United Nations UNEP Convention on Biological Diversity NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

Forum of Experts in SEEA Experimental Ecosystem Accounting

28-30 April 2015, New York

Session 5: Structure of Ecosystem accounts – compilation of accounting outputs and tables

Remarks

Jean-Louis Weber
jlweber45@gmail.com
http://www.ecosystemaccounting.net/

Expected characteristics of the ecosystem accounting framework fit for a quick start

- As simple as possible, in order to start NOW... Accounts are summaries...
- Modular: to allow several entry points, cooperation, synergies... Modular but not by pieces and bits...
- Structured, systemic, systematic (integrating area and linear units, sketching the full picture, ...) *(next slide)*
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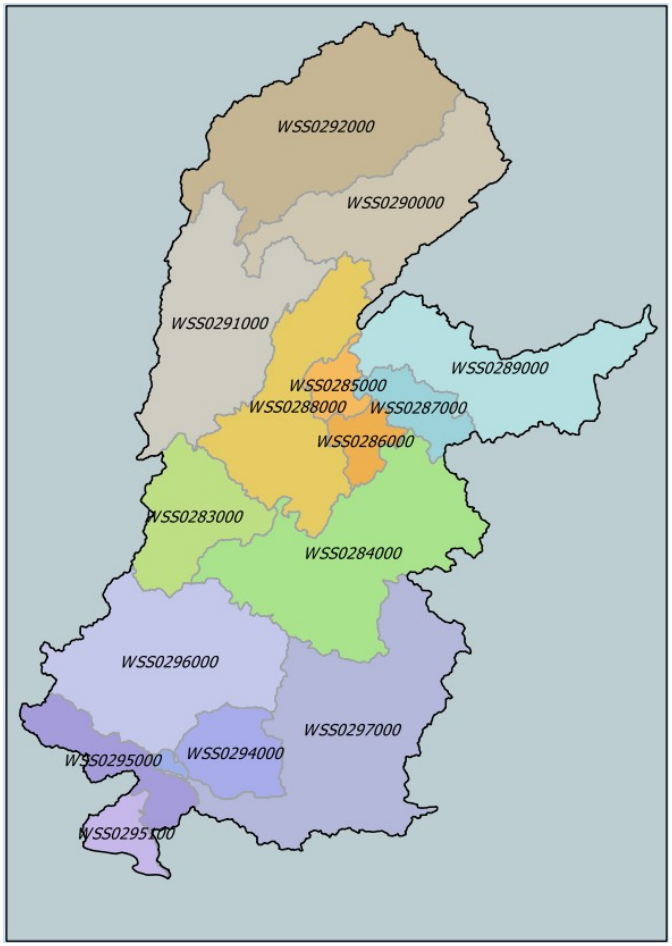
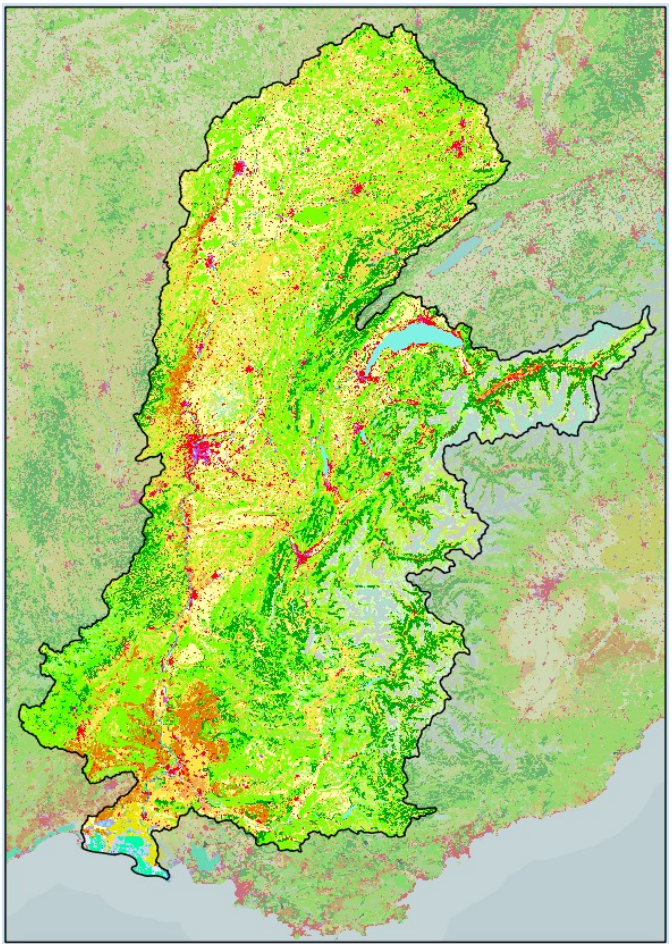
Integration of area and linear ecosystem accounting units

The Rhône river catchment



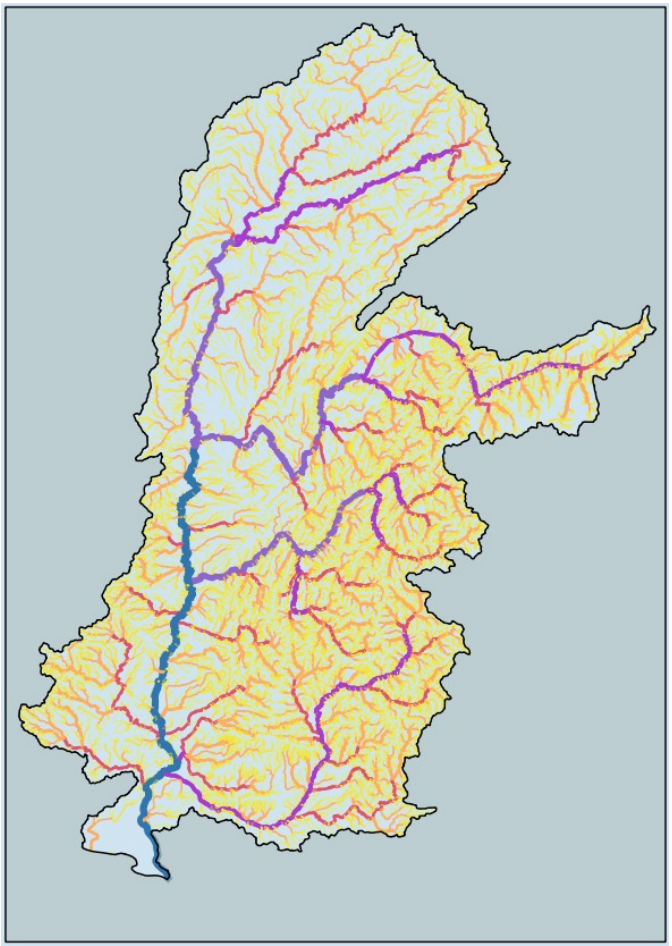
Ecosystem natural capital accounts being produced for the Upper Rhône river catchment, and France, by École Polytechnique Fédérale de Lausanne (Switzerland) and École Normale Supérieure de Lyon (France).

The land cover area units - LCEU



Ecosystem's skin

The rivers system units



Ecosystem's arteries and veins

Example of integration of area (landscape units) and linear (rivers) accounts

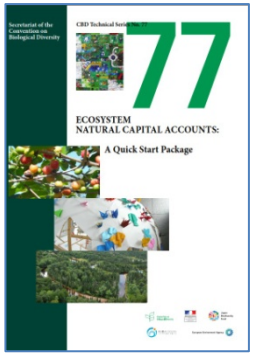
		Socio-Ecological Landscape Units (SELU) / Dominant Land Cover Type (DLCT)								River System Units (RSU)/ Homogeneous Stream Reach Units (HSRU) classes						
Ecosystem Accounting Unit Types		UR *Urban/ developed areas*	LA *Large scale agriculture*	AM *Agriculture mosaics*	GR *Grassland*	FO *Forest cover*	NA *Other natural land cover*	ND *No dominant land cover*	**s/total landscape ecosystems**	HSR1 *Large rivers, main drains*	HSR2 *Medium rivers, main tributaries*	HSR3 *Small rivers*	HSR4 *Brooks, small streams*	HSR5 *Canals*	**s/total river systems**	**Total inland ecosystems**
II. Accessible ecosystem infrastructure potential																
LC1	**Opening stock of land cover in km2**															
LEP01	*Green background landscape index (GBLI) (average by km2)*															
LEP02	*Landscape high nature conservation value index (average by km2)*															
LEP03	*Landscape fragmentation index (average by km2)*															
LEP04	*Landscape green ecotones index (average by km2)*															
LEP05	*Other LEP index (average by km2)*															
LEP_avg	***Average LEP composite index by km2***															
NLEP1	**Net Landscape Ecosystem Potential = LC1 x LEP_avg**															
RS1	**Opening stock of rivers in standardized river measurement units (SRMU)**															
REP01	*River ecosystem background index*															
REP02	*Rivers nature conservation value index*															
REP03	*Rivers fragmentation index (obstacles by km2)*															
REP04	*Rivers green ecotones index*															
REP05	*Other REP index*															
REP_idx	***REP composite index***															
NREP1	**Net River Ecosystem Potential = RS1 x REP_idx**															
REP_avg	***Average NREP by km2***															
LREP1	**Landscape River Ecosystem Potential = LC1 x REP_avg**															
TEIP1	**Opening stock of Total ecosystem infrastructure potential =NLEP1+LREP1**															

NLEP

NREP

NREP/ km2

Total ecosystem infrastructure potential



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Accounts' sequence in ENCA-QSP – example of ecosystem carbon

Accounts	Main items	Typical indicators/ balancing items
I. Ecosystem Carbon Basic Balance	Stocks Primary and secondary production of biocarbon Withdrawals Natural perturbations	*Total inflow of biocarbon* *Net Ecosystem Carbon Balance*
II. Accessible Resource Surplus	Total inflow of biocarbon Accessible stock carried over Restrictions of use Other accessibility corrections	*Net Accessible Resource Surplus*
III. Total Uses of Ecosystem Bio and Geo-Carbon	Total use of biocarbon Imports/biocarbon commodites contents Imports/ embedded biocarbon Direct use of fossil carbon Fossil carbon embedded into commodites	*Direct use of biocarbon Biocarbon requirement* *Total carbon requirement*
IV. Table of Indexes of Intensity of Use and Ecosystem Health	Sustainable intensity of ecosystem carbon use Composite ecosystem biocarbon health index	*Biocarbon ecological internal unit value*

ENCA-QSP: the same accounting structure for the 3 basic components

Ecosystem carbon

I. Ecosystem Carbon Basic Balance	Stocks Primary and secondary production of biocarbon Withdrawals Natural perturbations	*Total inflow of biocarbon* *Net Ecosystem Carbon Balance*
II. Accessible Resource Surplus	Total inflow of biocarbon Accessible stock carried over Restrictions of use Other accessibility corrections	*Net Accessible Resource Surplus*
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IV. Table of Indexes of Intensity of Use and Ecosystem Health	Sustainable intensity of ecosystem carbon use Composite ecosystem biocarbon health index	*Biocarbon ecological internal unit value*

Ecosystem water resource

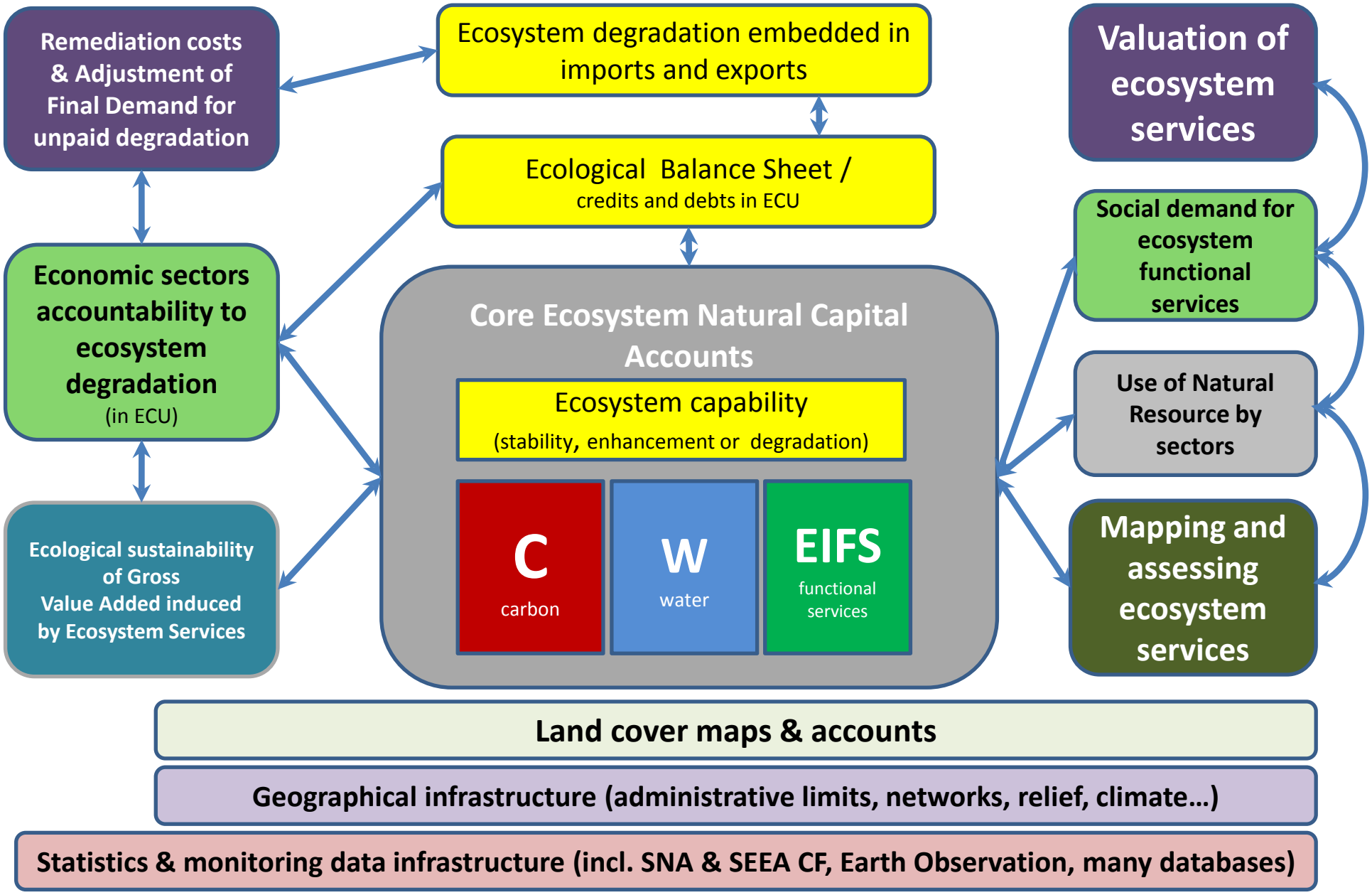
I. Ecosystem Water Basic Balance	Stocks Primary and secondary production of water Transfers between water bodies and basins Actual Evapotranspiration Abstraction of water, supply and use Returns to waste water and losses	*Total inflow of water* *Net Ecosystem Water Balance*
II. Accessible Resource Surplus	Total renewable water resources Accessible stock carried over Restrictions of use Other accessibility corrections	*Net Accessible Water Resource Surplus*
III. Total Uses of Water	Total use of ecosystem water: blues, grey & green water Imports/water commodities contents Imports/ embedded water	*Total use of ecosystem water* *Direct use of water* *Total water requirement*
IV. Table of Indexes of Intensity of Use and Ecosystem Health	Sustainable intensity of ecosystem water use Composite ecosystem water health index	*Water internal ecological unit value*

Ecosystem infrastructure functional services

I. Basic Balances I.1 Basic land cover account I.2 Basic river account	Stocks of land cover (km^2) Formation & Consumption of land cover Stocks of rivers (SRMU) Change in rivers stocks	*Net change/ land cover* *Net change/ river systems*
II. Accessible ecosystem infrastructure potential	Stocks of Landscape Ecosystem Potential Stocks of River Ecosystem Potential Total Ecosystem Infrastructure Potential	*Change in LEP* *Change in REP* *Change in TEIP*
III. Overall access to ecosystem infrastructure potential	Population local access to TEIP Agriculture local access to TEIP Nature conservation local access to TEIP Basin access to water regulating services Regional access to TEIP [tourism] Global nature conservation access to TEIP	*Change in access to key ecosystem infrastructure functional services*
IV. Table of Indexes of Intensity of Use and Ecosystem Health	Ecosystem infrastructure intensity of use index Composite ecosystem infrastructure health index	*Annual change in ecosystem infrastructure services ecological internal unit value*

all 3 based on land cover accounts

Structure of Ecosystem Natural Capital Accounts



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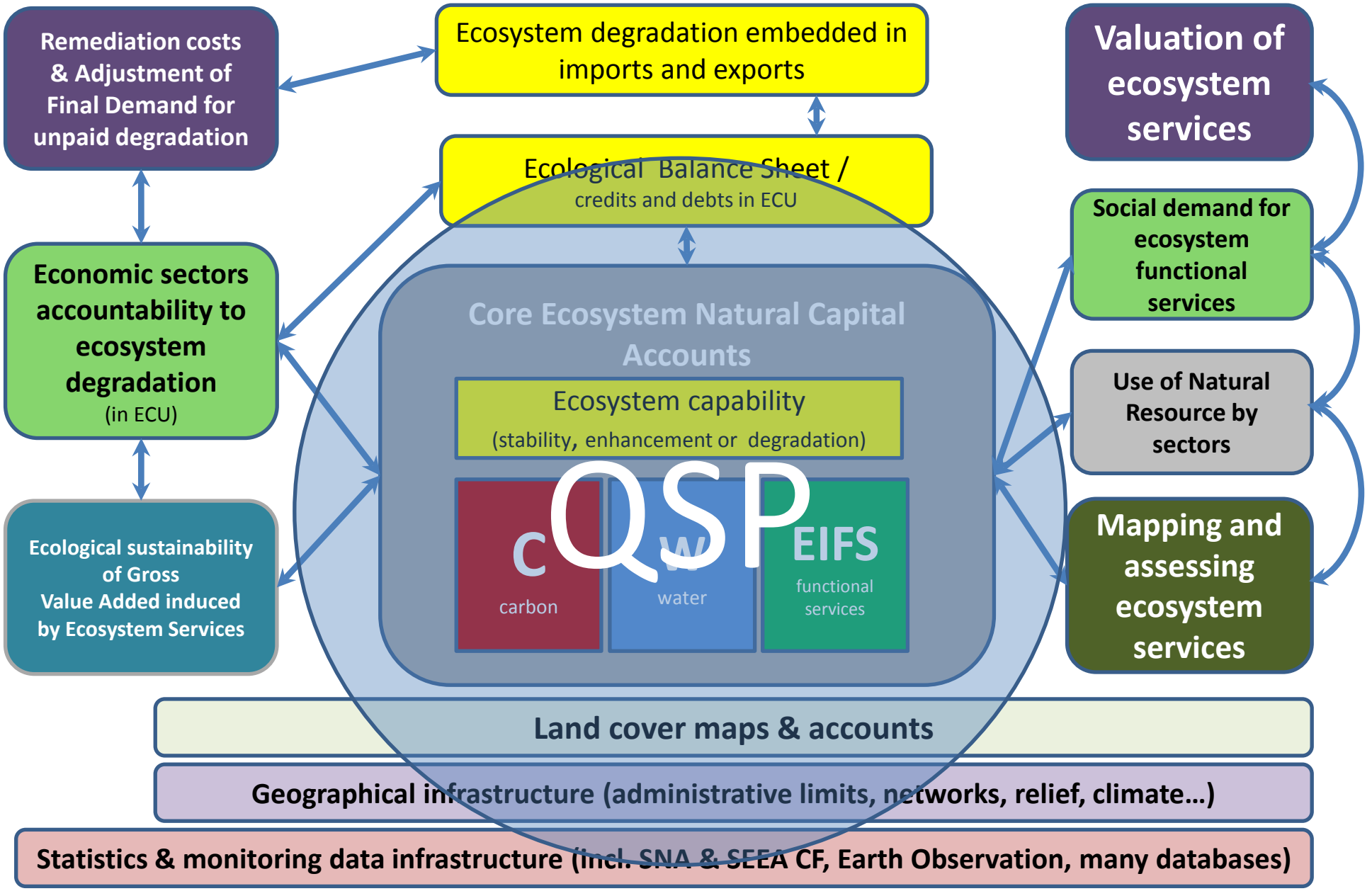

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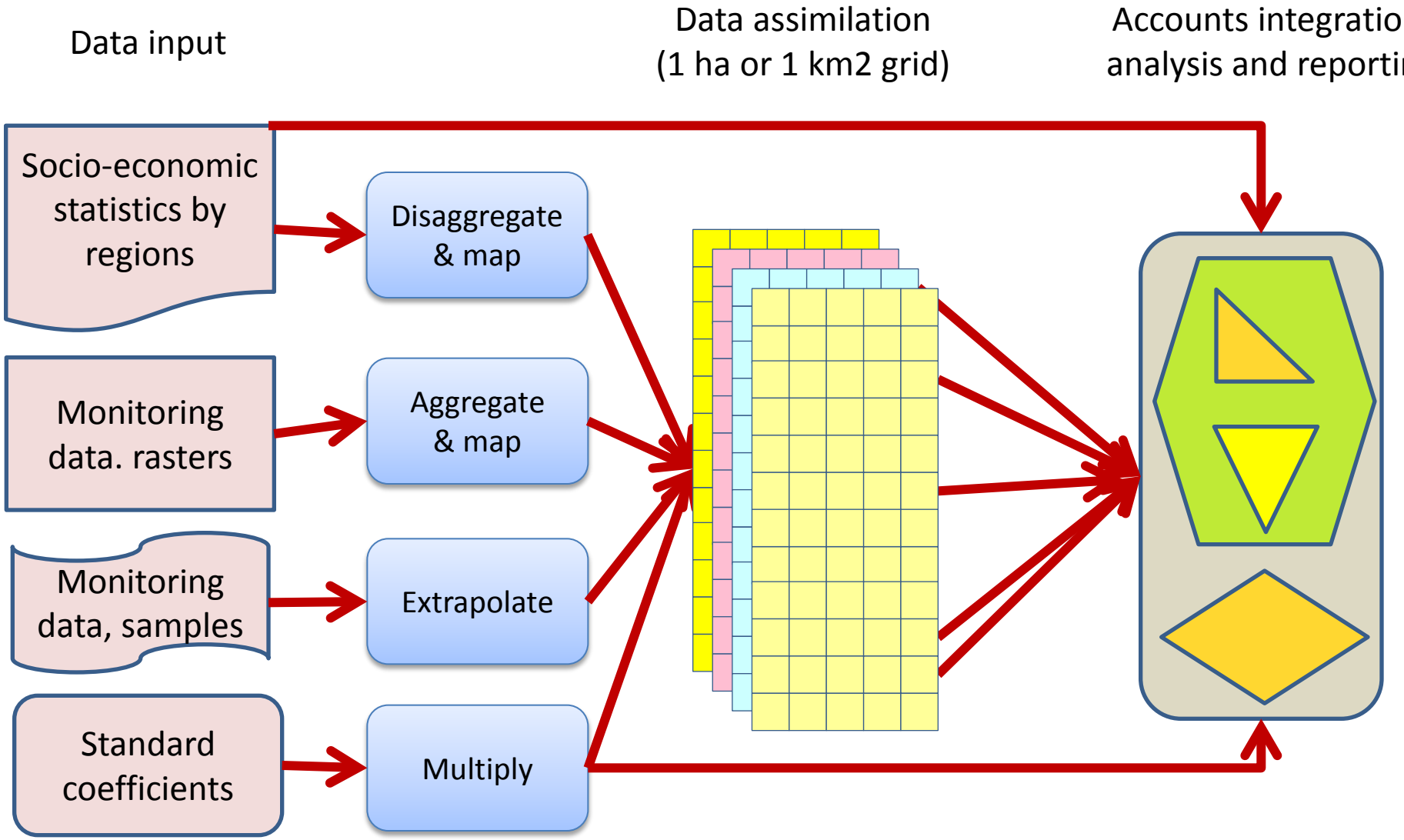
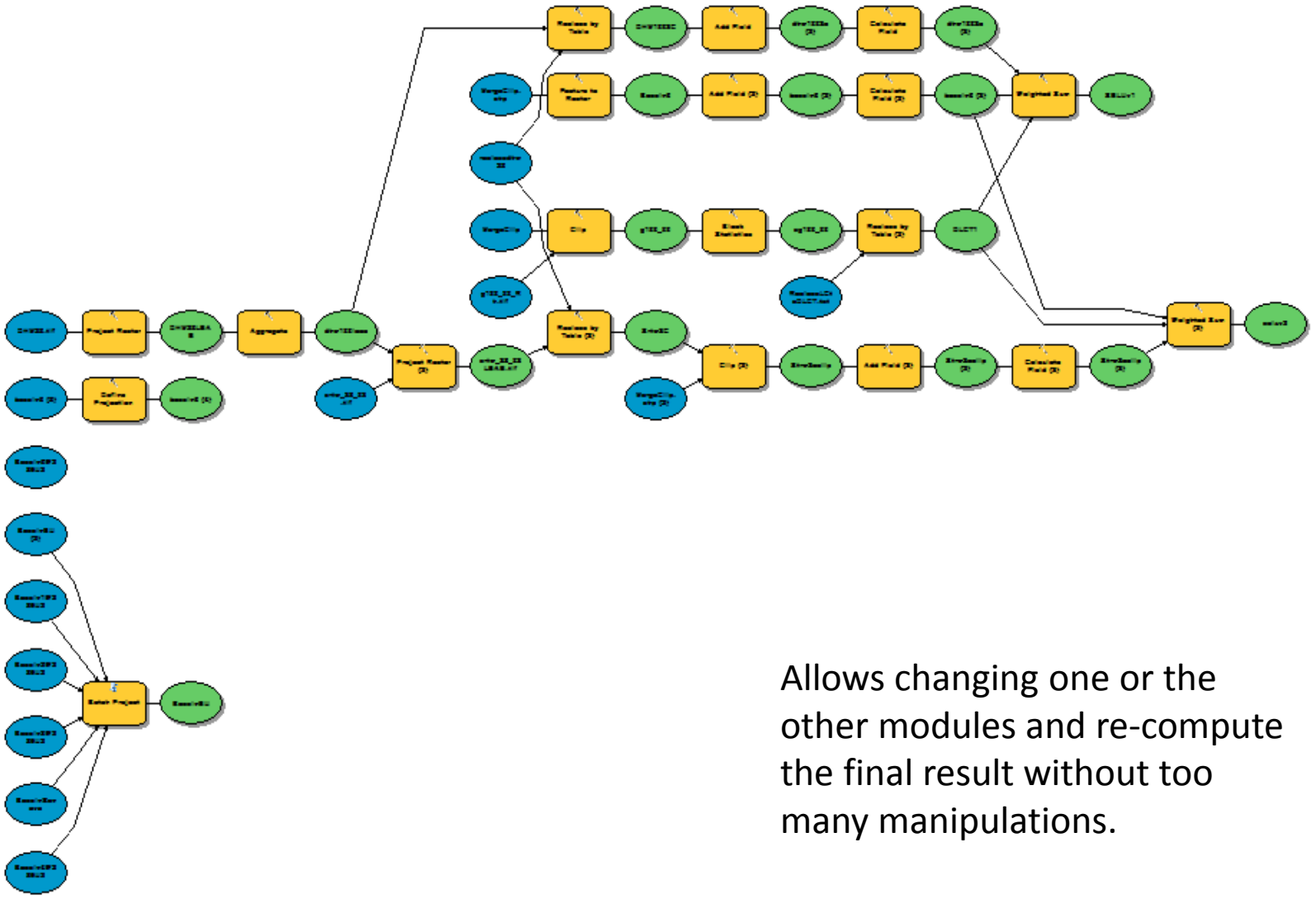
Main data flows to compile ecosystem natural capital accounts



A sketch of the script used to produce ecosystem accounting units



Allows changing one or the other modules and re-compute the final result without too many manipulations.

Priority: a good balance between sketching the full picture and highlighting priority issues

Core accounts

+

Selected functional accounts for key ecosystem services mapping and valuation