



**United
Nations**



System of
Environmental
Economic
Accounting

Ecosystem Accounting and Institutional coordination: the Italian experience

Forum of Experts on
SEEA Ecosystem Accounting

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THE **MAES PROCESS** BEGAN IN ITALY IN 2014, IN THE EXPERIMENTAL PHASE OF ECOSYSTEM ACCOUNTING WITH *THE ITALIAN BOTANICAL SOCIETY* SUPPORTING THE *ENVIRONMENT MINISTRY* FOR ITS IMPLEMENTATION.

IT PRODUCED:

- THE FIRST ECOSYSTEM MAP
- A FIRST ASSESSMENT OF CONDITIONS
- 4 PILOTS FOR ECOSYSTEM SERVICES.

RESTORATION PRIORITIES WERE DEFINED ON THIS BASIS.

REGULAR UPDATE OF THE QUANTIFICATIONS OF THE FOUR E.S. IS FORESEEN FOR USE IN THE *ANNUAL REPORT ON THE STATE OF NATURAL CAPITAL IN ITALY*, ALONG WITH THAT OF OTHER QUANTIFICATIONS THAT HAVE LATER BEEN DEVELOPED BY ISPRA.

THE ANNUAL **REPORTS ON THE STATE OF NATURAL CAPITAL IN ITALY** ARE DRAFTED BY THE **EXPERTS** OF A **COMMITTEE** SET UP BY **LAW** IN 2015. THE LAW ESTABLISHING IT EXPLICITLY MENTIONS **SEA (BOTH CF AND EA)**. THE COMMITTEE IS CHAIRED BY THE *MINISTRY OF ECOLOGICAL TRANSITION* AND GATHERS *9 OTHER MINISTRIES*, AS WELL AS *PUBLIC RESEARCH INSTITUTIONS (INCLUDING ISTAT AND ISPRA)*, THE *BANK OF ITALY*, *ENVIRONMENTALIST ASSOCIATIONS* AND *ACADEMICS*. ITS ACTIVITIES UNFORTUNATELY RARELY GO BEYOND THE ANNUAL TASK OF THE REPORT. ITS **RECOMMENDATIONS** ARE NOT BINDING FOR THE GOVERNMENT AND ARE FOLLOWED ONLY IN PART, FOR A NUMBER OF REASONS.

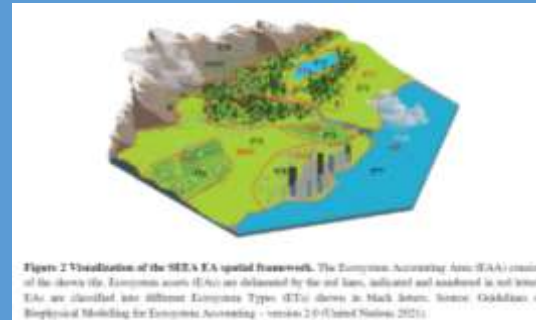


- IN 2017-18 **ISPRA**, WITH SUPPORT BY ISTAT AND CO-FINANCING BY EUROSTAT, A QUANTIFICATION OF **FOUR OTHER E.S.** AND OF CONNECTED MONETARY VALUES, WHICH ALSO FED THE *REPORT* AND SUBSEQUENTLY GREW IN NUMBER UP TO TWELVE IN 2021.
- IN 2020 ISTAT INSERTED A PROJECT ON ENVIRONMENTAL ACCOUNTING IN THE **NATIONAL STATISTICAL PROGRAM**. AS A STRATEGIC ORIENTATION, THIS PROJECT ENVISAGES THE PROGRESSIVE INVOLVEMENT OF OTHER COMPETENT PUBLIC INSTITUTIONS – FIRST OF ALL THOSE REPRESENTED IN THE *COMMITTEE OF EXPERTS*. IT AIMS AT COMPILING ACCOUNTS COMPLYING WITH THE INTERNATIONAL STANDARD (CH. 1-7 OF THE SEEA EA), AND TO DEVELOPING A NATIONAL APPROACH TO ECONOMIC VALUES, CONNECTED TO E.S., THAT CAN BE EXPRESSED IN MONETARY UNITS.
- IN 2020 ISTAT, IN COLLABORATION WITH **CIRBISES (UNIVERSITY OF ROME «LA SAPIENZA»)**, PUBLISHED THE FIRST NON-EXPERIMENTAL PIECE OF OFFICIAL STATISTICS IN THE FIELD FOR , CONSISTING IN A CLASSIFICATION OF THE ITALIAN TERRITORY (UNIT: MUNICIPALITY/LAU1) BY **ECOREGION**.
- IN 2021, AT THE LAUNCH OF THE **EUROPEAN TASK FORCE ON ENVIRONMENTAL ACCOUNTS** AND FACING THE PERSPECTIVE OF AN EXTENSION TO ECOSYSTEM ACCOUNTS OF THE **EUROPEAN REGULATION ON ENVIRONMENTAL ACCOUNTS**, THE COOPERATION BETWEEN **ISTAT, ISPRA AND THE UNIVERSITY OF ROME «LA SAPIENZA»** GOT TIGHTER AND WE ARE NOW PUTTING IN COMMON KNOWLEDGE OF THE SEEA EA AND TECHNICAL EXPERTISE. WE EXCHANGE VIEWS, DISCUSS DOCUMENTS, DRAFT ANSWERS, PREPARE PROPOSALS AND PRESENTATIONS IN A CONSTANT DIALOGUE.

THE FOLLOWING SLIDES SHOW RESULTS AND TOOLS THAT THESE THREE INSTITUTIONS ARE CONTRIBUTING TO THE COMMON EFFORT.

Work on ecoregions

SEEA EA issue: (Subnational) ecosystem accounting areas and associated measurement boundaries



EUROPEAN COMMISSION
EUROSTAT

Directorate E: Sectoral and regional statistics
Unit E-2: Environmental statistics and accounts: sustainable development

Doc. EN/EA/TF/2021_1/6
Item 6 of the agenda

Implementation in Italy

Rationale: in heterogeneous countries, *ecological regions* are more representative of ecosystem diversity than *administrative regions*

Data and methods: Ecosystem Accounting System based on the Ecoregions of Italy and the respective Classification of Municipalities

Ecoregions of Italy

Temperate Division

- Alpine Province
- Po Plain Province
- Apennine Province

Mediterranean Division

- Tyrrhenian Province
- Adriatic Province

Administrative regions



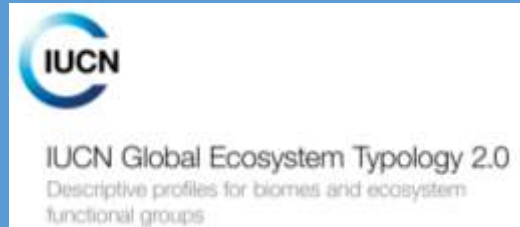
Characteristic broadleaved deciduous woodland ecosystems in the Lazio Region



Istat website showing the classification of municipalities based on Italian ecoregions. The page title is "CLASSIFICATION OF MUNICIPALITIES BASED ON ITALIAN ECOREGIONS". The content includes a map of Italy and text describing the methodology and results of the classification.

Work on ecosystem types

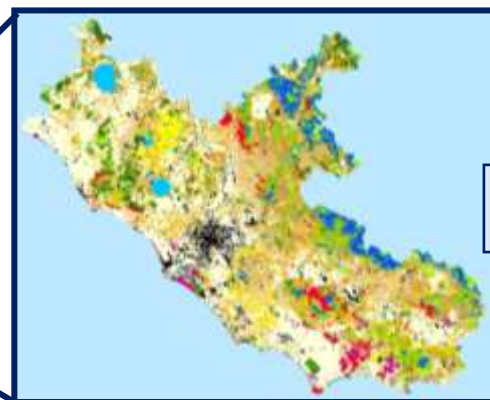
SEEA EA issue: Ecosystem type reference classification and ecosystem extent account



Implementation in Italy

Rationale: the level of detail in ecosystem characterization has to properly support the assessment of ecosystem condition as well as of specific ecosystem services

Data and methods: Map of the Ecosystems of Italy (V 2.0, 2021), including 98 categories hierarchically arranged into 'Physiognomic types', 'Functional-structural categories' and 'Macrotypes'



Detailed ecosystem types derived from Corine Land Cover classes and Potential Natural Vegetation



Structural and functional characterization of ecosystems (e.g. LAI); aggregation into functional-structural categories



Spatial assessment and biophysical valuation of ES per administrative region and per ecoregion (e.g. PM¹⁰ removal; Fusaro et al., 2017)

PSVCs (Latium Region)	Mg	Mg-ha ⁻¹
Evergreen oak woods	1060.53	0.0206
Deciduous oak woods	1822.75	0.0087
Mixed broadleaved woods	523.68	0.0073
Chestnut woods	734.60	0.0092
Beech woods	351.18	0.0060
Hygrophilous woods	8.83	0.0053
Mediterranean pine woods	64.02	0.0178
Mountain coniferous woods	164.80	0.0134
Mediterranean maquis	99.31	0.0170
Total	4829.69	0.0098

Ecosystem types by ecoregion in tabular form

Ecosystem extent by type in the 5 ecoregional Provinces (year 2017)

LEVELS of ECOSYSTEM TYPOLOGY				EXTENT (km2)					
MACROTYPES	STRUCTURAL CATEGORIES	PHYSIOGNOMIC TYPES	ECOSYSTEM TYPES (nr)	ALPINE ECOREGION	PO PLAIN ECOREGION	APENNINE ECOREGION	TYRRHENIAN ECOREGION	ADRIATIC ECOREGION	ITALY (total)
URBAN ECOSYSTEMS	Artificial surfaces		2	2050	5751	2350	4926	1422	16498
	Green urban areas		1	2	60	16	35	1	114
AGRO-ECOSYSTEMS	Arable land		2	684	30971	15524	23100	13093	83372
	Permanent crops		4	1083	1728	3368	9714	6495	22388
	Heterogeneous agricultural areas		3	4107	7178	15646	15813	4776	47519
	Pastures		1	1652	437	1081	694	278	4141
FOREST ECOSYSTEMS	Broadleaved evergreen forests	Mediterranean broadleaved evergreen forests	4	29	12	1432	5852	340	7665
	Mixed broadleaved deciduous forests	Quercus pubescens, Q. petraea and Q. robur temperate forests	7	744	514	7072	243	35	8608
		Quercus cerris, Q. frainetto, Q. trojana and Q. macrolepis thermophilous forests	5			8893	3723	765	13381
		Hornbeam and hophornbeam forests	3	5045	381	3365	327	5	9122
		Hygrophilous forests	4	61	147	236	121	103	667
		Allochthonous broadleaved forests	4	335	781	200	388	1	1705
	Chestnut forests	Chestnut forests	4	3339	213	4089	1352	23	9016
	Beech forests	Beech forests	3	4431		5877	1164	55	11527
	Pine forests	Mediterranean pine forests	3	14	53	763	1858	424	3111
		Mountain pine forests	3	1610	90	1028	1039	5	3772
		Larch and Stone pine forests	1	3011					3011
		Allochthonous coniferous forests	1	8		52	43		103
Fir and spruce forests	Fir and spruce forests	2	7285		150	36		7470	
SHRUB ECOSYSTEMS	Shrublands	Subapine shrublands	3	2789		217	80		3086
		Temperate shrublands	3	2028	177	3955	578	93	6831
	Mediterranean maquis	Mediterranean shrublands	2	17		316	10611	642	11586
HERBACEOUS ECOSYSTEMS	Continuous grasslands		8	8390	32	4367	3787	848	17424
	Open spaces with little or no vegetation		7	4542	30	155	349	22	5098
HYGROPHILOUS ECOSYSTEMS	Hygrophilous freshwater and halophilous ecosystems		7	150	694	248	383	185	1659
INLAND WATER ECOSYSTEMS	Freshwater and maritime wetlands ecosystems		11	988	1152	420	523	157	3240

Work on ecosystem conditions

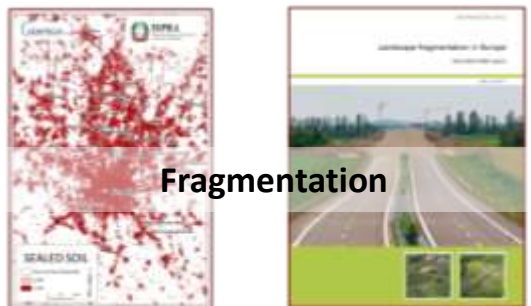
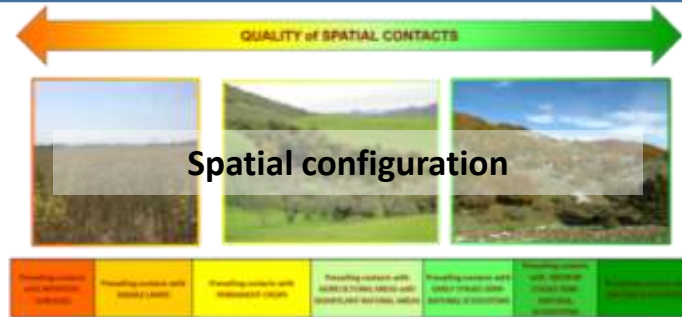
SEEA EA issue:
Measurement of ecosystem conditions



Implementation in Italy

Rationale: the capacity of an ecosystem to supply ES depends on extent and condition, both depending on state and pressures

Data and methods: multi-criteria assessment against spatial and temporal baselines



IUCN red list assessments
(e.g. declining distribution, agriculture intensity, forest fires, water pollution, biological invasions, etc)

e.g. Degradation of abiotic environment per ecoregion
(Red List of Ecosystems, criterion C)

Ecosystem conservation status per ecoregion
(1st Report on the State of Natural Capital)



Conservation status of natural and seminatural ecosystems

Conservation status of the physiognomic ecosystem types (x low, ! medium, v high) , year 2017,
and selected indicators for industry and services, urban surface and inhabitants per ecoregional Province, year 2018.

		ALPINE ECOREGION	PO PLAIN ECOREGION	APENNINE ECOREGION	TYRRHENIAN ECOREGION	ADRIATIC ECOREGION
Physiognomic type conservation status	Broadleaved evergreen forests	!	x	!	!	!
	Quercus pubescens, Q. petraea and Q. robur temperate forests			!	x	x
	Quercus cerris, Q. frainetto, Q. trojana and Q. macrolepis thermophilous forests			!	x	x
	Hornbeam and hophornbeam forests	v	x	!	!	!
	Hygrophilous forests	!	x	x	x	x
	Chestnut forests	v	x	v	x	!
	Beech forests	v		!	!	!
	Mediterranean pine forests		x	x	x	x
	Mediterranean pine forests	v	x	x	x	!
	Larch and Stone pine forests	v				
	Fir and spruce forests	v		v	v	
	Subapine shrublands	v		v	v	
	Temperate shrublands	v	x	!	x	x
	Mediterranean shrublands			!	!	x
Industry	operators/ha	31,8	142,3	28,4	53,0	45,0
	u.lo/ha	8,4	34,6	8,4	16,8	14,6
	added value/ha	1,5	7,4	1,2	2,1	1,5
	urban_surf/tot	4,8%	13,9%	3,9%	6,9%	5,3%
	% inhabitants	9,3	32,8%	14,2%	34,9%	8,9

Work on ecosystem services

SEEA EA issue:

Measurement of ecosystem services, and of connected economic values in monetary units

Implementation in Italy /1

PHYSICAL ASSESSMENT OF, AND MONETARY VALUES CONNECTED TO, CHANGES IN ECOSYSTEM SERVICES, AS INCLUDED IN THE FOURTH ANNUAL REPORT ON STATE OF THE ITALIAN NATURAL CAPITAL

VARIATION
2012-2018

INCREASED BIOPHYSICAL
BENEFIT

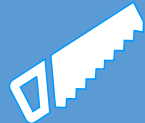
ARIES
TECHNOLOGY

CROP POLLINATION



+24.714 tons
of pollinated biomass

WOOD BIOMASS (USE)



+691.280 cubic meters
of wood biomass used

WOOD BIOMASS
(SUPPLY)



+2,1 M cubic meters
of wood biomass supplied

FISH PROVISION



+5.685 tons
of fish biomass

Work on ecosystem services

SEEA EA issue:

Measurement of ecosystem services, and of connected economic values in monetary units

Implementation in Italy /2

VARIATION
2012-2018

ARIES
TECHNOLOGY

AGRICULTURAL
PRODUCTION



BIOPHYSICAL LOSS

-166.215 tons
of agricultural biomass
produced

WATER SUPPLY



-72 million cubic meters
of available water resource

SOIL EROSION
PROTECTION



1,24 million tons
of eroded soil

HYDROLOGICAL
REGULATION



259 million cubic meters
of overflow

SEQUESTRATION AND
CARBON STOCK



-2,5 million tons
of carbon stock

Work on *monetary values*

SEEA EA issue:

Measurement of economic values in monetary units connected to ecosystem services

Implementation in Italy

ARIES
TECHNOLOGY

VARIATION
2012-2018

NATURE-BASED
TOURISM



MONETARY BENEFIT
(Billions of euros)

4,3 Bn €

MONETARY VALUATION
METHOD/MEANING

PURPOSE EXPENSES

ARIES
TECHNOLOGY

FLOOD RISK
MANAGEMENT



14 Bn €

POTENTIAL ADDITIONAL COSTS

WATER PURIFICATION



DATA ONLY FOR
2018

Regulation of nutrient
cycling

Filtering and
decontamination

MONETARY BENEFIT
(billions of euros)

0,2-1,8 Bn €

5,6-66,3 Bn €

POTENTIAL
ADDITIONAL COSTS

POTENTIAL
ADDITIONAL COSTS

Attitude towards monetary aggregates

A PECULIARITY OF THE ITALIAN INTERSTITUTIONAL COOPERATION IS THE FACT THAT – AFTER YEARS OF PASSIONATE DISCUSSIONS (JUST AS WE HAD AROUND THE WORLD) – AN APPROACH TO MONETARY VALUES DIFFERENT FROM THAT PURSUED IN CHAPTERS 8-11 OF THE SEEA EA EMERGED AS MOST CONVINCING.

WE NOW TALK OF MONETARY VALUES CONNECTED IN VARIOUS WAYS TO ECOSYSTEM SERVICES, OF WHICH ACTUAL OR POTENTIAL EXCHANGE VALUES OF ECOSYSTEM SERVICES ARE ONLY ONE KIND. IN SLIDES 9-11 ABOVE, THE BASIC QUALIFICATIONS OF THE ESTIMATED MONETARY AGGREGATES ARE GIVEN NEXT TO THEM.

Attitude towards policy use

- **EXTENT AND CONDITIONS** PROVIDE THE MAIN KNOWLEDGE BASIS FOR POLICIES ORIENTED AT MAKING SURE THAT CAPACITY DOES NOT DECLINE UNLESS DESIRED (TRADE OFFS), I.E. THAT THE USE OF SOME SERVICES DOES NOT LEAD TO OVEREXPLOITATION / DEGRADATION / OTHER SERVICES' CAPACITY LOSS.
- WHICH SERVICES ARE PREFERABLE OR PREFERRED – E.G. WHETHER WOOD USE OR CARBON UPTAKE – IS A MATTER FOR POLICY. POLICY SHOULD BE GIVEN INFORMATION ABOUT **TRADE-OFFS**, INCLUDING COSTS (ACTUAL AND OPPORTUNITY, OF DOING AND OF NOT DOING), RATHER THAN OVERALL OUTCOMES OF THE DEMAND / CAPACITY RELATIONSHIP, WEIGHTED BY EXCHANGE VALUES (THIS IS WHAT SEEA EA VALUES EXPRESS).
- **MONETARY VALUES** INVOLVED (CONNECTED TO SERVICES) ARE IMPORTANT AND MUST BE REPORTED, BUT THERE IS NO NEED TO CONCEPTUALIZE THEM AS “VALUE OF” E.S.. ON THE CONTRARY, IT IS NECESSARY TO UNDERSTAND WHAT THEY ACTUALLY REPRESENT, THE COMPLEX MECHANISMS BEHIND THEM, AND THAT THEIR POLICY RELEVANCE DEPENDS ON WHAT THEY REPRESENT.

- INTEGRATE EA-RELATED SYSTEMS AMONG THE THREE INSTITUTIONS LEADING THE IMPLEMENTATION OF SEEA EA (INTEROPERABILITY)
- SHARPEN AND MAKE MORE PRECISE THE MODELS
- INVOLVE OTHER INSTITUTIONS AND INTEGRATE THEIR KNOWLEDGE AND SYSTEMS IN THE EFFORT (STEP-BY-STEP)
- BE READY BEFORE THE EUROPEAN REGULATION ENTERS INTO FORCE AND PRODUCES EFFECTS (2026?), TO COVER *AT LEAST* ALL ACCOUNTS INCLUDED IN IT (THE PROPOSAL WILL BE PUT FORWARD IN 2022 BY THE EUROPEAN COMMISSION)
- CLARIFY THE DEFINITION OF *URBAN ECOSYSTEM*, IN ORDER TO MEASURE ITS SERVICES IN AN APPROPRIATE WAY
- COMPLETE THE FRAMEWORK FOR A SATELLITE ACCOUNT OF MONETARY VALUES CONNECTED – IN VARIOUS WAYS – TO ECOSYSTEMS AND THEIR SERVICES.
- FIND THE NECESSARY RESOURCES FOR ALL THAT

Thank you for the attention

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