INCASE

Irish Natural Capital Accounting for Sustainable Environments

Trinity College Dublin

The University of Dublin

Ecosystem services assessment at catchment scale, learnings from Ireland

1. Introducing INCASE
2. Accounting for services
3. Catchment – challenges?

INCASE

Irish Natural Capital Accounting for Sustainable Environments

https://www.incaseproject.com/

@IncaseProject

epa Research

Climate - Water - Sustainability

Identifying pressures • Informing policy • Developing solutions

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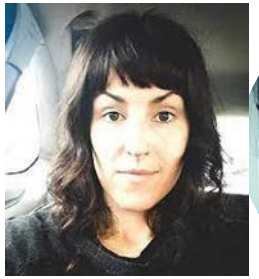

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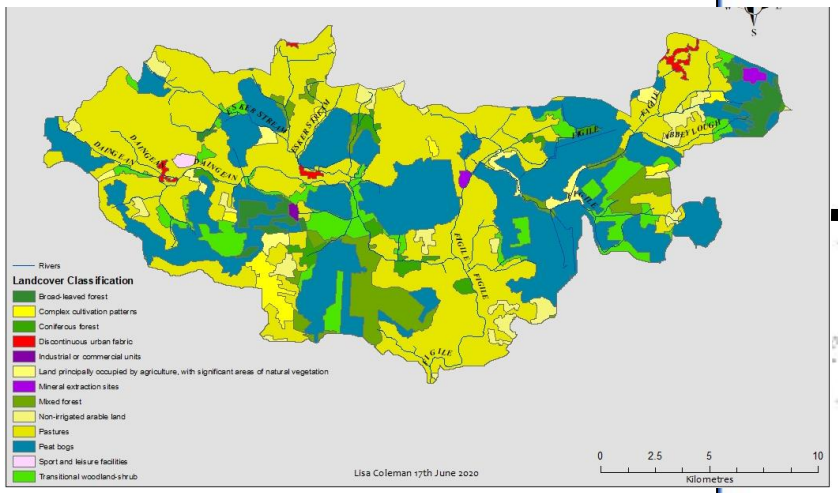
Figile



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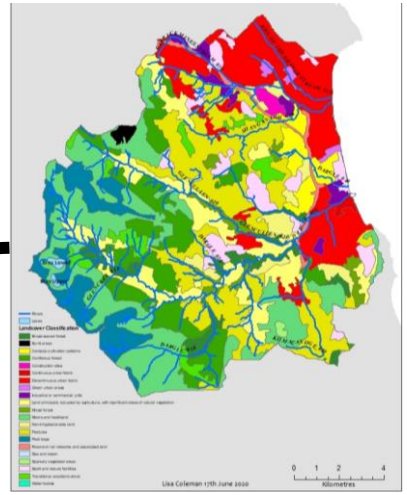
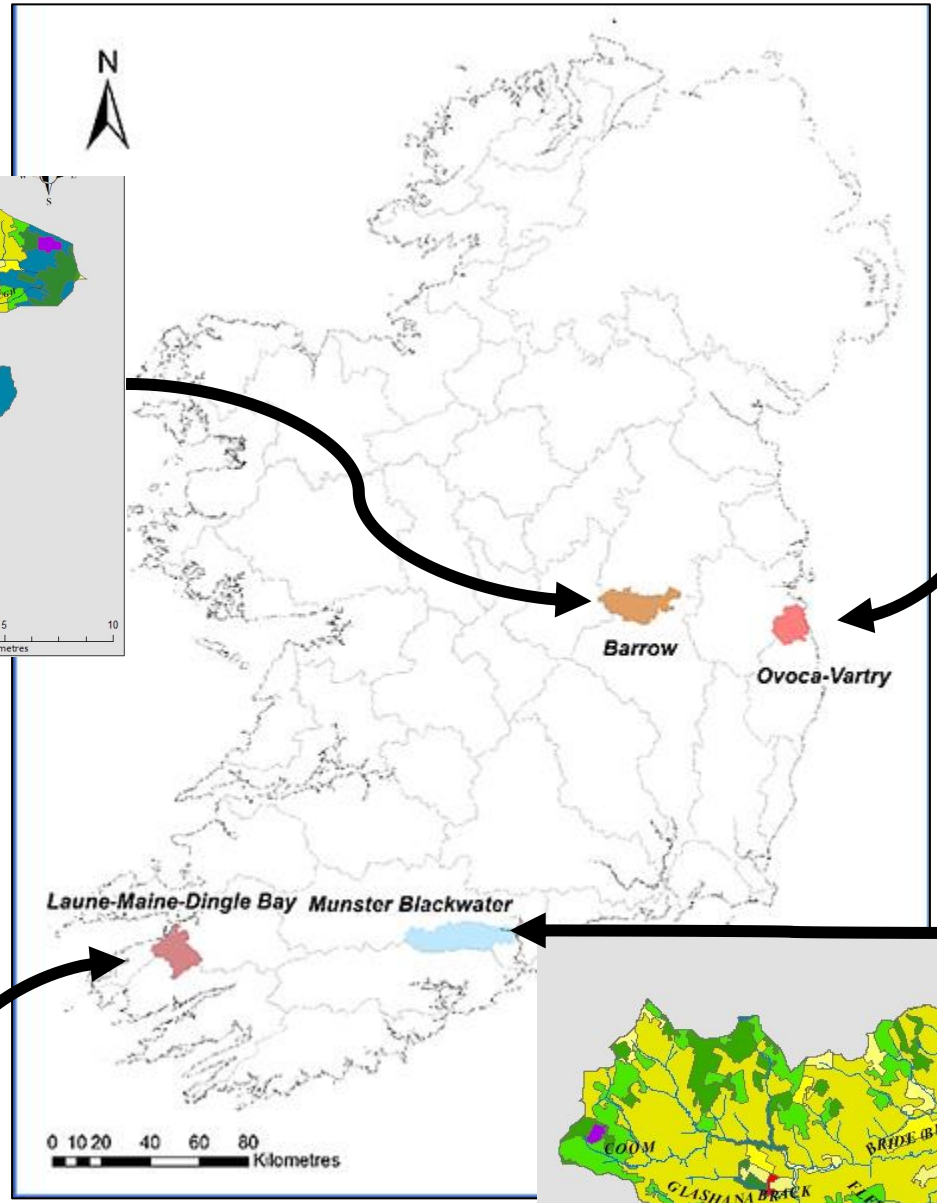
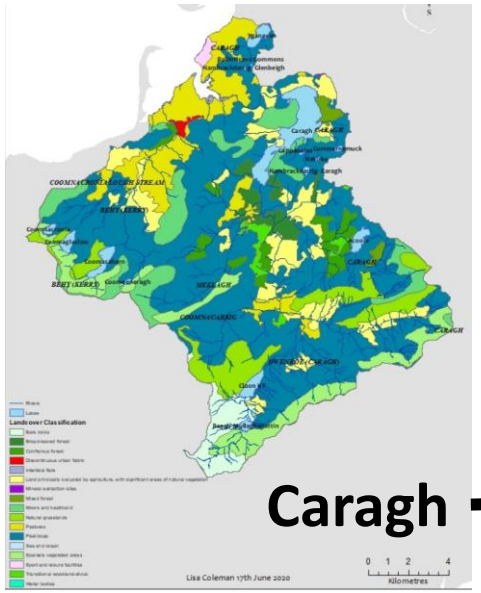
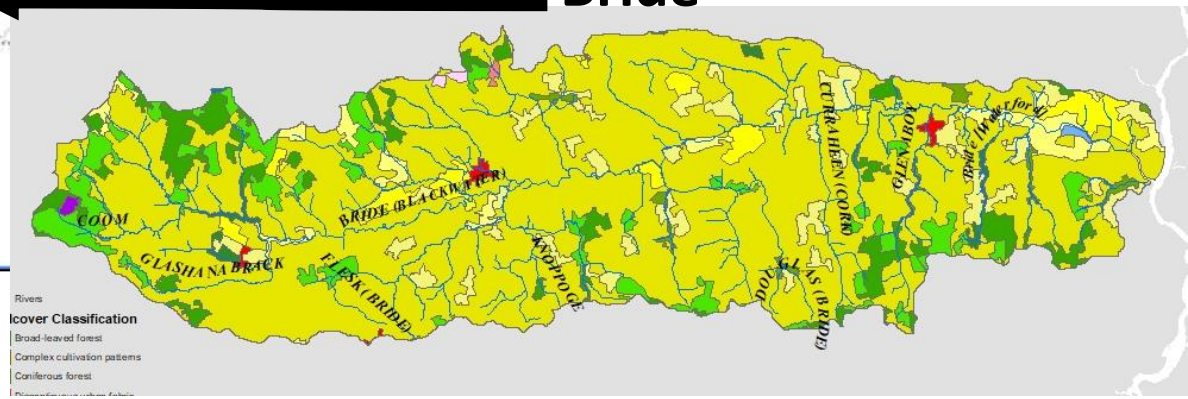




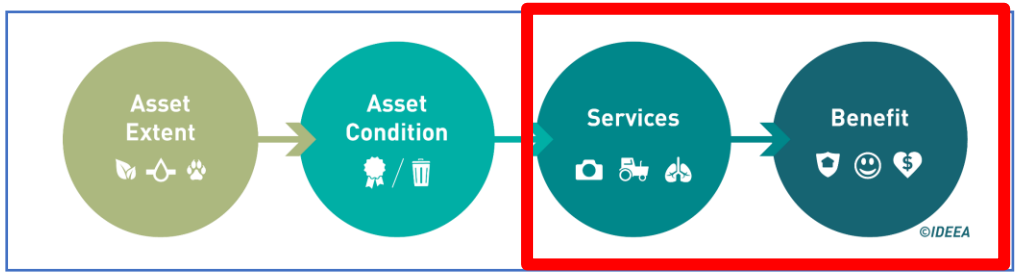
Caragh



Bride



SERVICES AND BENEFITS



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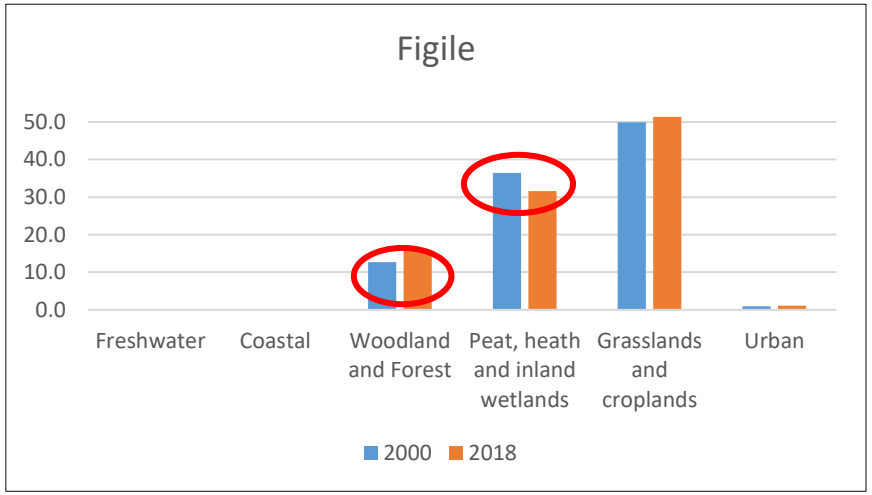
All four catchments

Relevant (attempted!) services

- *Provisioning*:
  - Biomass (crops, grazing, wood)
- *Regulating*
  - Climate
  - Water purification (what to use?)
  - Habitat (nursery)?
- *Cultural*: Recreation
- *Non-use values:* Ecosystem/ biodiversity appreciation
- *Abiotic flows*: Water (supply), Peat (domestic / industrial energy

Policy linkages / Policy relevance

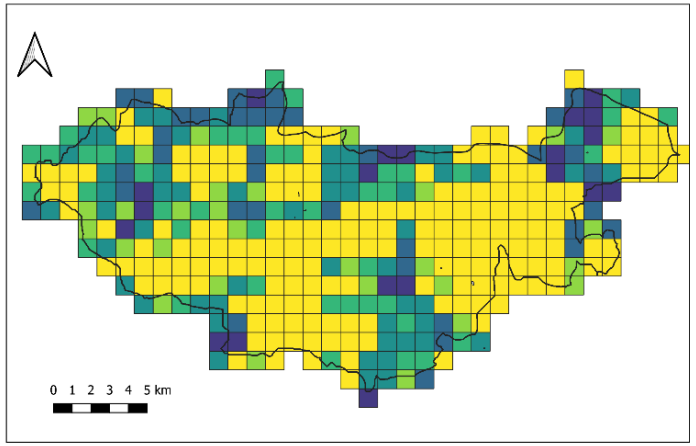


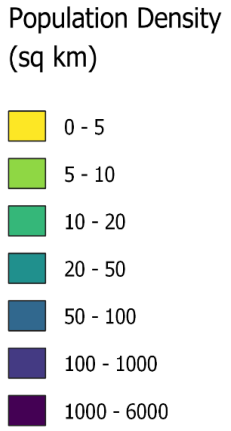
Three Questions

Where are people?

What are they doing?

Who could lose out?





SUPPLY ACCOUNT: WHAT ECOSYSTEM SUPPLIES WHAT SERVICE?

Supply		Units of Measure (e.g)	Selected economic units: Selected industries: Agriculture, forestry and fishing	Building and construction	Manufacturing industries	Commerce and trade	Transport and communications	Public administration	Professional services	Households	**Total Industry**	Imports - products	**Total Supply products**	INCASE working classification (CORINE / other data merged) — Terrestrial: Woodlands and Forest: Woodlands	Forests	Linear woodlands and scattered trees	Peatlands: Raised bogs	Mountain blanket bogs	Lowland blanket bogs	Degraded bogs	Heathlands: Wet heathlands	Dry heathands	Bracken	Grass-land: Improved grassland	Semi-natural grassland	Crop-land: Cropland	Urban and Built: Built lands	Urban green space	Amenity and sports facilities	Saline: Coastal: Sand dune complexes	Saltmarsh complexes	Beaches (sand, shingle, tidal mudflats)	Sea cliffs	Freshwater: Water-bodies: FW Rivers	FW Lakes	Wet-lands: FW Wetlands and swamps	Geosystem: Groundwater aquifers	Geo landscape forms	Subsoils	Mineral aggregates	**Total Supply resident ecosystem assets**	Supply from non-resident ecosystem assets - Imports	**Total Supply ecosystem services**	**TOTAL SUPPLY**
Selected ecosystem services (reference list)																																													
Provisioning services																																													
Biomass provisioning	**Crops**	**Tonnes dry matter (tdm)**																								X																		
	Grazed biomass	**Tdm**															X	X	X	X	X	(X)	X	X																				
	Timber	**Tdm**													X																													
	Peat	**Tdm**																			X																							
Water supply		**m3**																																			X	X		X					
Other provisioning services																																													
Regulating and maintenance services																																													
Global climate regulation services		**Tonnes CO2**													X	(X)	X	X	X	X	(X)	X	X			X					X						X								
Water purification services		**N/P loads**													X	(X)	X	X	X	X	(X)	X	X		(X)	X	(X)	(X)	X	X		X				X	X	X			X				
Water flow regulation services																																													
Nursery population & habitat maintenance services		**Species types/no.**													X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X						
Other regulating and maintenance services																																													
Cultural services																																													
Recreation-related services		**No. visits**													X	X	X		X		X	X	X	X					X	X	X	X	X	X	X	X	X	X						
Eco/Geosystem and species appreciation services		**Area conserved; species a/c**													X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X						
Other cultural services																																													

FIGILE SUPPLY ACCOUNT: WHAT ECOSYSTEM SUPPLIES WHAT SERVICE (range of data ages)

Summary ES assessment:

- Biomass: area crop/pasture x growth
- Peat: estimated household use; area x estimate extraction.
- Water: demand approach (no data available)
- Climate: land cover + soil type x Tier Efs
- Carbon stock: SIS SOC
- Ecosystem appreciation: area designated

Supply	TOTAL SUPPLY
Selected ecosystem serv	
Provisioning services	
Biomass provisioni	13,513
	75,273
	52,658
Peat (abiotic flow)	1,451
	744,634
Water supply (abi	907,262
Other provisioning	
Regulating and maintena	
Global climate reg	49,499
Water purificatior	?
Water flow regulat	
Nursery populatio services	?
Other regulating c	
Cultural services	
Recreation-relate	?
Eco/Geosystem ar	318 (1.4%)
Other cultural serv	

FIGILE USE ACCOUNT: work in progress!

Need consistent approach to accounting for services – only as good as the inputs!

		Beneficiaries / Economic Sectors											
		01 Crop and animal production, hunting and related service activities	02 Forestry and logging	03 Fishing and aquaculture	A - Agriculture, Forestry and Fishing	B,C - Mining and manufacturing	D - Electricity	E - Water supply	F-H - Construction, wholesale and transportation	I,R - Accommodation and food service, culture, sports and recreation	Other Sectors	Households	Government	Exports
Provisioning	Crop provisioning services (tonnes DM)	13,513												
	Fodder (tonnes DM)	75,273												
	Timber (m3)		52,658											
	Water (Quantity) (m3)	414,042					68,848	424,372		?	?	?		
Provisioning (abiotic)	Peat Turf (tonnes DM)											1,451		
	Peat Milled (tonnes DM)					744,634								
Regulation & Maintenance	Carbon sequestration (tonnes CO2 equiv)												0.05Mt C	
	Flood regulation												?	
	Water (purification)													
Cultural	Recreation (Trips)									?		?		
	Ecosystem appreciation (ha conserved)												318 (1.4%)	

Logic chains: grazed biomass

Policy linkages: CAP Policy and national level rules

Ecosystem type/s	Factors determining supply		Factors determining use	Ecosystem Service		Benefit	Main users and beneficiaries
	Ecological	Societal		Description	Potential physical metric/s for ES		
Grasslands	Type and condition of vegetation; soil type; elevation; weather	Ecosystem management (fertiliser application; stocking density,	Landowners occupation and preferences; market price; subsidies	**Biomass** for Reared animals and their Outputs	Gross tonnes of grazed biomass	Livestock and livestock products (e.g., meat, milk, eggs, wool) (SNA benefits)	Agricultural producers, including household and subsistence production

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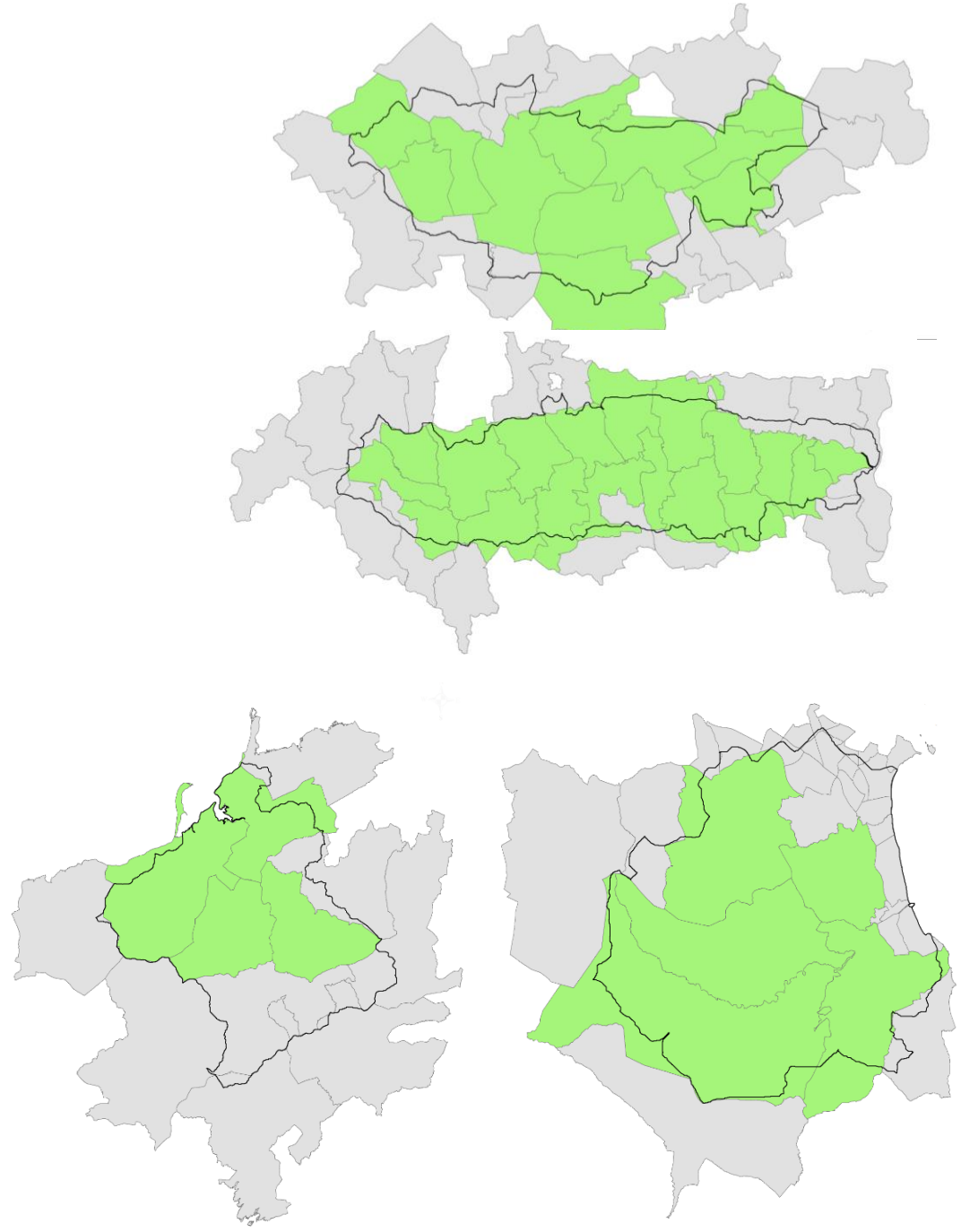
Challenges

1. Finding the Data
2. Coverage
3. Resolution and Coordinates
4. Time Series
5. Data Gaps
6. Catchments



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Thanks for listening