Ecosystem services assessment at catchment scale, learnings from Ireland

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

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?

<table>
<thead>
<tr>
<th>Supply</th>
<th>Units of Measure (e.g.)</th>
<th>INCASE working classification (CORINE / other data merged)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Woodlands and Forest</td>
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<td>Peatlands</td>
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<td>Heathlands</td>
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<td>Grassland</td>
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<td>Urban and Built</td>
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<td>Water-bodies</td>
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<td>Wetlands</td>
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<td>Total Supply ecosystem services</td>
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<td>Freshwater</td>
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<td>Imports - products</td>
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## Selected Ecosystem Services (Reference List)

### Provisioning Services
- **Biomass Provisioning**
  - Crops: Tonnes dry matter (tdm)
  - Grazed Biomass: Tdm
  - Timber: Tdm
  - Peat: Tdm

### Regulating and Maintenance Services
- Global Climate Regulation Services: Tonnes CO2
- Water Purification Services: N/P loads
- Water Flow Regulation Services
- Nursery Population & Habitat Maintenance Services: Species/No.

### Cultural Services
- Recreation-related Services: No. visits
- Eco/Geosystem and Species Appreciation Services: Area conserved; Species a/c

### Selected Economic Units
- Agriculture, forestry and fishing
- Building and construction
- Manufacturing industries
- Transport and communications
- Public administration
- Professional services
- Households

### Total Industry
- Woodlands
- Forests
- Linear woodland and scattered trees
- Raised bogs
- Mountain blanket bogs
- Lowland blanket bogs
- Drainage ditches
- Wetland heaths
- Bracken
- Improved grassland
- Semi-natural grassland
- Cropland
- Built-lands
- Urban green space
- Amenity and sports facilities
- Sand dune complexes
- Saltmarsh complexes
- Beaches (sand, shingle, tidal mudflats)
- Sea cliffs
- FW Rivers
- FW Lakes
- FW Wetlands and swamps
- Groundwater aquifers
- Geosystem forms
- Soils
- Mineral aggregates

### Imports - Products
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### 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
### FIGILE USE ACCOUNT: work in progress!

**Beneficiaries / Economic Sectors**

<table>
<thead>
<tr>
<th>Division</th>
<th>Agriculture, Forestry and Fishing</th>
<th>B - C - Mining, manufacturing</th>
<th>D - Electricity</th>
<th>E - Water supply</th>
<th>F - H - Recreation, tourism and leisure</th>
<th>I - R - Accommodation and food service, culture, sports and recreation</th>
<th>Other Sectors</th>
<th>Households</th>
<th>Government</th>
<th>Exports</th>
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<tbody>
<tr>
<td><strong>Provisioning</strong></td>
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<td>Crop provisioning services (tonnes DM)</td>
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<td>Fodder (tonnes DM)</td>
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<td>52,658</td>
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<td>Water (Quantity) (m3)</td>
<td>414,042</td>
<td>68,848</td>
<td>424,372</td>
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<td><strong>Provisioning (abiotic)</strong></td>
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<td>Peat Turf (tonnes DM)</td>
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<td>Peat Milled (tonnes DM)</td>
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<td>744,634</td>
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<td><strong>Regulation &amp; Maintenance</strong></td>
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<td>Carbon sequestration (tonnes CO2 equiv)</td>
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<td>Flood regulation</td>
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<td>Water (purification)</td>
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<td><strong>Cultural</strong></td>
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<td>Recreation (Trips)</td>
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<td>Ecosystem appreciation (ha conserved)</td>
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<td>318 (1.4%)</td>
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</tbody>
</table>

*Need consistent approach to accounting for services – only as good as the inputs!*
<table>
<thead>
<tr>
<th>Ecosystem type/s</th>
<th>Factors determining supply</th>
<th>Factors determining use</th>
<th>Ecosystem Service</th>
<th>Benefit</th>
<th>Main users and beneficiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grasslands</td>
<td>Ecological</td>
<td>Societal</td>
<td>Description</td>
<td>Potential physical metric/s for ES</td>
<td>Livestock and livestock products (e.g., meat, milk, eggs, wool) (SNA benefits)</td>
</tr>
</tbody>
</table>

**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

**Logic chains: grazed biomass**

**Policy linkages: CAP Policy and national level rules**
Challenges

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


Thanks for listening