



Conceptual model of Natural Capital Accounting with an example of blue carbon application

“Sustainable planning and governance for marine and coastal area”
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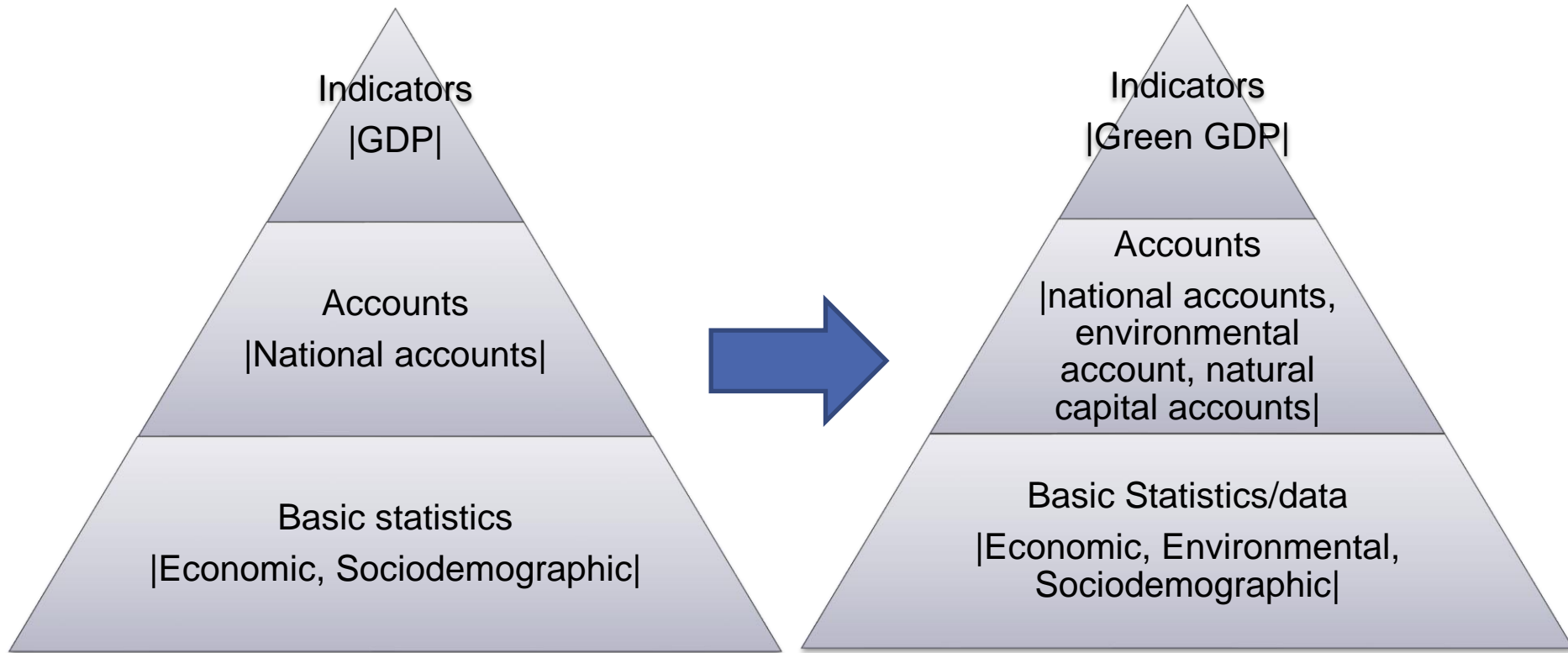
Photo: Mats Westerborn



EUROPEAN UNION
European Regional Development Fund

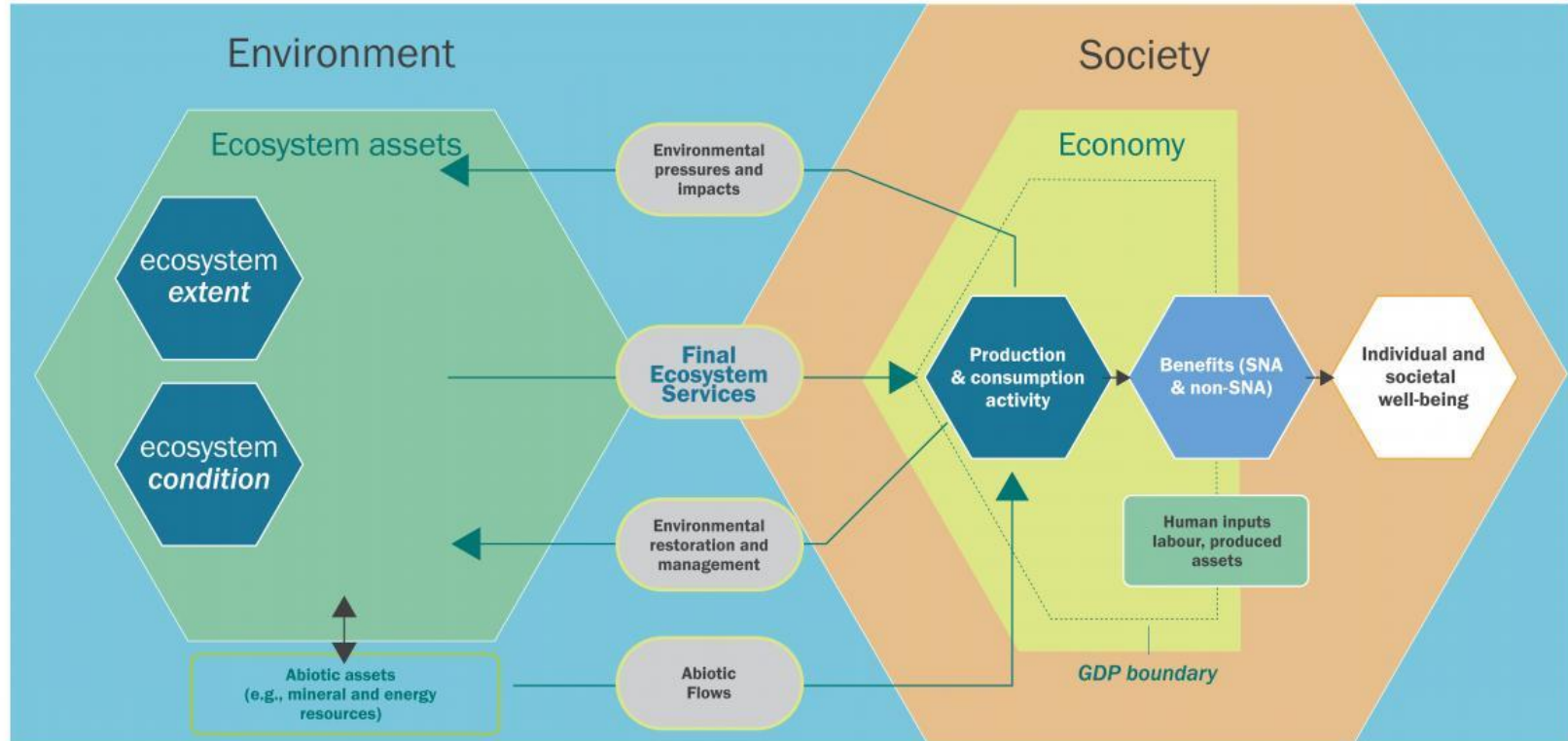


Background information

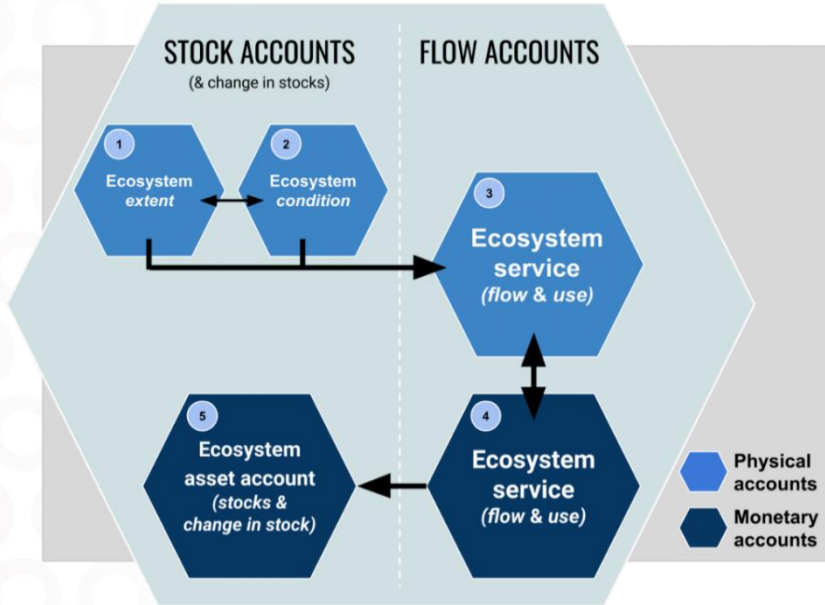


Natural capital accounting (Ecosystem accounting)

Integrate the information of natural capital/ecosystems and their services into the accounting system.



5 core accounts for ecosystem accounting from the System of Environmental-Economic Accounting: Ecosystem Accounting (SEEA EA)



MAREA works

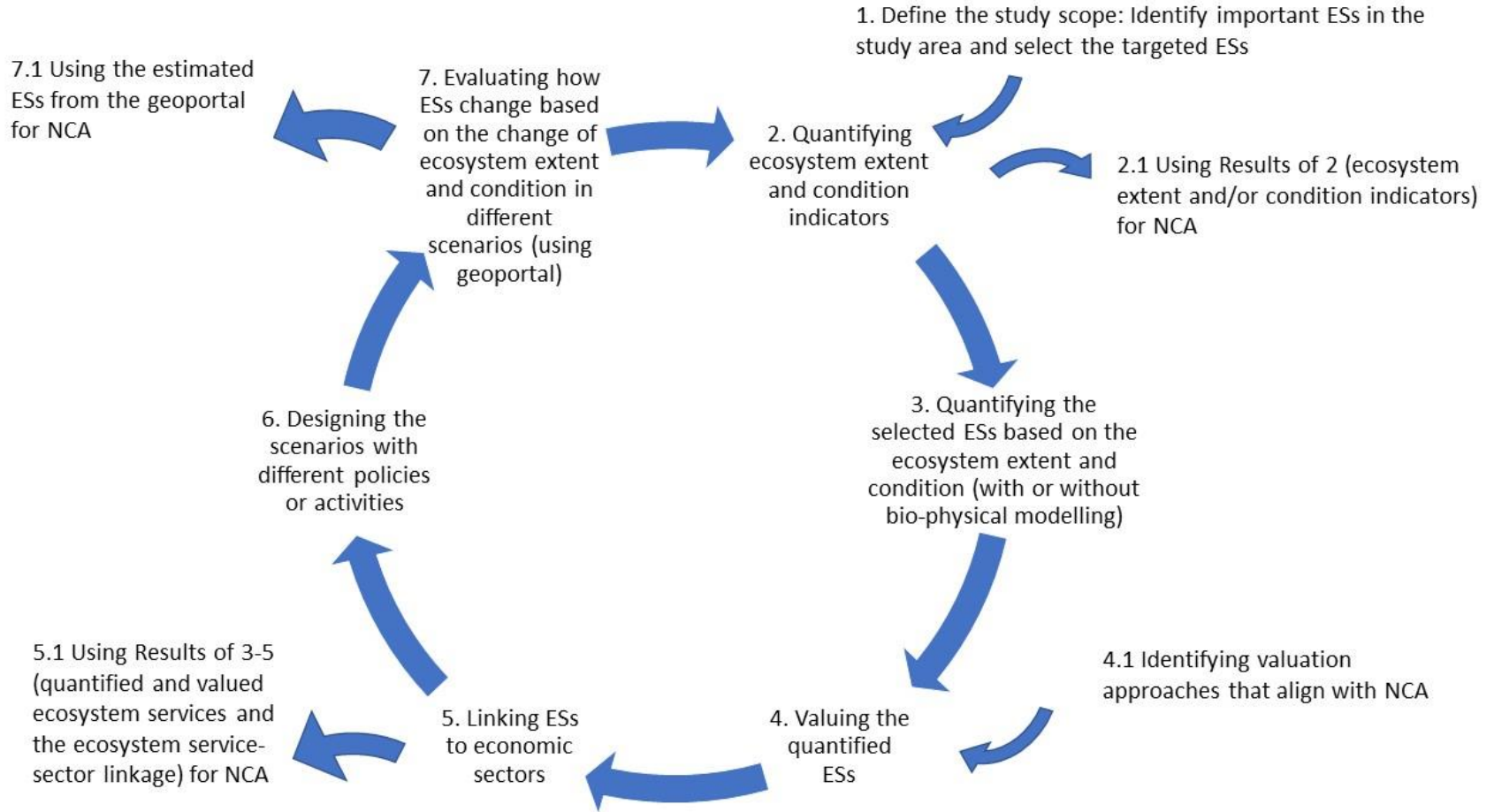
How to link existing research/assessment/works on marine ecosystem (and ecosystem services) to accounting

Method development to improve account compilation

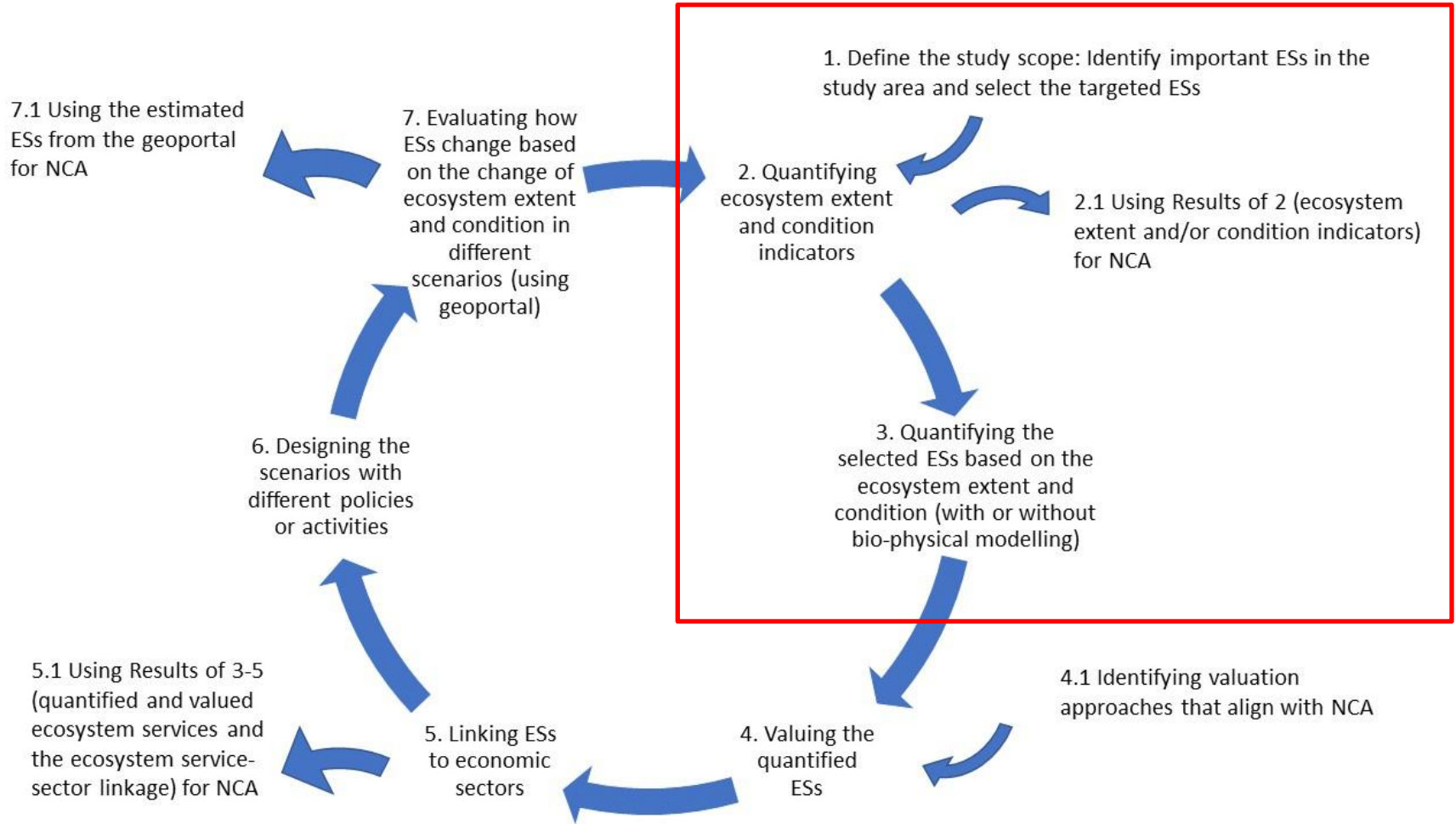


How to link existing marine ecosystem (services) research to accounting-A conceptual model

Conceptual model of Natural Capital Accounting (NCA)

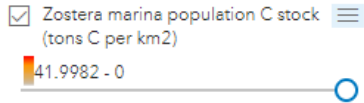
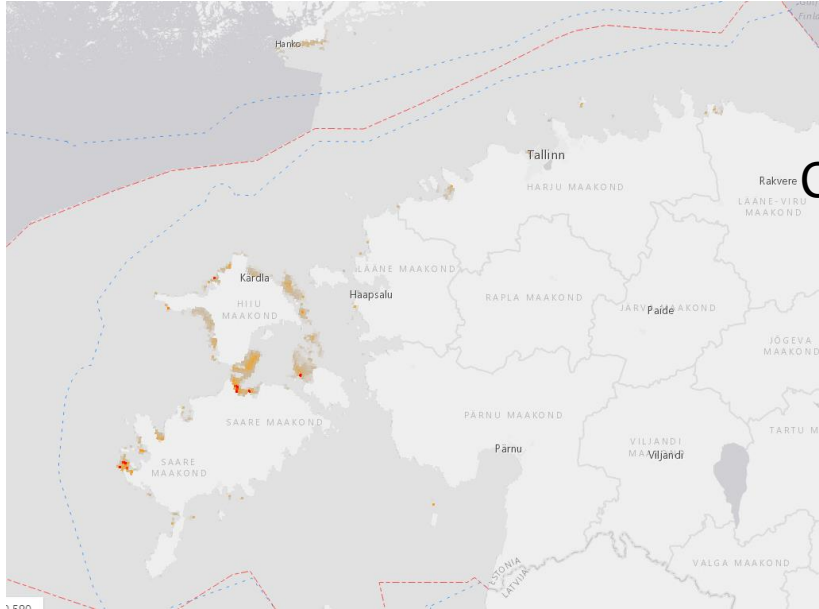


Conceptual model of Natural Capital Accounting (NCA)

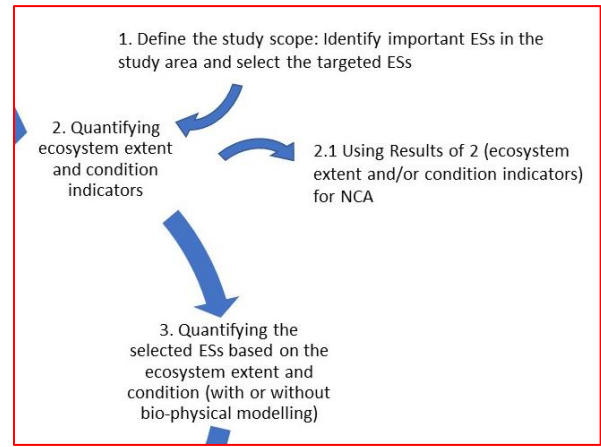
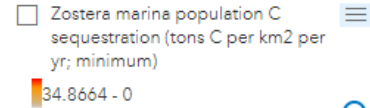
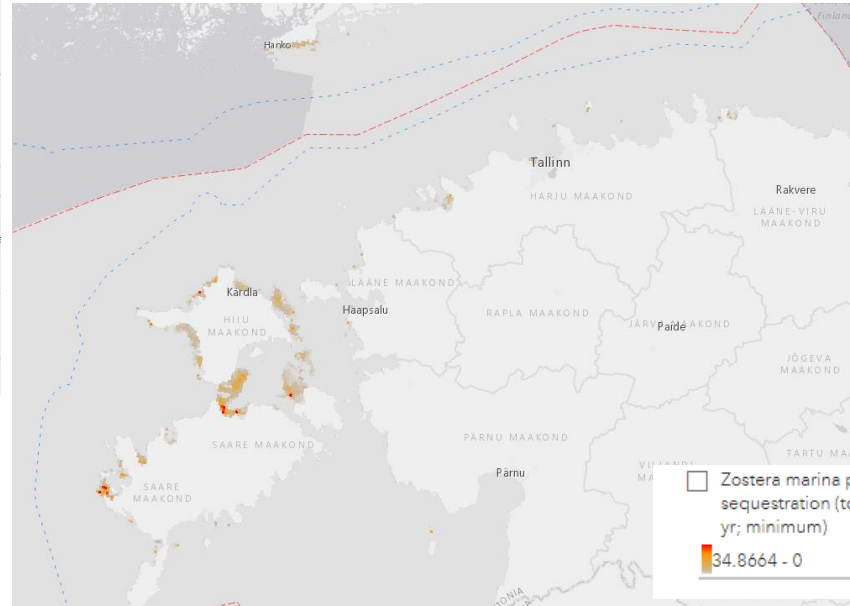


Blue carbon (global climate regulation services)-provided by seagrass

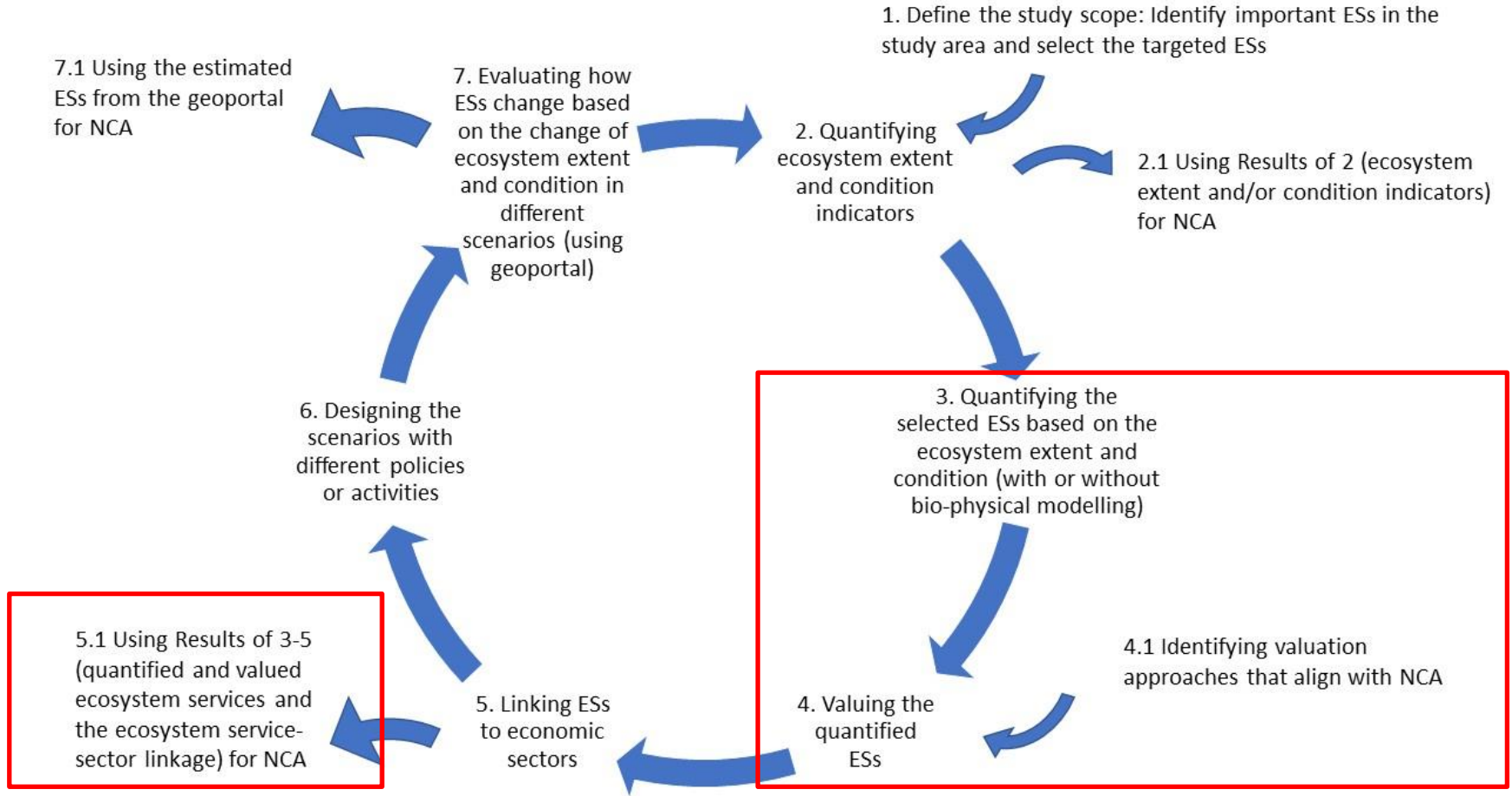
Carbon stock



Carbon sequestration

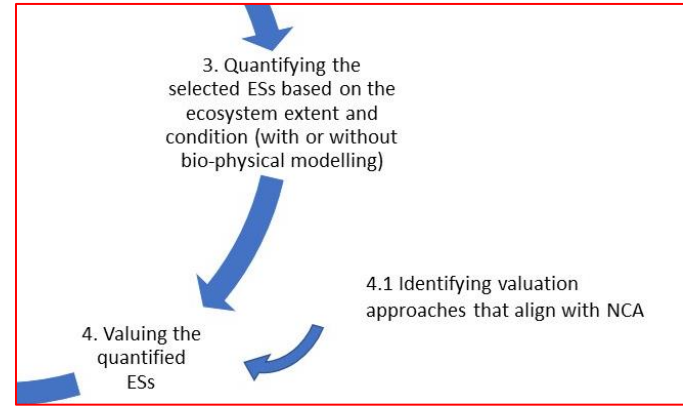


Conceptual model of Natural Capital Accounting (NCA)



Valuation

- Unit consistent between step 3 and 4
- Valuation approaches are various depending on the target ES
 - Not all valuation approaches matches NCA requirement

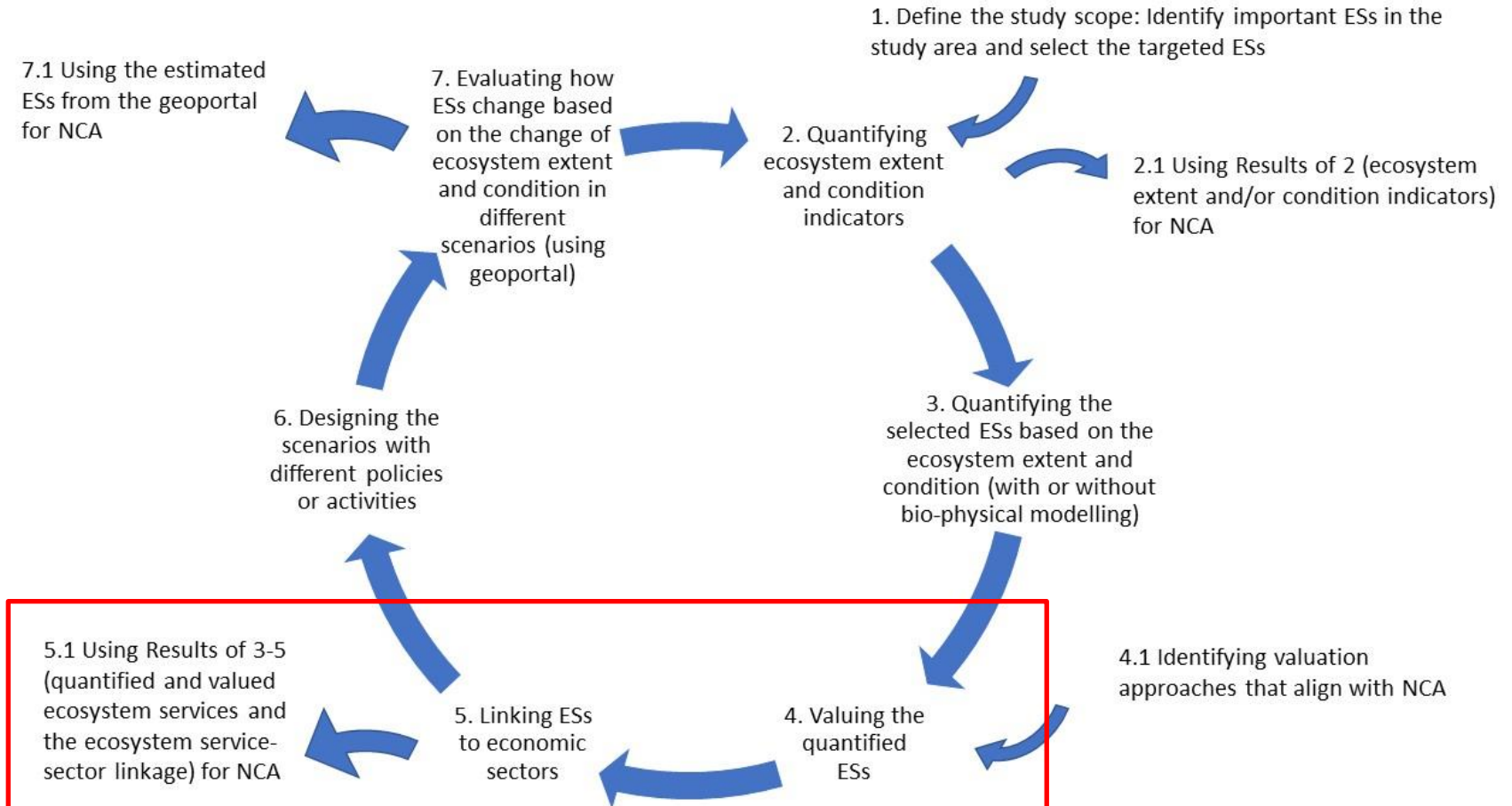


Blue carbon (global climate regulation services)

Unit value in 2021 price level

	Carbon stock	Carbon sequestration
Valuation approach (based on NCAVES and MAIA (2022))	Avoided damage method: social cost of carbon	Market price: EU-ETC
Value	88-540 EUR/tC	118-319 EUR/tC
Reference	Nordhaus (2017)	ICAP (2022)

Conceptual model of Natural Capital Accounting (NCA)



Link Blue carbon (global climate regulation services) to economic sectors

For supply and use table in NCA

- Government (final demand)
 - Collectively consumed by government on behalf of society (individuals, households and businesses globally) (UN et al., 2021)

For future ES estimation/scenario/modelling

- Link to pressure: e.g., nutrient load impact of seagrass
- Activity and economic sector

Pressure in HELCOM report	Activity in HELCOM report*	Sectors (NACE Rev. 2)
Input of phosphorus to the Gulf of Finland	Agriculture	<u>A 01</u> Crop and animal production, hunting and related service activities
	Forestry	<u>A 02</u> Forestry and logging
	Storm water/overflows	<u>G 01</u> Government or <u>O 84</u> Public administration and defence; compulsory social security (Government act as collectively impacts from urban community)
	Scattered Dwellings	<u>H 01</u> Household
	WWTP	<u>E 37</u> Sewerage
	Industry	Requires collecting further information to identify if specific industries typically do not connect to the network of WWTP (either have their own WWT procedures or no treatment)
	Freshwater aquaculture	<u>A 03.22</u> Freshwater aquaculture
	Marine aquaculture	<u>A 03.21</u> Marine aquaculture

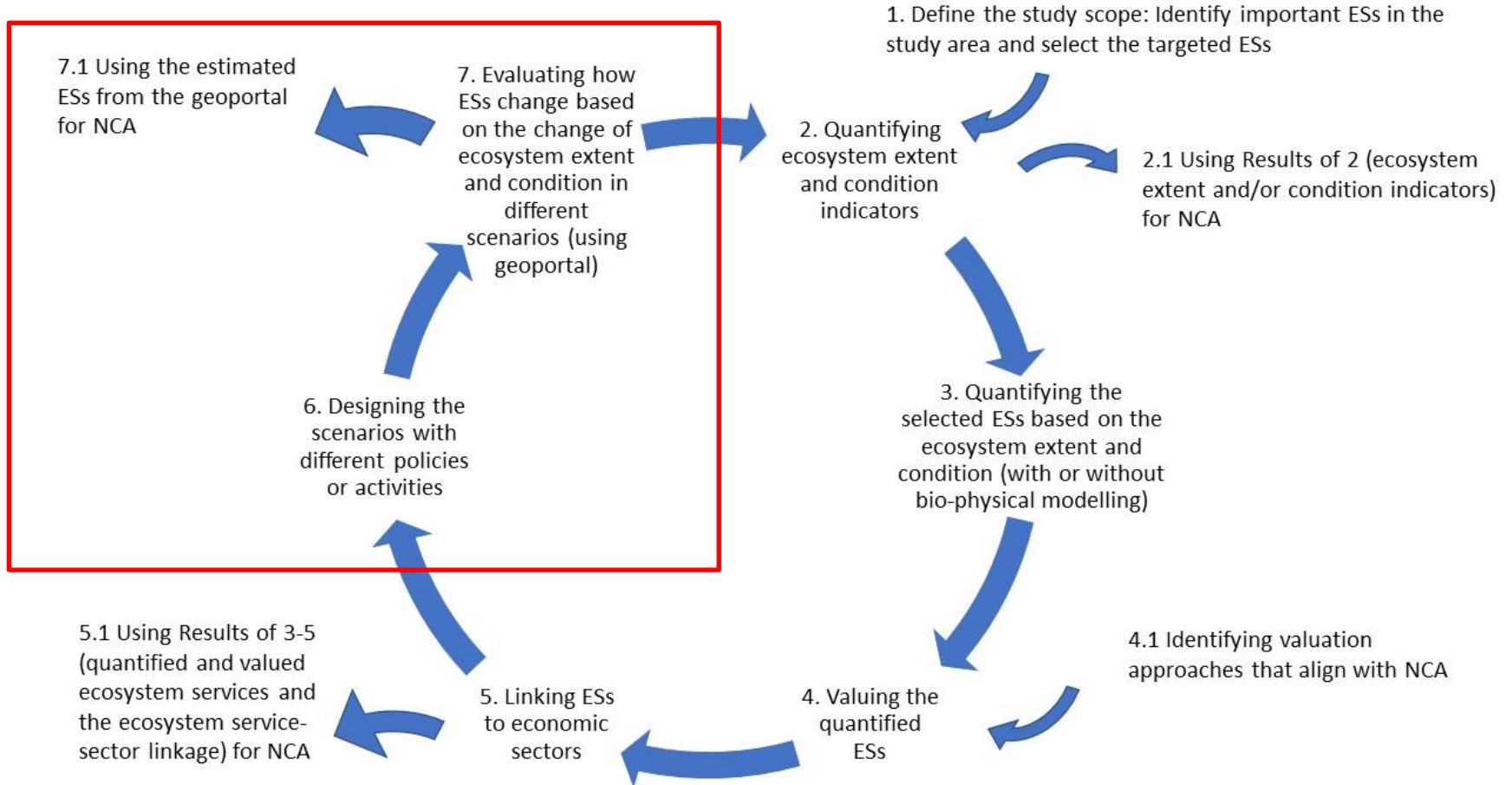
5.1 Using Results of 3-5 (quantified and valued ecosystem services and the ecosystem service-sector linkage) for NCA

5. Linking ESs to economic sectors

4. Valuing the quantified ESs

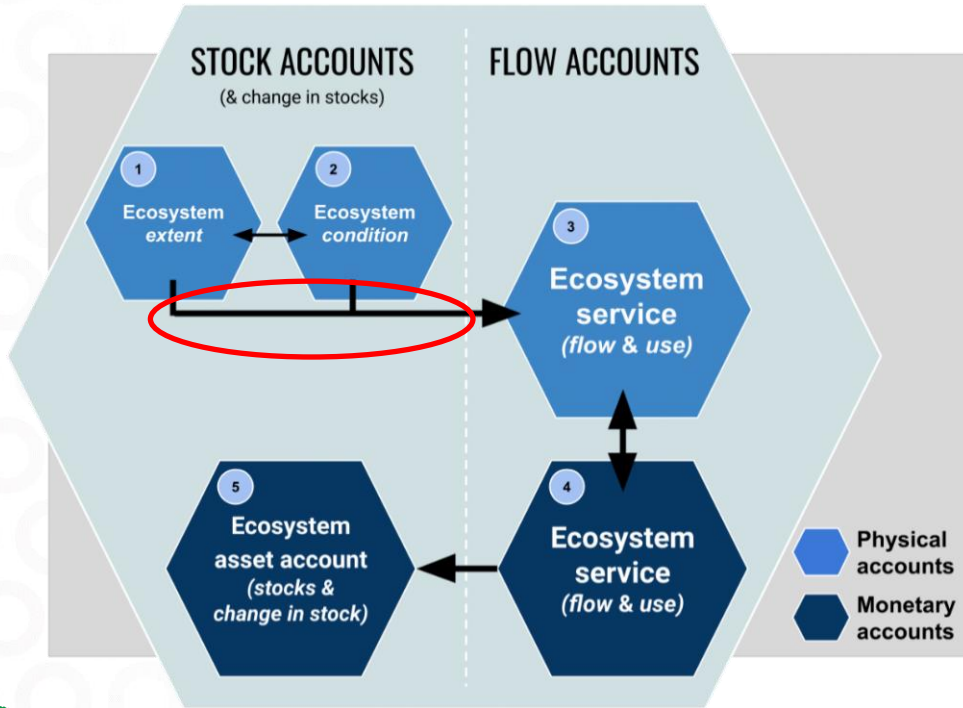


Conceptual model of Natural Capital Accounting (NCA)



Method development to improve account compilation-cultural services

The gap of measuring cultural ES under the ecosystem accounting framework



Because of the unit and approaches to measure or value cultural services

