



Identifying economic activities relating to climate change adaptation

UNECE Expert Forum for Producers and Users of Climate Change Related-Statistics

1 September 2021

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Background

- European Green Deal: “*climate change will continue to create significant stress in Europe in spite of the mitigation efforts. Strengthening the efforts on **climateproofing, resilience building, prevention and preparedness** is crucial. Work on climate adaptation should continue to **influence public and private investments, including on nature-based solutions**. It will be important to ensure that across the EU, investors, insurers, businesses, cities and citizens are able to **access data and to develop instruments to integrate climate change into their risk management practices**.*”
- To date: development of statistical metrics relating to climate change adaptation (‘CCA’) concentrates mainly on risks and losses arising due to climate change
- [!] Measures taken to address the vulnerability and build resilience also need to be quantified

Eurostat's project

- (Ultimate) objective:
 - To measure the resources invested into 'climateproofing, resilience building, prevention and preparedness' of the economy and how related activities contribute to GDP, job creation and competitiveness of the domestic economy
- Envisaged approach:
 1. To establish a reference definition and target classification(s),
 2. To 'operationalise' the definition by linking it – to the extent possible - to existing statistical standards (for which data are compiled and reported on a regular basis), including valuation principles (convention),
 3. To produce first estimates and assess their quality,
 4. To correct/update/refine the reference definition and its statistical implementation and to compile data.

The work on this project is supported by researchers
from outside the European Commission:
Prognos (and Devstat)

Conceptual framework

Based on Eurostat's experience and know-how:

- Macro-economic statistics (SNA) and its satellite system for environmental economic accounts (SEEA CF) as a basis
- Experience gathered in the work on the Environmental Goods and Services Sector (EGSS) accounts and Environmental Protection Expenditure Accounts (EPEA)
- Enumeration of activities and products to measure => list of relevant economic activities and products
- Valuation convention for 'secondary-purpose' products
- Data compilation based on already available statistical information
- Breakdown by economic activity and environmental purpose
- Climate adaptation NOT considered an environmental activity; climate mitigation should overall be covered in EGSS accounts (and partially – in relation to direct air quality protection measures – in EPEA)

Specific application to CCA (1)

Definition(s):

"The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects." [IPCC]

"The term refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." [UNFCCC]

How to adapt the definition(s) to the statistical work on the CCA economy?

- CCA economic activities cover activities whose primary purpose is to substantially reduce, moderate or avoid harm in natural and human systems arising from actual or expected climate change and their effects
- Economic goods and services that exploit beneficial opportunities arising from actual or expected climatic stimuli or their effects are currently excluded as these are still not well documented/described

=> Reference to SNA definition of economic activities and ISIC/NACE classification of economic activities

Specific application to CCA (2)

Functional classification

- CCA activities are activities that directly serve a CCA purpose, or produce specifically designed products whose use serve a CCA purpose; they can be categorized by their more specific purpose.
- 6 purpose categories can be distinguished based on different types of natural hazards likely to increase in likelihood and/or magnitude/impact by actual or expected climatic stimuli from climate change:
 - Hydrological events including floods, mass movements (subsidence, rockfall, avalanche, landslide)
 - Hydrological events including coastal erosion, sea-level rise, storm surges
 - Climatological events including heat waves, cold waves, droughts, forest fires
 - Meteorological events including heavy/intense precipitation/rain/snowfall, hail
 - Meteorological events including storms/blizzards, strong winds, lightning
 - Other events posing risks to health, ecosystems and soil

Specific application to CCA (3)

Operationalisation (1/2)

- A degree of subjectivity when identifying the relevant economic activity => a need to focus on a technical nature
- Two categories of CCA economic activities
 1. For which CCA is the primary purpose (e.g. construction of flood defences),
 2. For which CCA is a secondary purpose (e.g. insulation of buildings)

The scope of the CCA economy can be extended also to activities which enable or support the production and use of CCA primary and secondary purpose goods and services

- Key boundary issues:
 - **Adaptation/ resilience building for natural hazards arising from the CC **versus** the ones caused by other factors**

Proposed solution: based on the assumption that CC related adaptation needs are the main reason for current and future activities to moderate harm from expected natural hazards, all related activities to be covered

- **Preventive **versus** 'reactive'/response measures**, i.e., moderation or avoiding harm ahead of an event occurring ('preventive') v those undertaken in direct response to an occurring event ('reactive')

Proposed solution: To exclude 'reactive'/response activities

(see the definition (=> slide 6): purpose of CCA activity is to reduce, moderate or avoid harm

Specific application to CCA (4)

Operationalisation (2/2)

Other boundary issues and conceptual questions

- **Upstream versus downstream** – activities producing inputs for a CCA activity ('upstream' activities) or using a CCA product as an input in other production activities ('downstream' activities)

Proposed solution: to include only if they fit the definition of a CCA activity themselves, i.e., they either directly serve a CCA purpose or produce specifically designed products whose use serve a CCA purpose.

Consequently, system components of CCA goods (e.g. water pipes, insulation) are included if designed specifically and produced for a CCA purpose. Similarly, installation services (e.g. plumbing) and construction activities are considered as a CCA service.

- **Ambiguity** e.g., negative impacts on CC (certain CCA activities may add to emissions through e.g. higher energy usage or cement demand) or increase in other CC risks

Proposed solution: ambiguities cannot be resolved as these depend on context-dependent aims and objectives; within CAA the following additional criteria considered: expected lifetime of the product/activity (sufficiently long to actually address CC and consistent with CC related impacts) + no adverse impact on the adaptation efforts of other people, nature and assets + the reduction of physical climate risks can be measured (in principle)

- **Country/region-specific risks/ CCA solutions versus statistical harmonization and a need for comparable data**

First results – ‘long-listed’ activities/products

- 194 activities/ products:
 - 17 agriculture, forestry and fishery activities
 - 99 manufacturing activities
 - 3 energy and water supply-related activities
 - 28 construction activities
 - 1 warehouse and storage activity
 - 2 ICT activities
 - 6 insurance and related activities
 - 1 business and management consultancy activity
 - 10 architectural, engineering and technical consultancy activities
 - 6 scientific R&D activities
 - 8 other professional, scientific and technical activities
 - 3 landscape service activities
 - 8 administrative and education activities
 - 2 ‘other’

First results – ‘out of scope’

Description of the activity/product	Justification
Climate-tolerant livestock	Too unspecific
Construction of passive houses	Mainly relates to mitigation, energy efficiency
Water extraction and treatment: Well construction Water management 4.0 (measuring, analyzing, controlling, regulating): Water analysis service, e.g., composition and purity testing and analysis services	Extraction of possibly finite resources not considered as moderating harm, but postponing it.
Renting and leasing of water transport equipment Soil protection technologies: e.g. during decontamination of soil permeated with harmful liquids Remediation and pollution control of soil, groundwater and surface water	‘Reactive’/ post-event activities
Wastewater treatment: Appliances for chemical and physical examination of wastewater; instruments for wastewater analysis and treatment - Instrument for checking other physical characteristics, for measuring or checking the flow, level, pressure or other variables of liquids and gases, for physical or chemical analysis n.e.c., for measuring electrical quantities or ionizing radiations	Relates to treatment, but not relevant for infrastructure resilience
Sewerage services: Sewage removal and treatment services	

Way forward for Eurostat's project

- Further review of the definitions, assumptions and the long-list of CC adaptation activities (if possible in consultation with experts and stakeholders – contact ESTAT-MEA-METHODOLOGY@ec.europa.eu if you wish to have a detailed look at the draft list!)
- Start the data estimation process, review quality of the results
- Adjust/ update/ refine the definitions and their statistical implementation
- Recalculate the data (if needed) and discuss their plausibility
- Outcome: either plausible data for the users or a 'lesson learnt' from the project for Eurostat's future work on climate change related statistics

Conclusions

- To measure CCA activities, it is necessary to agree on definitions, lists of products and activities and a valuation convention (e.g., full costs or extra costs).
- Still, we should first experiment and Eurostat is doing that (**happy to learn about others!**)
- At a certain stage, we would then likely need some form of international reference handbook to facilitate compiling comparable data



Thank you