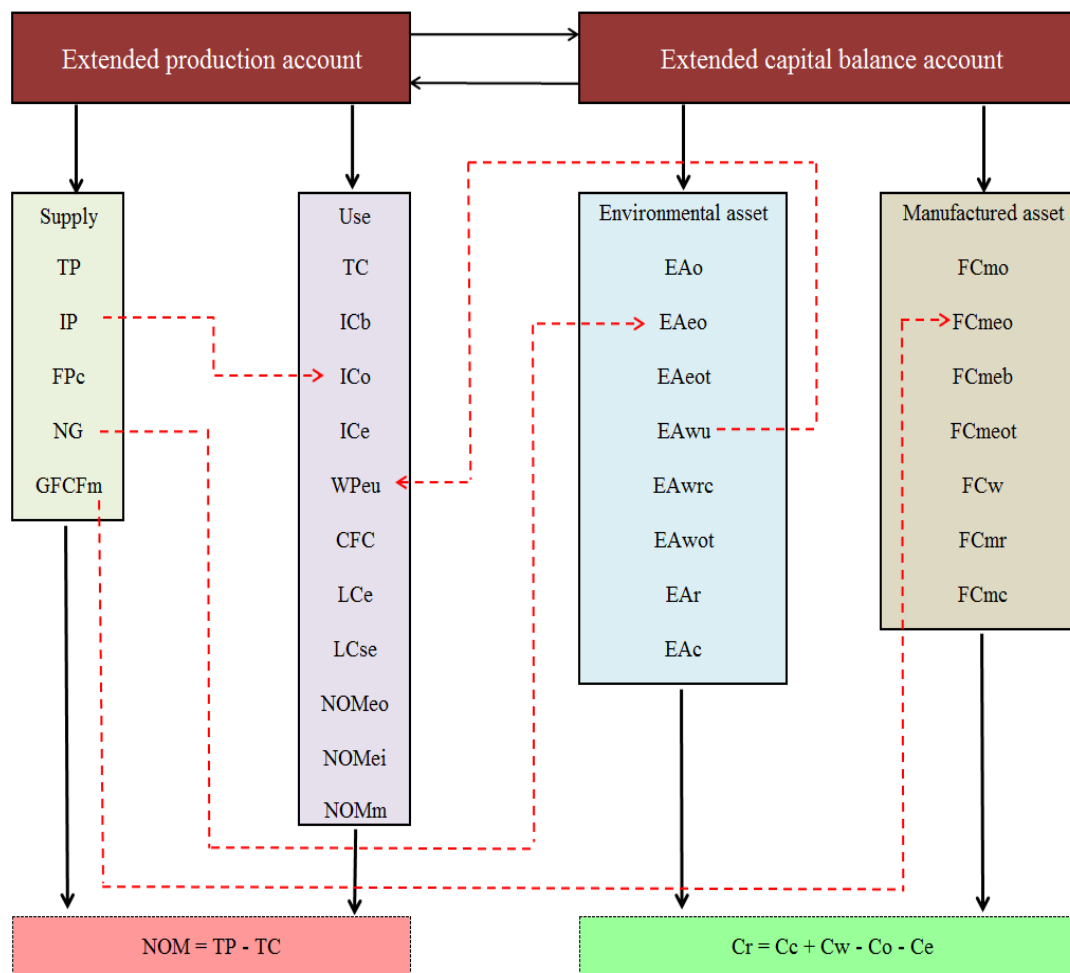
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# RECAMAN Project

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# Extended production and capital balance accounts



# **Environmental income accounting framework**

✓ Forest landscape environmental income is the nature contribution to total income:

$$\mathbf{TI = LC + CIm + EI}$$

✓ We estimate EI as the aggregated value of ecosystem system services and the change in the environmental net worth :

$$\mathbf{EI = ES + CNWe}$$

✓ CNWe denotes the other components of EI that they are not included in ES and adjustments for avoiding double counting:

$$\mathbf{CNWe = NGc - ICe + EAg}$$

✓ Environmental asset gain:

$$\mathbf{EAg = EAr - EAwd - NGo}$$

✓ Environmental asset revaluation:

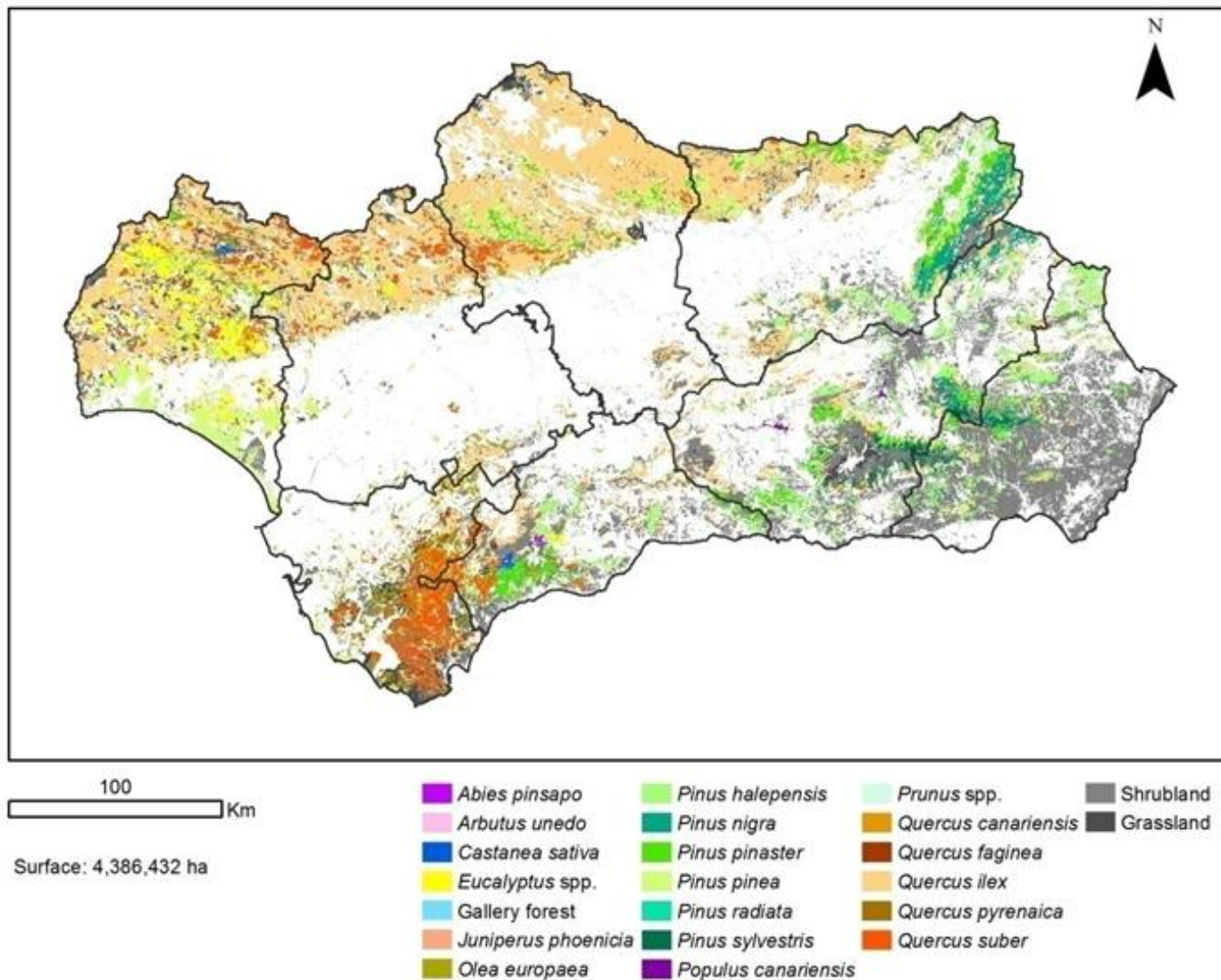
$$\mathbf{EAr = EA_c - EA_o + EA_w - EA_e}$$

# Testing ES and EI in Andalusia forest landscapes, Spain

- ✓ **Accounting period: 2010.**
- ✓ **Spatial unit: 4.4 million ha.**
- ✓ **Andalusia forest ownership:** private : 73% and public: 27%.
- ✓ **Independent economic management agents:**  
**Landowner and government**
- ✓ **Activities/sub-activities, products, EI and ES measured**
  - 10 activities: 4 private (7 forestry sub-activities) and 6 public .
  - 14 ecosystem services
  - 16 environmental incomes
  - 18 products
- ✓ **Andalusia forests landscape total product consumed valued:**

**Wood, firewood, cork, grass, browse, acorn, pine-nut, chest-nut, forestry conservation services, hunting services, residential service, private amenity service, carbon service, mushroom, water yield, open access recreation, landscape conservation and wildlife threatened biodiversity preservation.**

# Andalusia mosaic of forest landscapes vegetation covers



# Extended account total capital of Andalusia forest landscapes

## Surface: 4,386,432 ha

### (2010: €/ha).

Activities	Environmental asset			Manufactured capital			Opening total capital		
	Landowner	Government	Total	Landowner	Government	Total	Landowner	Government	Total
<b>Private</b>	<b>4,544.6</b>		<b>4,544.6</b>	<b>461.3</b>	<b>45.6</b>	<b>506.9</b>	<b>5,005.9</b>	<b>45.6</b>	<b>5,051.5</b>
<b>Forestry</b>	<b>1,097.1</b>		<b>1,097.1</b>	<b>96.5</b>	<b>44.7</b>	<b>141.1</b>	<b>1,193.5</b>	<b>44.7</b>	<b>1,238.2</b>
Wood	316.1		316.1	51.5		51.5	367.7		367.7
Cork	233.2		233.2	2.7		2.7	236.0		236.0
Firewood	73.3		73.3	0.0			73.3		73.3
Nuts	5.2		5.2	0.0			5.2		5.2
Grazing	469.2		469.2	13.2		13.2	482.4		482.4
Conservation forestry				29.0		29.0	29.0		29.0
Government forestry					44.7	44.7	0.0	44.7	44.7
Hunting	174.9		174.9		0.9	0.9	174.9	0.9	175.8
Residential				364.8		364.8	364.8		364.8
<b>Amenity</b>	<b>3,272.6</b>		<b>3,272.6</b>				<b>3,272.6</b>		<b>3,272.6</b>
<b>Public</b>		<b>4,847.4</b>	<b>4,847.4</b>		<b>58.8</b>	<b>58.8</b>		<b>4,906.2</b>	<b>4,906.2</b>
<b>Recreation</b>		<b>1,354.4</b>	<b>1,354.4</b>		<b>49.7</b>	<b>49.7</b>		<b>1,404.2</b>	<b>1,404.2</b>
Mushrooms		322.4	322.4		1.1	1.1		323.5	323.5
Carbon		723.0	723.0					723.0	723.0
<b>Landscape</b>		<b>1,123.5</b>	<b>1,123.5</b>		<b>2.1</b>	<b>2.1</b>		<b>1,125.6</b>	<b>1,125.6</b>
Biodiversity		382.0	382.0		5.9	5.9		387.9	387.9
<b>Water</b>		<b>942.0</b>	<b>942.0</b>					<b>942.0</b>	<b>942.0</b>
<b>Total</b>	<b>4,544.6</b>	<b>4,847.4</b>	<b>9,392.0</b>	<b>461.3</b>	<b>104.4</b>	<b>565.7</b>	<b>5,005.9</b>	<b>4,951.8</b>	<b>9,957.7</b>

# Extended capital balance account of Andalusia forest landscapes by types of capital (2010 €/ha)

Class	1.Opening capital	2. Capital entries				3. Capital withdrawals					4. Reva- luation	5. Closing capital
	(Co)	(Ce)				(Cw)					(CCr)	(Cc)
		2.1 Bought	2.2 Own	2.3 Others	2.4 Total	3.1 Used	3.2 Destru- ctions	3.3. Recla- sification	3.4 Others	3.5 Total		
<b>Capital (C) (2 + 3)</b>	<b>9,957.7</b>	<b>0.4</b>	<b>19.5</b>	<b>51.2</b>	<b>71.1</b>	<b>6.9</b>		<b>58.1</b>	<b>15.0</b>	<b>80.1</b>	<b>-91.6</b>	<b>9,857.1</b>
1. Work in progress (WPe)	251.6		8.7		8.7	6.9		8.4		15.3	24.6	269.5
2. Fixed capital (FC)	9,706.0	0.4	10.8	51.2	62.4	0.0		49.7	15.0	64.7	-116.2	9,587.6
2.1. Environmental (EFA)	9,140.3			51.2	51.2			49.7	15.0	64.7	86.0	9,040.9
2.1.1 Land (EFAI)	8,888.8			51.2	51.2			49.7	15.0	64.7	-100.7	8,774.7
2.1.2 Biological (EFAbr)	251.5										14.7	266.2
2.2 Manufactured (FCm)	565.7	0.4	10.8		11.2				0.0	0.0	-30.2	546.7



# Extended production account of Andalusia forest landscapes by activities (2010: €/ha).

Class	Forestry	Hunting	Resi- dential	Private amenity	Recrea- tion	Mush- rooms	Carbon	Land- scape	Bio- diversit y	Water	Forest landscapes
	1	2	3	4	5	6	7	8	9	10	11=∑1 to 10
<b>1. Total product (TP) (1.1 + 1.2)</b>	<b>95.6</b>	<b>7.4</b>	<b>11.7</b>	<b>258.7</b>	<b>47.3</b>	<b>9.9</b>	<b>51.2</b>	<b>87.0</b>	<b>18.1</b>	<b>63.3</b>	<b>650.3</b>
1.1 Intermediate product (IP)	68.4	1.3	11.7								81.4
1.2 Final product (FP) (1.2.1 + 1.2.2)	27.2	6.1		258.7	47.3	9.9	51.2	87.0	18.1	63.3	568.9
1.2.1 Consumption (FPc)	10.5	1.2		258.7	46.2	9.8	51.2	86.5	17.2	63.3	544.6
1.2.2 Gross capital formation (GCF)	16.7	4.9			1.1	0.0		0.5	1.0		24.2
1.2.2. 1 Natural growth (NG)	8.7	4.8									13.4
1.2.2.2. Capital formation (GFCFm)	8.0	0.1			1.1	0.0		0.5	1.0		10.8
<b>2. Total cost (TC) (2.1 + 2.2 + 2.3)</b>	<b>109.7</b>	<b>2.6</b>	<b>7.6</b>	<b>11.7</b>	<b>10.1</b>	<b>0.1</b>	<b>15.0</b>	<b>51.3</b>	<b>6.4</b>		<b>214.6</b>
2.1. Intermediate consumption (IC)	35.9	1.5	0.6	11.7	3.7	0.0	15.0	47.0	1.8		117.3
2.1.1 Raw materials (RM)	7.5	1.3	0.1		0.1	0.0		0.0	0.0		9.0
2.1.2 Services (SS)	21.5	0.2	0.5	11.7	3.6	0.0	15.0	47.0	1.8		101.4
2.1.3 Work in progress used (WPeu)	6.9										6.9
2.2 Labor cost (LC)	68.7	1.0	2.5		4.8	0.1		3.6	4.0		84.7
2.3 Depreciation (CFC)	5.0	0.1	4.5		1.7	0.0		0.7	0.7		12.6
<b>3. Net operating margin (NOM) (1-2)</b>	<b>-14.1</b>	<b>4.8</b>	<b>4.1</b>	<b>246.9</b>	<b>37.3</b>	<b>9.7</b>	<b>36.2</b>	<b>35.7</b>	<b>11.7</b>	<b>63.3</b>	<b>435.6</b>
3.1. Environmental (NOMe)	16.5	4.4	0.0	246.9	21.5	9.3	36.2	34.4	9.2	63.3	441.8
3.1.1. Ordinary (NOMeo)	7.8	4.4	0.0	246.9	21.5	9.3	51.2	34.4	9.2	63.3	448.1
3.1.2. Investment (NOMei)	8.7	0.0	0.0	0.0	0.0	0.0	-15.0	0.0	0.0	0.0	-6.4
3.2. Manufactured (NOMm)	-30.6	0.4	4.1	0.0	15.7	0.4	0.0	1.3	2.5	0.0	-6.1

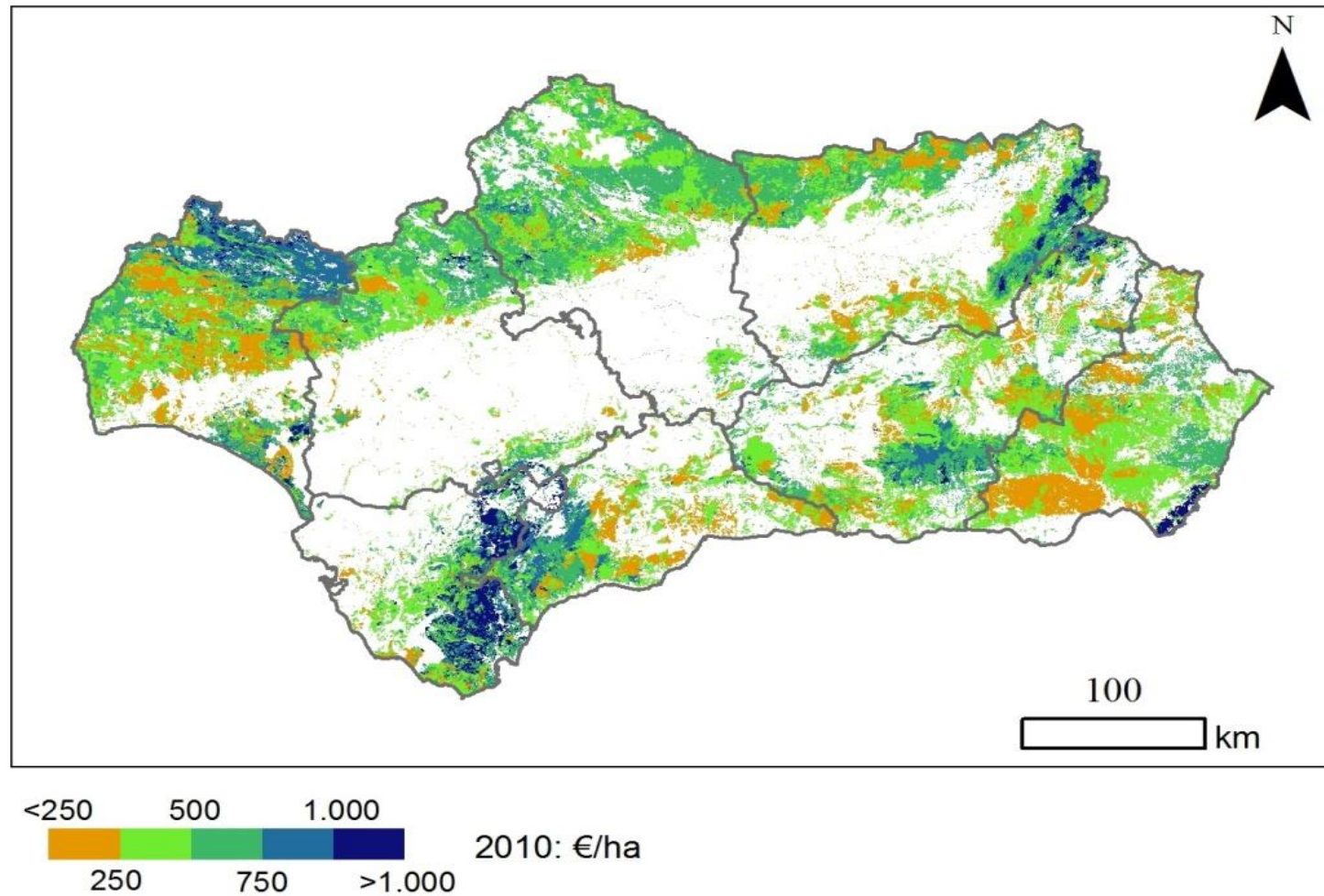
# Extended account ecosystem services by activities/sub-activities in Andalusia forest landscapes (2010: €/ha).

Class	Total product consummed <b>TPc</b> (€/ha)	Intermediate consumption <b>ICmo</b> (€/ha)	Labor cost <b>LCo</b> (€/ha)	Immobilized capital user cost <b>IMCmou</b> (€/ha)	Forest landscapes ecosystem services <b>ES</b> (€/ha) (%)	
<b>1. Provisioning</b>	<b>112.4</b>	<b>13.6</b>	<b>34.9</b>	<b>-27.8</b>	<b>91.8</b>	<b>20.2</b>
Wood	4.4	5.6	26.8	-29.7	1.7	0.4
Cork	11.2	5.5	1.1	-0.5	5.1	1.1
Firewood	0.5	0.1	0.1	0.0	0.3	0.1
Nuts	0.7	0.6	3.7	-3.6	0.0	0.0
Grazing	15.2	0.4	2.1	5.1	7.6	1.7
Hunting	7.3	1.4	1.0	0.5	4.4	1.0
Mushrooms	9.8	0.0	0.1	0.4	9.3	2.1
<b>Water yield</b>	<b>63.3</b>				<b>63.3</b>	<b>13.9</b>
<b>2. Regulating</b>	<b>201.7</b>	<b>61.0</b>	<b>36.5</b>	<b>8.2</b>	<b>94.8</b>	<b>20.8</b>
Carbon	51.2				51.2	11.3
Landscape	86.5	46.7	3.3	2.0	34.4	7.6
Biodiversity	17.2	0.2	3.3	3.2	9.2	2.0
Con. forestry	7.9	2.8	4.9	0.2		
Gov. forestry	39.0	11.3	24.9	2.7		
<b>3. Cultural</b>	<b>316.6</b>	<b>15.5</b>	<b>6.6</b>	<b>26.0</b>	<b>268.5</b>	<b>59.0</b>
Amenity	258.7	11.7			246.9	54.3
Recreation	46.2	3.2	4.1	17.4	21.5	4.7
Residential	11.7	0.6	2.5	8.6	0.0	0.0
<b>Total</b>	<b>630.8</b>	<b>90.1</b>	<b>78.0</b>	<b>6.4</b>	<b>455.1</b>	<b>100.0</b>

# AAS versus rSNA indicators comparisons in Andalusia forest landscapes (2010: €/ha)

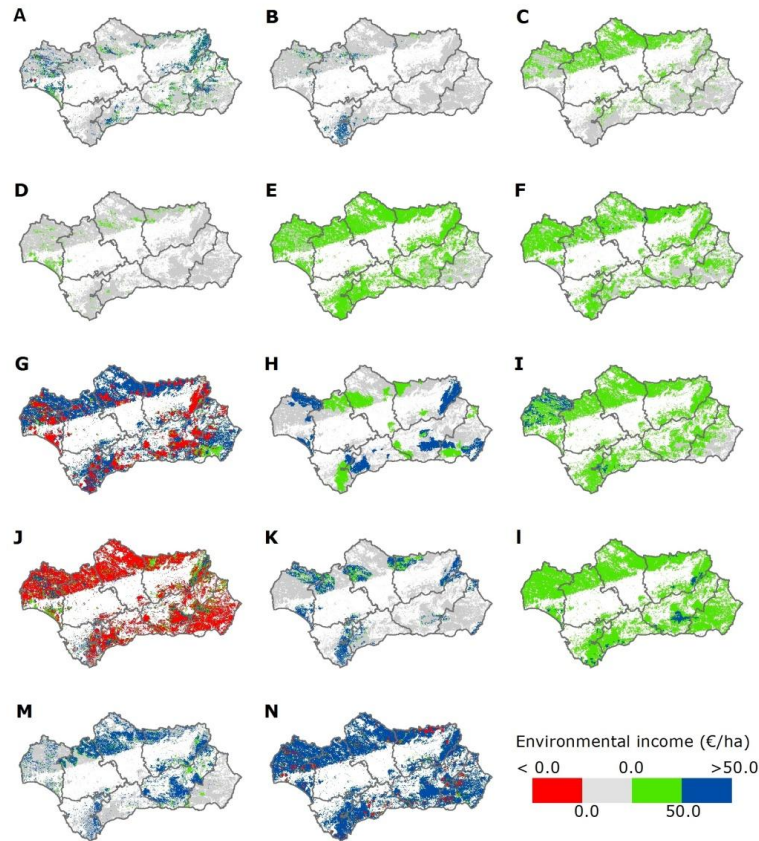
Class	Forestry 1	Huntin g 2	Resi- dential 3	Private amenity 4	Public recreation 5	Mushr ooms 6	Carbon 7	Land- scape 8	Biodivers ity 9	Water 10	Forest landscapes 11= $\sum$ 1 to 10
<b>AAS</b>											
GVA	59.6	5.9	11.1	246.9	43.7	9.8	36.2	40.0	16.3	63.3	533.0
TI	87.9	6.0	-10.4	90.5	42.3	9.8	38.4	39.6	0.0	63.3	383.1
EI	55.6	5.2	0.0	90.5	40.6	9.7	38.4	33.7	11.5	63.3	348.5
ES	14.8	4.4	0.0	246.9	21.5	9.3	51.2	34.4	9.2	63.3	455.1
<b>r.SNA</b>											
GVA	57.9	5.9	11.1	-11.7	8.0	9.8		6.3	4.9	53.8	146.0
ES	14.8	4.4				9.3				53.8	82.3
<b>Comparisons</b>											
<b>GVA</b>											
AAS/rSNA	1.0	1.0	1.0	-21	5.5	1.0		6.3	3.4	1.2	3.7
<b>ES</b>											
AAS/rSNA	1.0	1.0				1.0				1.2	5.5

# Andalusian forests total ecosystem services values



# Environmental incomes values of Andalusian forests

Abbreviations: **(A)** wood, **(B)** cork, **(C)** firewood, **(D)** nuts, **(E)** grazing, **(F)** hunting, **(G)** private amenity, **(H)** public recreation, **(I)** mushrooms, **(J)** carbon, **(K)** landscape, **(L)** biodiversity, **(M)** water, **(N)** all products.



# OPEN ISSUES FOR DISCUSSION

➤ AAS follows consistently with total economic value theory the SEEA-EEA concepts of :

- ✓ ecosystem services (ES),
- ✓ environmental asset (EA),
- ✓ environmental asset revaluation (EAr),
- ✓ environmental asset extraordinary destruction (EAwd),
- ✓ environmental asset withdrawals used (EAwu) and
- ✓ natural growth (NG).

➤ The AAS and SEEA-EEA measurements of the EAr differ on accounting register conventions.

➤ Total and environmental incomes are consistent SEEA-EEA indicators.

# Total and environmental incomes references

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<http://documents.worldbank.org/curated/en/825651468778804896/pdf/300260PAPER0Counting0on0ENV0EDP0198.pdf> (accessed on 27 September 2017).





Thanks...





## *Extended accounts: Agroforestry Accounting System (AAS)*

✓ **Product function:**  $P \equiv F( IC, LC, EFA, FCm)$

✓ **Total product:**  $TP = TPc + GCF$

$$TP = IC + LC + CFC + NOM$$

✓ **Net operating margin:**  $NOM = NOMm + NOMe$

✓ **Environmental asset:**

$$EA = WPe + EFAbr + EFAI$$

✓ **EA withdrawal used:**  $EAWu = WPeu$

✓ **EA revaluation:**

$$EAr = EAc - EAo + EAw - EAe$$

✓ **Total income:**  $TI = NC + CNW$

$$TI = NVA + CG = LC + CIm + EI$$

## *Extended accounts: Agroforestry Accounting System (AAS)*

### ✓ **Ecosystem services:**

$$ES = TPc - ICmo - LCo - IMCmouc$$

$$ES = WPeu + NOMeo$$

### ✓ **Change of environmental net worth:**

$$CNWe = NIe + Age$$

### ✓ **Environmental net investment:**

$$NIe = NG - WPeu - ICee$$

### ✓ **Environmental asset gain:**

$$EAg = EAr - EAwd - NGo$$

# Extended capital balance account of Andalusia forests landscapes by activities/sub-activities/products (2010: €/ha).

Class	1. Opening capital (Co)	2. Capital entries				3. Capital withdrawals					4. Revaluation, (Cr)	5. Closing capital (Cc)
		2.1 Bought	2.2 Own	2.3 Other	2.4 Total	3.1 Used	3.2Destruc- tions	3.3. Recla- sifications	3.4 Other	3.5 Total		
		(Ceb)	(Ceo)	(Ceot)	(Ce)	(Cwu)	(Cwd)	(Cwrc)	(Cwo)	(Cw)		
<b>1. Forest landscapes</b>	<b>9,957.7</b>		<b>0.4</b>	<b>19.5</b>	<b>51.2</b>	<b>71.1</b>	<b>6.9</b>	<b>58.1</b>	<b>15.0</b>	<b>80.1</b>	<b>-91.6</b>	<b>9,857.1</b>
2. Work in progress (WPe)	251.6		8.7		8.7	6.9		8.4		15.3	24.6	269.5
2.0.1. Wood (WPet)	212.2		3.3		3.3	1.7		3.2		5.0	17.5	228.0
2.0.2. Cork (WPec)	30.4		5.2		5.2	5.1		5.0		10.2	6.6	32.0
2.0.3. Firewood (WPef)	9.0		0.1		0.1	0.1		0.1		0.2	0.5	9.5
<b>2.1 Produced (WPep)</b>	<b>106.3</b>		<b>8.7</b>		<b>8.7</b>	<b>6.9</b>				<b>6.9</b>	<b>4.4</b>	<b>112.3</b>
2.1.1. Wood (WPept)	85.4		3.3		3.3	1.7				1.7	3.5	90.5
2.1.2 Cork (WPepc)	13.9		5.2		5.2	5.1				5.1	0.6	14.6
2.1.3 Firewood (WPepf)	6.9		0.1		0.1	0.1				0.1	0.3	7.3
<b>2.2 Expected (WPee)</b>	<b>145.4</b>							<b>8.4</b>		<b>8.4</b>	<b>20.2</b>	<b>157.2</b>
2.2.1 Wood (WPeeet)	126.8							3.2		3.2	14.0	137.5
2.2.2 Cork (WPeec)	16.5							5.0		5.0	6.0	17.4
2.2.3 Firewood (WPeeef)	2.1							0.1		0.1	0.2	2.2
3. Fixed capital (FC)	9,706.0	0.4	10.8	51.2	62.4	0.0		49.7	15.0	64.7	-116.2	9,587.6
<b>3.1 Land (EFAI)</b>	<b>8,888.8</b>			<b>51.2</b>	<b>51.2</b>			<b>49.7</b>	<b>15.0</b>	<b>64.7</b>	<b>-100.7</b>	<b>8,774.7</b>
3.1.1 Wood (EFAIt)	96.4										2.1	98.5
3.1.2 Cork (EFAIc)	8.0										0.3	8.3
3.1.3 Firewood (EFAIf)	30.1										0.9	31.0
3.1.4 Nuts (EFAIn)	2.3										0.1	2.4
3.1.5 Grazing others (EFAIgo)	443.4											443.4
3.1.6 Grazing acorn (EFAIga)	13.9										0.4	14.3
3.1.7 Hunting (EFAIh)	174.9											174.9
3.1.8 Private amenety (EFAIa)	3,272.6										-156.4	3,116.2
3.1.9 Public recreation(EFAIrr)	1,354.4											1,354.4
3.1.10 Mushrooms (EFAImu)	322.4											322.4
3.1.11 Carbon (EFAIca)	723.0			51.2	51.2			49.7	15.0	64.7	52.0	761.5
3.1.12 Landscape (EFAIl)	1,123.5											1,123.5
3.1.13 Biodiversity (EFAIb)	382.0											382.0
3.1.14 Forest water (FCIfw)	942.0											942.0
<b>3.2 Biological resources (EFAbr)</b>	<b>251.5</b>										<b>14.7</b>	<b>266.2</b>
3.2.1 Wood (EFAbr t)	7.6										1.1	8.7
3.2.2 Cork (EFAbr c)	194.8										11.4	206.2
3.2.3 Firewood (EFAbrf)	34.2										1.8	36.0
3.2.4 Nuts (EFAbrn)	2.9										0.1	3.0
3.2.5 Grazing acorns (EFAbra)	12.0										0.3	12.2
<b>3.3 Manufactured (FCm)</b>	<b>565.7</b>	<b>0.4</b>	<b>10.8</b>		<b>11.2</b>				<b>0.0</b>	<b>0.0</b>	<b>-30.2</b>	<b>546.7</b>
3.3.1 Plantations (FCmp)	51.2		4.4		4.4						0.1	55.7
3.3.2 Buildings (FCmb)	497.0		4.7		4.7						-28.6	473.0
3.3.3 Equipments (FCme)	3.2	0.4			0.4	0.0				0.0	-0.2	3.5
3.3.4 Others (FCmo)	14.4		1.7		1.7						-1.5	14.5

# Extended production account of forestry in Andalusia forest landscapes (2010: €/ha).

Class	Wood	Cork	Firewood	Nuts	Grazing	Conser. forestry	Govern. forestry	Fores-try
<b>1. Total product (TP)</b>	<b>7.8</b>	<b>16.4</b>	<b>0.6</b>	<b>0.7</b>	<b>15.2</b>	<b>12.3</b>	<b>42.6</b>	<b>95.6</b>
<b>1.1 Intermediate product (IP)</b>	<b>1.1</b>	<b>5.3</b>			<b>15.2</b>	<b>7.9</b>	<b>39.0</b>	<b>68.4</b>
1.1.1 Woody harvested (IRMw)	1.1	5.3						6.3
1.1.2 Grazing grass/browse (IRMgb)					12.8			12.8
1.1.3 Grazing acorn (IRMa)					2.4			2.4
1.1.4 Recreational game hunted (IRMh)								
<b>1.1.5 Commercial services (ISSc)</b>						<b>7.9</b>	<b>39.0</b>	<b>46.9</b>
<b>1.2 Final product (FP)</b>	<b>6.7</b>	<b>11.1</b>	<b>0.6</b>	<b>0.7</b>		<b>4.4</b>	<b>3.6</b>	<b>27.2</b>
1.2.1 Sales (FPs)	3.4	5.9	0.4	0.7				10.4
1.2.2 Capital formation (GFCF)						4.4	3.6	8.0
1.2.2.1 Plantations (GFCFp)						4.4	0.0	4.4
1.2.2.2 Construction (GFCFc)							3.0	3.0
1.2.2.3 Born female game breeders (GFCFh)								
1.2.2.4 Others (GFCFo)							0.6	0.6
1.2.3 Work in progress formation (GWPF)	3.3	5.2	0.1					8.7
<b>1.2.3.1 Natural growth (NG)</b>	<b>3.3</b>	<b>5.2</b>	<b>0.1</b>					<b>8.7</b>
1.2.3.2 Game (GWPFh)								
1.2.4 Autoconsumption (FPa)			0.1					0.1
1.2.5 Public final product (FPpu)								
1.2.9 Other final product (FPo)								
<b>2. Total cost (TC)</b>	<b>35.4</b>	<b>11.7</b>	<b>0.3</b>	<b>4.3</b>	<b>3.3</b>	<b>12.3</b>	<b>42.5</b>	<b>109.7</b>
<b>2.1 Intermediate consumption (IC)</b>	<b>7.3</b>	<b>10.6</b>	<b>0.2</b>	<b>0.6</b>	<b>0.4</b>	<b>4.2</b>	<b>12.7</b>	<b>35.9</b>
2.1.1 Raw materials (RM)	1.7	5.3	0.1	0.1	0.2	0.0	0.1	7.5
2.1.1.1 Bought raw materials (RMb)	0.6	0.0	0.1	0.1	0.2	0.0	0.1	1.1
2.1.1.2 Own raw materials (RMo)	1.1	5.3						6.3
2.1.2 Services (SS)	3.9	0.1	0.0	0.5	0.2	4.2	12.6	21.5
2.1.2.1 Bought services (SSb)	3.9	0.1	0.0	0.5	0.2	4.2	12.6	21.5
2.1.2.2 Own services (SSis)								
2.1.2.3 Environmental services (SSe)								
<b>2.1.3 Work in progress used (WPeu)</b>	<b>1.7</b>	<b>5.1</b>	<b>0.1</b>					<b>6.9</b>
2.1.3.1 Wood harvested (WPeut)	1.7							1.7
2.1.3.2 Cork stripping (WPeuc)		5.1						5.1
2.1.3.3 Firewood pruning (WPeuf)			0.1					0.1
<b>2.2 Labor cost (LC)</b>	<b>26.8</b>	<b>1.1</b>	<b>0.1</b>	<b>3.7</b>	<b>2.1</b>	<b>7.8</b>	<b>27.1</b>	<b>68.7</b>
2.3 Consumption of fixed capital (CFC)	1.2		0.0	0.1	0.7	0.3	2.7	5.0
2.3.1 Plantations (CFCp)	0.4					0.3		0.7
2.3.2 Buildings (CFCb)	0.1			0.0	0.7		1.3	2.1
2.3.3 Equipments (CFCe)	0.8		0.0	0.1	0.0		0.3	1.1
2.3.9 Others (CFCo)							1.1	1.1
<b>3. Net operating margin (NOM)</b>	<b>-27.6</b>	<b>4.7</b>	<b>0.4</b>	<b>-3.7</b>	<b>11.9</b>	<b>0.0</b>	<b>0.1</b>	<b>-14.1</b>
<b>4. Net value added (NVA)</b>	<b>-0.8</b>	<b>5.8</b>	<b>0.0</b>	<b>0.0</b>	<b>14.1</b>	<b>7.8</b>	<b>27.2</b>	<b>54.6</b>

# Extended production account by activities/sub-activities in Andalusia forest landscapes (2010: €/ha)

Class	Forestry	Hunting	Residential	Private amenity	Public recreation	Mush-rooms	Carbon	Landscape	Biodiversity	Water	Forest landscape
<b>1. Total product (TP)</b>	<b>95.6</b>	<b>7.4</b>	<b>11.7</b>	<b>258.7</b>	<b>47.3</b>	<b>9.9</b>	<b>51.2</b>	<b>87.0</b>	<b>18.1</b>	<b>63.3</b>	<b>650.3</b>
<b>1.1 Intermediate product (IP)</b>	<b>68.4</b>	<b>1.3</b>	<b>11.7</b>								<b>81.4</b>
1.1.1 Woody harvested (IRMw)	6.3										6.3
1.1.2 Grazing grass/browse (IRMgb)	12.8										12.8
1.1.3 Grazing acorn (IRMa)	2.4										2.4
1.1.4 Recreational game hunted (IRMh)		1.3									1.3
<b>1.1.5 Commercial services (ISSc)</b>	<b>46.9</b>		<b>11.7</b>								<b>58.6</b>
<b>1.2 Final product (FP)</b>	<b>27.2</b>	<b>6.1</b>		<b>258.7</b>	<b>47.3</b>	<b>9.9</b>	<b>51.2</b>	<b>87.0</b>	<b>18.1</b>	<b>63.3</b>	<b>568.9</b>
1.2.1 Sales (FPs)	10.4										10.4
1.2.2 Capital formation (GFCF)	8.0	0.6			1.1	0.0		0.5	1.0		11.3
1.2.2.1 Plantations (GFCFp)	4.4										4.4
1.2.2.2 Construction (GFCFc)	3.0	0.0			0.9	0.0		0.0	0.6		4.7
1.2.2.3 Born female game breeders (GFCFh)											0.5
1.2.2.4 Others (GFCFo)	0.6	0.1			0.2	0.0		0.5	0.3		1.7
1.2.3 Work in progress formation (GWPF)	8.7	4.3									12.9
<b>1.2.3.1 Natural growth (NG)</b>	<b>8.7</b>										<b>8.7</b>
1.2.3.2 Game (GWPFh)		4.3									4.3
1.2.4 Autoconsumption (FPa)	0.1			258.7							258.8
1.2.5 Public final product (FPpu)					46.2	9.8	51.2	86.5	17.2	63.3	274.2
1.2.9 Other final product (FPo)		1.3									1.3
<b>2. Total cost (TC)</b>	<b>109.7</b>	<b>2.6</b>	<b>7.6</b>	<b>11.7</b>	<b>10.1</b>	<b>0.1</b>	<b>15.0</b>	<b>51.3</b>	<b>6.4</b>		<b>214.6</b>
<b>2.1 Intermediate consumption (IC)</b>	<b>35.9</b>	<b>1.5</b>	<b>0.6</b>	<b>11.7</b>	<b>3.7</b>	<b>0.0</b>	<b>15.0</b>	<b>47.0</b>	<b>1.8</b>		<b>117.3</b>
2.1.1 Raw materials (RM)	7.5	1.3	0.1		0.1	0.0		0.0	0.0		9.0
2.1.1.1 Bought raw materials (RMb)	1.1	0.0	0.1		0.1	0.0		0.0	0.0		1.4
2.1.1.2 Own raw materials (RMo)	6.3	1.3									7.6
2.1.2 Services (SS)	21.5	0.2	0.5	11.7	3.6	0.0	15.0	47.0	1.8		101.4
2.1.2.1 Bought services (SSb)	21.5	0.2	0.5		1.9	0.0		1.8	1.8		27.7
2.1.2.2 Own services (SSis)				11.7	1.7			45.1	0.0		58.6
<b>2.1.2.3 Environmental services (SSe)</b>							<b>15.0</b>				<b>15.0</b>
<b>2.1.3 Work in progress used (WPeu)</b>	<b>6.9</b>										<b>6.9</b>
2.1.3.1 Wood harvested (WPeut)	1.7										1.7
2.1.3.2 Cork stripping (WPeuc)	5.1										5.1
2.1.3.3 Firewood pruning (WPeuf)	0.1										0.1
<b>2.2 Labor cost (LC)</b>	<b>68.7</b>	<b>1.0</b>	<b>2.5</b>		<b>4.8</b>	<b>0.1</b>		<b>3.6</b>	<b>4.0</b>		<b>84.7</b>
2.3 Consumption of fixed capital (CFC)	5.0	0.1	4.5		1.7	0.0		0.7	0.7		12.6
2.3.1 Plantations (CFCp)	0.7										0.7
2.3.2 Buildings (CFCb)	2.1	0.0	4.5		1.4	0.0		0.2	0.3		8.5
2.3.3 Equipments (CFCe)	1.1	0.0	0.0		0.0	0.0		0.0	0.0		1.3
2.3.9 Others (CFCo)	1.1	0.0			0.2	0.0		0.5	0.4		2.3
<b>3. Net operating margin (NOM)</b>	<b>-14.1</b>	<b>4.8</b>	<b>4.1</b>	<b>246.9</b>	<b>37.3</b>	<b>9.7</b>	<b>36.2</b>	<b>35.7</b>	<b>11.7</b>	<b>63.3</b>	<b>435.6</b>
<b>4. Net value added (NVA)</b>	<b>54.6</b>	<b>5.8</b>	<b>6.6</b>	<b>246.9</b>	<b>42.0</b>	<b>9.8</b>	<b>36.2</b>	<b>39.4</b>	<b>1.6</b>	<b>63.3</b>	<b>520.3</b>

# Forestry activity AAS versus rSNA indicators comparisons in Andalusia forest landscapes (2010: €/ha)

Class	Wood	Cork	Firewood	Nuts	Grazing	landowner forestry	Government forestry	Forestry activity
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1 = $\sum$ 1.1 to 1.7
<b>Extended AAS</b>								
<b>1. Gross value added (GVA)</b>	<b>0.5</b>	<b>5.8</b>	<b>0.5</b>	<b>0.1</b>	<b>14.8</b>	<b>8.1</b>	<b>3.0</b>	<b>59.6</b>
2. Net value added (NVA)	-0.8	5.8	0.5	0.0	14.1	7.8	27.2	54.6
3. Capital gain (CG)	17.7	13.1	3.2	0.0	0.9	0.3	-2.0	33.3
4. Capital income (CI)	-9.9	17.8	3.5	-3.4	12.9	0.3	-2.0	19.2
<b>4.1. Environmental income (EI)</b>	<b>20.8</b>	<b>18.4</b>	<b>3.3</b>	<b>0.2</b>	<b>12.9</b>	<b>0.0</b>	<b>0.0</b>	<b>55.6</b>
4.2. Manufactured income (CI <sub>m</sub> )	-30.7	-0.6	0.3	-3.6	0.0	0.3	-2.0	-3.6
5. Total income (TI)	17.0	18.9	3.6	0.2	15.0	8.1	25.1	87.9
<b>6. Ecosystem services (ES)</b>	<b>1.7</b>	<b>5.1</b>	<b>0.3</b>	<b>0.0</b>	<b>7.6</b>	<b>0.0</b>	<b>0.0</b>	<b>14.8</b>
<b>Standard revised rSNA*</b>								
1. Final product (FP)	3.4	0.6	0.5	0.7	15.2	12.3	42.6	80.6
1.1. Consumption (FP <sub>cr</sub> )	3.4	0.6	0.5	0.7	15.2	7.9	3.9	72.6
1.2. Capital formation (GFCF <sub>m</sub> )	0.0	0.0	0.0	0.0	0.0	4.4	3.6	8.0
2. Total cost (TC)	32.6	1.3	0.2	4.3	3.3	12.3	42.5	9.6
2.1. Intermediate consumption (IC)	4.5	0.2	0.1	0.6	0.4	4.2	12.7	22.7
2.2. Capital consumption (CFC)	1.2	0.0	0.0	0.1	0.7	0.0	2.7	5.0
2.3. Labor cost (LC)	26.8	1.1	0.1	3.7	2.1	0.8	2.7	68.7
<b>3. Operating surplus (rNOS)</b>	<b>-29.2</b>	<b>4.6</b>	<b>0.3</b>	<b>-3.7</b>	<b>11.9</b>	<b>0.0</b>	<b>0.1</b>	<b>-15.8</b>
<b>4. Gross value added (rGVA)</b>	<b>-1.2</b>	<b>5.7</b>	<b>0.5</b>	<b>0.1</b>	<b>14.8</b>	<b>8.1</b>	<b>3.0</b>	<b>57.9</b>
<b>5. Ecosystem services (ES<sub>rSNA</sub>)</b>	<b>1.7</b>	<b>5.1</b>	<b>0.3</b>	<b>0.0</b>	<b>7.6</b>	<b>0.0</b>	<b>0.0</b>	<b>14.8</b>
<b>Government EAF**</b>								
1. Final product (FP)								97.8
2. Intermediate consumption (IC)								49.7
<b>3. Value added (GVA)**</b>								<b>4.8</b>
3.1. Employee labor cost (LC <sub>e</sub> )								4.2
<b>3.2. Operating surplus (GOS)**</b>								<b>0.6</b>
<b>Comparisons</b>								
$GVA_{AAS}/GVA_{rSNA}$	-0.4	1.0	1.1	1.0	1.0	1.0	1.0	1.0
$GVA_{AAS}/GVA_{EAF}$								1.2
$LC_{AAS}/LC_{EAF}$								1.6
$ES_{AAS}/ES_{rSNA}$		1.0	1.0		1.0			1.0

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