



Rijkswaterstaat  
*Ministry of Infrastructure  
and Water Management*

# Natural capital accounts for the North East Atlantic

Second version

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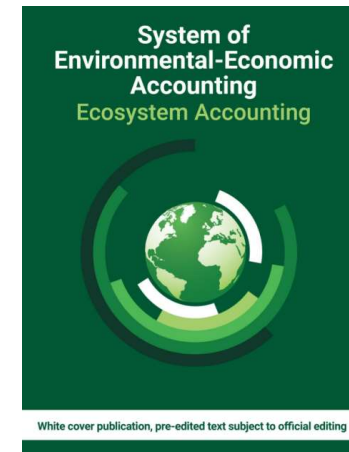
14-12-2022



# System of Environmental-Economic Accounting – Ecosystem Accounting

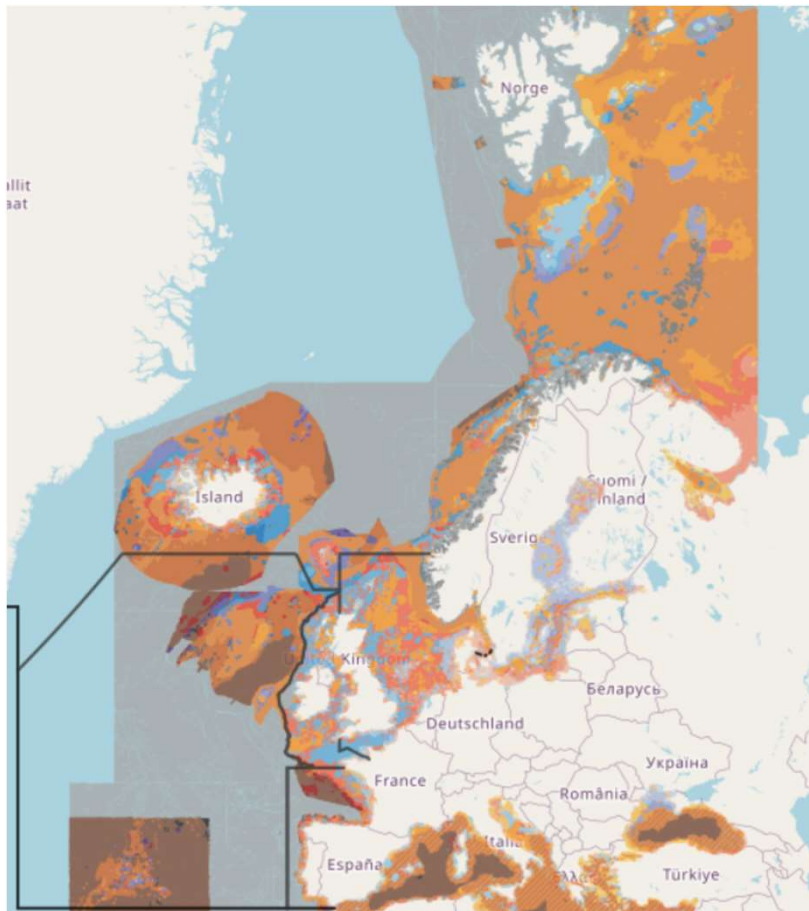
- Framework agreed upon by UN

1	Ecosystem extent account – physical terms
2	Ecosystem condition account – physical terms
3	Ecosystem services flow account – physical terms
4	Ecosystem services flow account – monetary terms
5	Monetary ecosystem asset account – monetary terms



# Extent account

Source: EUSeaMap2021



-  MB1: Infralittoral rock
-  MB2: Infralittoral biogenic habitat
-  MB3: Infralittoral coarse sediment
-  MB4: Infralittoral mixed sediment
-  MB5: Infralittoral sand
-  MB6: Infralittoral mud
-  MB5 or MB6: Infralittoral sand or Infralittoral mud
-  MC1: Circalittoral rock
-  MC2: Circalittoral biogenic habitat
-  MC3: Circalittoral coarse sediment
-  MC4: Circalittoral mixed sediment
-  MC5: Circalittoral sand
-  MC6: Circalittoral mud
-  MC3 or MC6: Circalittoral coarse sediment or Circalittoral mud
-  MC5 or MC6: Circalittoral sand or Circalittoral mud
-  MD1: Offshore circalittoral rock
-  MD2: Offshore circalittoral biogenic habitat
-  MD3: Offshore circalittoral coarse sediment
-  MD4: Offshore circalittoral mixed sediment
-  MD5: Offshore circalittoral sand
-  MD6: Offshore circalittoral mud
-  MD5 or MD6: Offshore circalittoral sand or Offshore circalittoral mud
-  ME1: Upper bathyal rock
-  ME2: Upper bathyal biogenic habitat
-  ME3: Upper bathyal coarse sediment
-  ME4: Upper bathyal mixed sediment
-  ME5: Upper bathyal sand
-  ME6: Upper bathyal mud
-  MF1: Lower bathyal rock
-  MF2: Lower bathyal biogenic habitat
-  MF3: Lower bathyal coarse sediment
-  MF4: Lower bathyal mixed sediment
-  MF5: Lower bathyal sand
-  MF6: Lower bathyal mud
-  ME1 or MF1: Upper bathyal rock or Lower bathyal rock
-  ME3 or MF3: Upper bathyal coarse sediment or Lower bathyal coarse sediment
-  ME4 or MF4: Upper bathyal mixed sediment or Lower bathyal mixed sediment
-  ME5 or MF5 or ME6 or MF6: Upper bathyal sand or Lower bathyal sand or Upper bathyal mud or Lower bathyal mud
-  ME5 or MF5: Upper bathyal sand or Lower bathyal sand
-  ME6 or MF6: Upper bathyal mud or Lower bathyal mud
-  MG1: Abyssal rock
-  MG2: Abyssal biogenic habitat
-  MG3: Abyssal coarse sediment
-  MG4: Abyssal mixed sediment
-  MG5: Abyssal sand
-  MG6: Abyssal mud
-  MG5 or MG6: Abyssal sand or Abyssal mud
-  EUNIS 2019 habitat could not be determined due to missing information



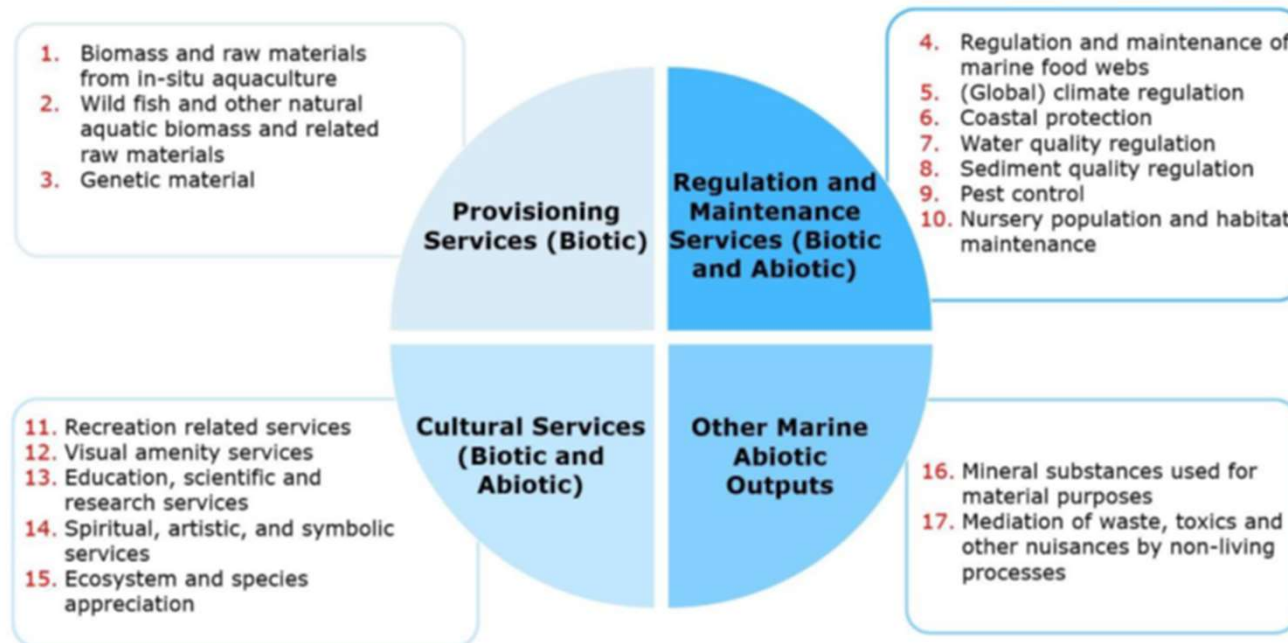
# Condition account

- OSPAR Quality Status Report 2023
- Mostly Pressure related
- Biodiveristy indicators can be added later

Thematic assessment	Indicator	Included in this report
Underwater noise	Impulsive noise impacts	Only the greater North Sea
	Ambient noise	Only the greater North Sea
	Impulsive noise pressure	Only the greater North Sea
Marine litter	Beach litter	Yes
	Seabed litter	Yes
	Ingestion by Fulmars	Yes
	Ingestion plastic particles by turtles	Yes
Radioactive substances	levels of radioactive substances	
	$\beta$ - activity discharges	
Offshore industry	Number and total quantities of oil spilled	Yes



# Ecosystem services – physical flow account



Source: Cornacchia, 2022.

[https://puc.overheid.nl/rijkswaterstaat/doc/PUC\\_709990\\_31/](https://puc.overheid.nl/rijkswaterstaat/doc/PUC_709990_31/)



# Ecosystem services – physical flow account

<b>Provisioning services</b>	- Fisheries - Aquaculture
<b>Regulating &amp; maintenance ecosystem services</b>	- Carbon sequestration
<b>Cultural services</b>	- Outdoor recreation
<b>Abiotic flows</b>	- Generation of electricity from wind power - Oil and gas - Minerals extraction
<b>Spatial function</b>	-

Source: Alarcon Blazquez, 2021  
[https://puc.overheid.nl/rijkswaterstaat/doc/PUC\\_657623\\_31/](https://puc.overheid.nl/rijkswaterstaat/doc/PUC_657623_31/)



## Ecosystem services – physical flow account

- Ecosystem services to update
  - Aquaculture provisioning
  - Fish provisioning
  - Carbon sequestration
  - Outdoor recreation
- Ecosystem services to add
  - Coastal protection
  - Water quality regulation
  - Visual amenity services



# Abiotic services

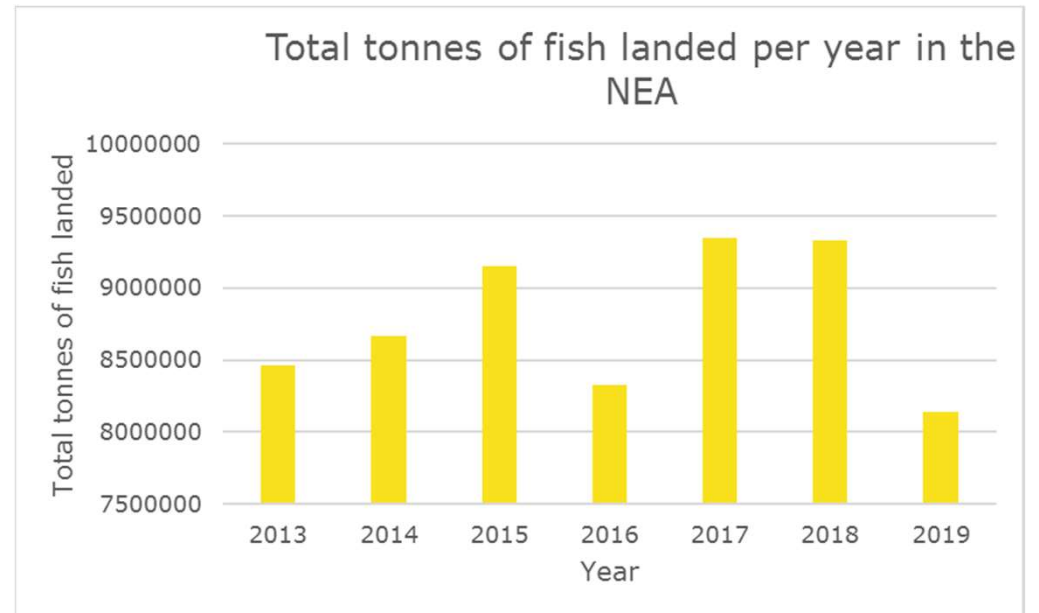
- Abiotic services to update
  - Mineral extraction
  - Wind energy
  - Oil and gas extraction
- Abiotic services to add
  - Mediation of waste, toxics and other nuisances by non-living processes





# Fish provisioning

- Data from FAO
- Year 2019 added
- Data for the whole North East Atlantic





## Ecosystem services – monetary flow account

- Same ecosystem services as physical account
- Use of benefit transfer of resource rent unit



## Final remarks

- Update accounts after QSR2023
- Linkage between accounts
- Policy implications?



# Discussion



## Discussion points

- What conditions could be added after the QSR2023 has been published?
- What are the ecosystem services that would be important for OSPAR to include in the accounts?
- Would it be relevant for OSPAR to add a pressure account?
  - SEEA EA: *“a human induced process that alters the condition of ecosystems”*



Thank you!

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