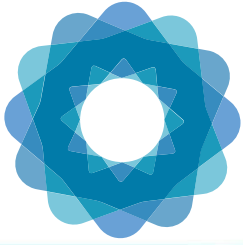


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**What would be?**

**What c/should be?**

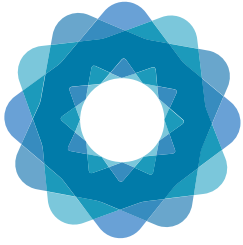
**What will be?**

**Baselines/hypotheticals in SEEA**

Prepared for the 30th Meeting of the London Group on Environmental Accounting by:

Simon Schürz & Nils Brown

**30<sup>th</sup> September to 3<sup>rd</sup> October 2024 | Washington D.C**



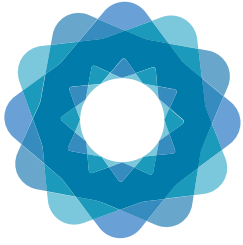
# Motivation

🌸 Baselines are measurements or calculations used for comparisons

- 🌸 Based on data (e.g. historical means)
- 🌸 Based on assumptions (e.g. constant resource rents in future periods)
- 🌸 Based on counterfactuals/hypothetical scenarios

🌸 Baselines and counterfactuals are useful:

- 🌸 For comparability over time and space
- 🌸 For quantifying flows
- 🌸 For classifying goods/services/activities
- 🌸 For understanding causal relationships and facilitating policy evaluations



# Motivation

❁ Relying on assumptions and complex modelling may contradict official statistics' emphasis on reliability and objectivity

❁ If they are perceived as unreliable/uncertain/implausible or not impartial

❁ Due to these concerns, statistical agencies may choose to:

❁ Use baseline concepts and methodology that are based on internationally agreed statistical standards

❁ Limit the use of counterfactuals to essential applications

❁ Refer advanced counterfactual modelling to projects or institutions outside of official statistics or label them as experimental

❁ This presentation:

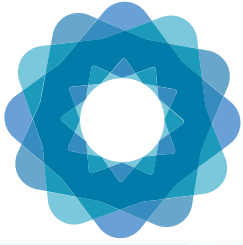
❁ Stocktaking of use of baselines/counterfactuals in SEEA

❁ Potential categorization (e.g. classification, reference levels etc.) with examples

❁ Need for additional guidance and standardization?

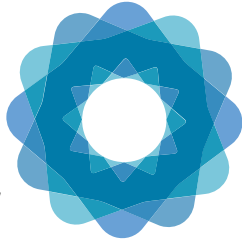
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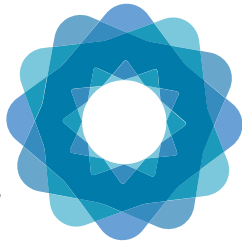
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# Stocktaking Baselines/Counterfactuals in SEEA



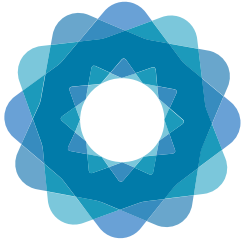
# SEEA CF

Area	Type	Issue	Baseline/Counterfactual	Relevant for SEEA CF update
Asset accounts (monetary)	Assumption for valuation	Net present value method requires assumptions about future resource rents	Default: constant future trajectory of resource rents Advanced: modelled based on past and current values (physical accounts/condition)?	Yes (SNA alignment?)
Functional accounts/ environmental activities accounts	Baseline for classification	EGSS/EPEA: Classifying of (adapted) goods and services/ expenditures	Is a good or service more environmentally friendly than the next best alternative?	-
Climate mitigation/ Natural hazards and risks/ Climate change adaptation	Baseline for classification	Classification for private sector/households: classification based on "technical nature" or "expected impact"	What would be the emissions of the next best alternative? What would be the impact of hazards/climate change without activities that minimizes impacts?  Reference list?	Yes
Environmental tax abatements	Counterfactual to quantify flows	Implicit taxes	What would be the relevant transactions? Revenue foregone, revenue gain, expenditure equivalent	Yes
Potentially environmentally damaging subsidies (PEDS)	Counterfactual to quantify flows	Implicit taxes	See above	Yes



# SEEA EA & SEEA AE

Area	Type	Issue	Baseline/Counterfactual	Relevant for SEEA CF update
Ecosystem Extent Account	Baseline for classification	Classification of natural/anthropogenic ecosystems	Historic land cover, land use and land use intensity, protected areas	-
Ecosystem Condition Account	Reference level	Reference levels for condition indicators	Historic, Natural/Protected, Expert-based	-
Physical Ecosystem Service Account	Counterfactual to quantify flows	Baseline for service flows Monetary service accounts	Counterfactual ecosystem extent and/or condition, spatial scale Non-market valuation using simulated exchanges	-
Ecosystem assets	Assumption for valuation	Net present value method requires assumptions about future values of ecosystem services (resource rents)	Default: constant future trajectory of ecosystem services (resource rents) Advanced: modelled based on past and current values (physical accounts/condition)?	-
Consumption-based indicators	Counterfactual to quantify flows	Baselines for analysis	For example: emissions in exports	Yes

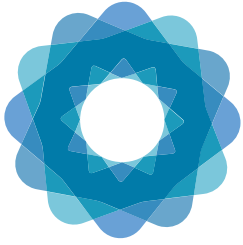


## Types of baselines/counterfactuals

# I. Classifications

### 🌱 Green or not green & how green?

- 🌱 EGSS, EPEA, Climate change mitigation & adaptation
- 🌱 *From a statistical point of view, the technical nature is the most neutral basis for determining the environmental protection purpose. In fact it allows checking the purpose of production activities by considering their suitability from a technical perspective for achieving the environmental protection purpose, whatever the motivation of the agent that performs it. (Eurostat)*
- 🌱 Private sector and households state no purpose
- 🌱 Purpose  $\neq$  preferences
- 🌱 Due to the high complexity classifications are operationalized by using lists (e.g. indicative compendium, list of climate change mitigation investments)



## Types of baselines/counterfactuals

# I. Classifications + Quantifying flows

### 🌸 Green or not green & how green?

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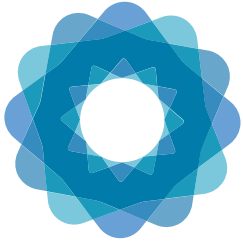
### 🌸 Comparison to “normal good”

- 🌸 1)  $\rightarrow$  relative prices changes  $\rightarrow$  baseline shifts over time  $\rightarrow$  global baselines applied to local context
- 🌸 2)  $\rightarrow$  Metric to decide whether product is greener
- 🌸 3)  $\rightarrow$  “Expenditure differential”?  $\rightarrow$  Fraction of product



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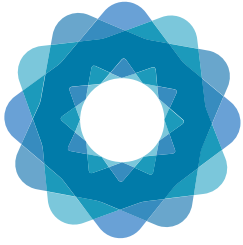
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## Types of baselines/counterfactuals

# II. Quantifying flows (what would be?)

### *Ecosystem services*

-  Local context, data quality, methodology
-  Spatial dimension and cumulative effects



## Types of baselines/counterfactuals

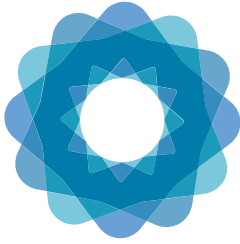
# III. Reference levels (what c/should be?)

### *Ecosystem condition reference levels*

-  Compare observed quality to natural, historic-natural, expert-based/regulatory or best-attainable condition

**Best attainable:**

### *Sustainability reference levels*



## Types of baselines/counterfactuals

# IV. Valuation (what would or will be?)

### ⚙️ *Non-market valuation*

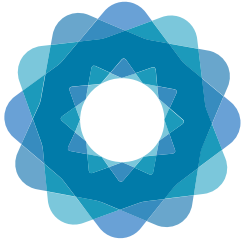
### ⚙️ *Net present value methods: future resource rents*

- ⚙️ *Materialist vs. fundist perspective*
- ⚙️ *Transaction prices vs. net present value method*

*Natural capital / Environmental assets:*

*Projections of future resource rent are calculated as the average unit resource rent times the physical extraction expected in each future year. It is recommended:*

- To assume that the unit resource rent remains constant in future unless specific policies have been implemented which would allow to estimate a specific unit resource rent path.*
- To assume a constant rate of extraction equal to the last period's extraction, unless a specific extraction / harvest profile is available*

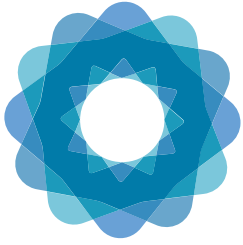


## Types of baselines/counterfactuals

# Climate effects of exports

The task:

- 🌸 Develop a measure for the climate impact of exported products *compared to equivalent foreign products*
- 🌸 Publish statistics on the climate effects of exports:
  - 🌸 Evaluate the quality of the indicators from a statistical perspective
  - 🌸 Develop a consistent and clear terminology for presenting the indicators produced



# Three related emissions concepts to pin down:

## Actual emissions from Sweden's export:

Value of Sweden's export (SEK) \* *Swedish value chain emissions intensity* (CO<sub>2</sub>e/SEK)

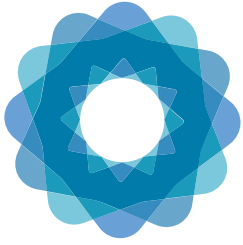
## Counterfactual emissions from Sweden's exports:

Value of Sweden's export (SEK) \* *Foreign value chain emissions intensity* (CO<sub>2</sub>e/SEK)

Which production?

## Potentially avoided/increased emissions from Swedish export:

Actual emissions – Counterfactual emissions



# Three scenarios for production

Value chain emissions intensities (GHG/SEK) according to:

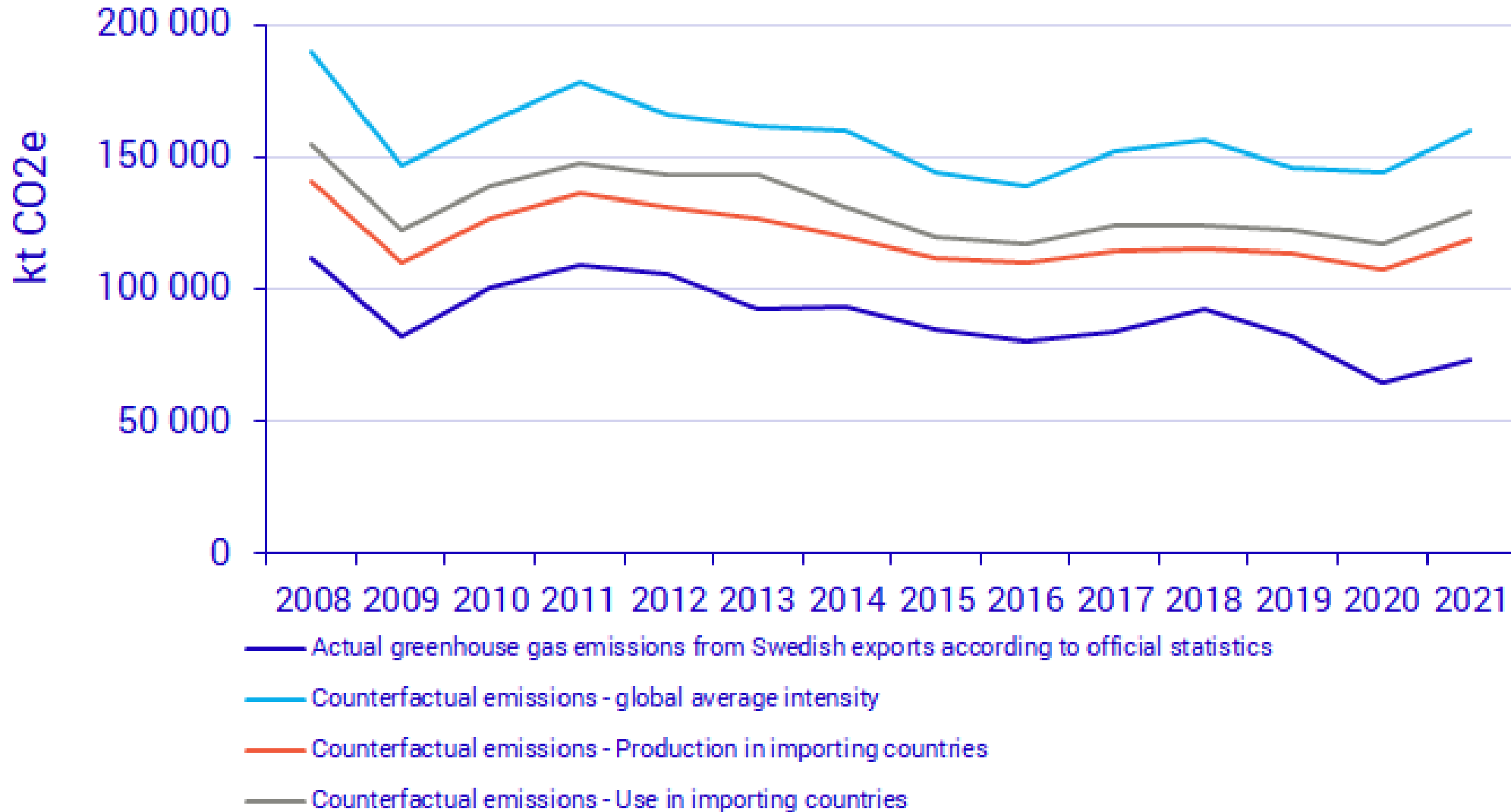
1. Global average production
2. Production in importing countries
3. Use in importing countries

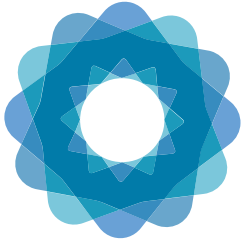
# Potentially avoided emissions for Sweden's exports vary according to scenarios

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# Accuracy and clarity key quality components to address

Relevance

**Accuracy and Reliability**

Timeliness and Punctuality

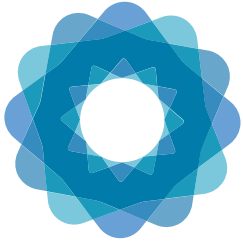
**Accessibility and Clarity**

Coherence and Comparability

The closeness of the published values to the unknown true values

Provide information to users to facilitate the correct use of the indicators





# Users need to be aware of the significance of the counterfactual

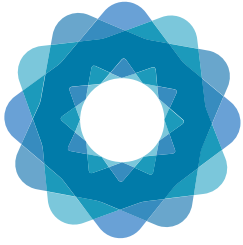
## 🌸 Accuracy:

🌸 cannot be assessed with respect to true values in the normal sense

## 🌸 Clarity:

🌸 NOT official statistics, rather "other national statistics"

🌸 Clear terminology



## Discussion: Implications for SEEA

- ✿ *SEEA contains accounting principles for most of these cases*
  - ✿ The issues regard a broad range of topics and the challenges are very specific to these topics
- ✿ *Many of the issues could be adressed in application guidelines*
- ✿ *Should SEEA CF/EA discuss the issues and challenges (without giving concrete guidance)?*
- ✿ *Is there a need for more concrete guidance?*
  
- ✿ *Do we need some sort of quality thresholds/best practice?*



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**THANK YOU**

<https://seea.un.org/content/london-group-environmental-accounting>