Developing ONS's environmental business surveys to measure a changing economy

Chris Jones & Neil Wilson

Environment Division
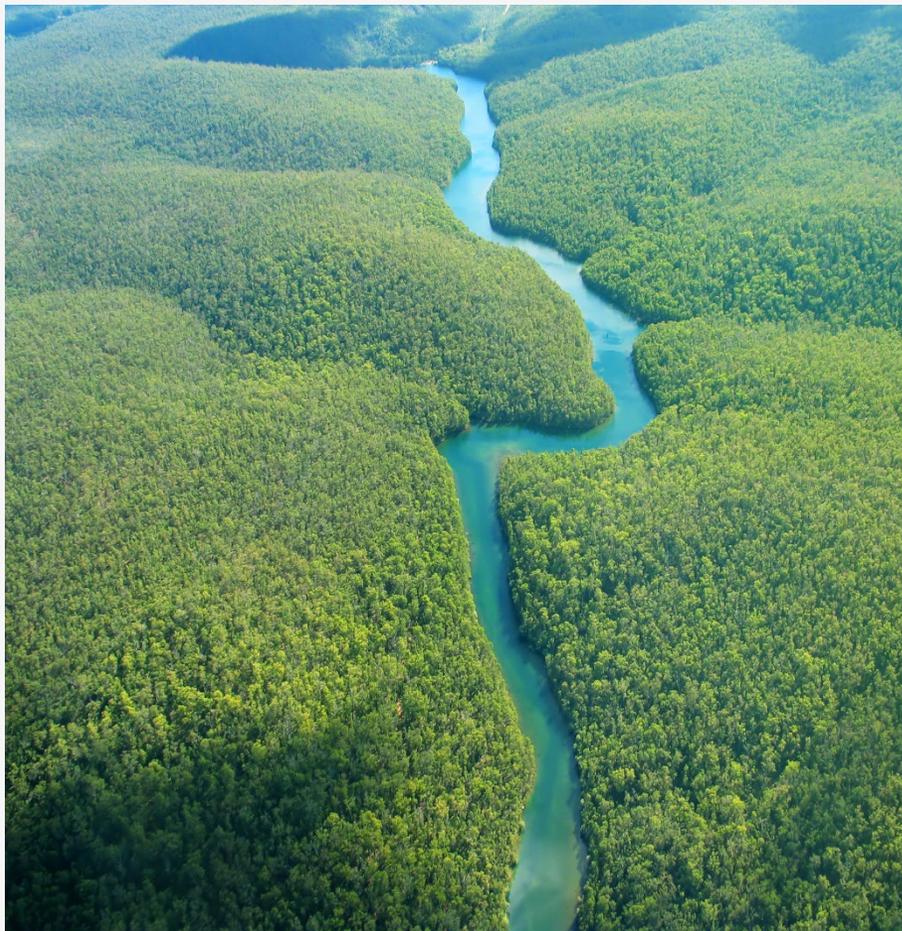
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The Green Economy

Neil Wilson

Environmental Accounts and Surveys

Environmental Accounts: Flow, footprint, taxes, EGSS…
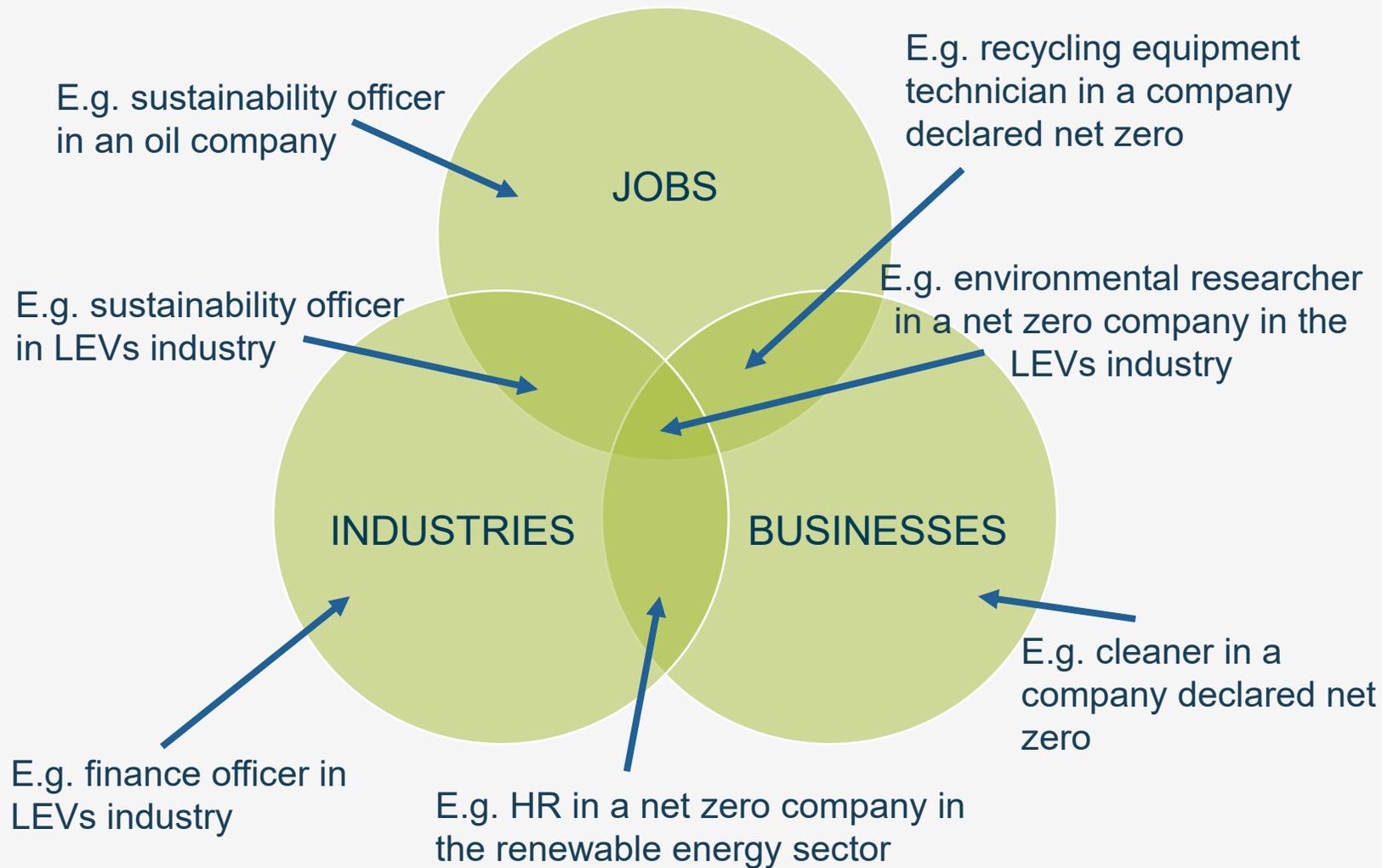
Green economy and green jobs

Low Carbon and Renewable Energy Economy survey, Environmental Protection Expenditure survey

GHG Emission: Residence based and quarterly

Towards 'green economy'

- Existing Environmental Accounts and Surveys:
  - UK Environmental Goods and Services Sector estimates (including <u>employment)</u> using the United Nations System of Environmental Economic Accounting definition of 17 relevant activities
  - <u>Low Carbon and Renewable Energy Economy (LCREE) survey</u> focused on 17 sectors which are deemed to be low carbon and/or related to renewable energy
- ONS green jobs project
- Frameworks

Dimensions

E.g. sustainability officer in an oil company

E.g. recycling equipment technician in a company declared net zero

JOBS

E.g. sustainability officer in LEVs industry

E.g. environmental researcher in a net zero company in the LEVs industry

INDUSTRIES

BUSINESSES

E.g. cleaner in a company declared net zero

E.g. finance officer in LEVs industry

E.g. HR in a net zero company in the renewable energy sector

The Green Economy

Green Jobs – ONS definition

"employment in an activity that contributes to protecting or restoring the environment, including those that mitigate or adapt to climate change" and can be estimated using industry, occupation and firm approaches.

Going forwards

- Green Jobs

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- Green Economy

- Whole economy transition

- Greening over time

- Utilising business/labour surveys and admin sources

- Granularity and other variables

- Pipelines

Developing LCREE Indirect Estimates

Chris Jones

What is the LCREE survey?

Run annually since 2015 in response to policy demand

The Low Carbon and Renewable Energy Economy (LCREE) Survey is the primary source of official information on this type of activity in the UK.

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LCREE = Low Carbon & Renewable Energy Economy

17 Sectors

1. Offshore wind
2. Onshore wind
3. Solar Photovoltaic
4. Hydropower
5. Other renewable electricity
6. Bio energy
7. Alternative fuels
8. Renewable heat
9. Renewable combined heat and power

10. Energy efficient lighting
11. Energy efficient products
12. Energy monitoring saving or control systems
13. Low carbon consultancy financial and advisory services
14. Low emission vehicles and infrastructure
15. Carbon capture and storage
16. Nuclear power
17. Fuels cells and energy storage systems

Sample

- The LCREE Survey currently samples approximately 25,000 UK businesses annually (mandatory business survey), using the [Inter-Departmental Business Register (IDBR)](#) as the sampling frame. We go out to a selection of industry codes judged as likely to contain low carbon activity

- The design is a stratified random sample with the target population being stratified by industry, employment size and UK country. Sample selection occurs independently within each stratum.

- Sample respondents are weighted to represent the number of non-sampled businesses within the same stratum.

- All businesses in our target population with 250 or more employees are selected

Outputs

Yearly [publication](#), with accompanying [dataset](#), [quality and methodology information](#) and FAQs for stakeholders.

Estimates of turnover, employment, number of businesses, imports, exports and capital assets are available at the UK and country level.

We also provide estimates of activity in the 17 LCREE sectors, outlined in more detail in: [LCREE sector and codes and descriptions (.doc, 25.4KB)](#).

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Indirect Estimates – previous method

- To estimate additional activity in the economy that is generated because of the demand for the inputs used by businesses directly active in the LCREE

- We produce indirect estimates to gain a more comprehensive understanding of the impact that the LCREE has on the wider economy.

- Previously generated using multipliers and published as experimental statistics. We found these were over-estimating because:
  - Generic multipliers for a given LCREE sector were not appropriate for fully capturing the interactions between different industries.
  - Our LCREE survey does not distinguish between final and intermediate use, so this multiplication led to some double counting and an overestimate of indirect activity.

- New methodology developed utilising UK industry by industry input-output tables
 - Updated dataset revising 2017-2020, 2021 and 2022 data are provisional - Official Statistics in Development

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Structure of the industry-by-industry input-output table (IOT)

Key definitions:

- **Final use:** Consumption expenditure not contributing to further creation of products
- **Intermediate use:** Consumption of products that are used up or transformed to create other products

- **Direct effect:** immediate effect on economy caused directly by a change in final use
- **Indirect effect:** subsequent effect on economy caused by consequent changes in intermediate use

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Overview of improved methodology
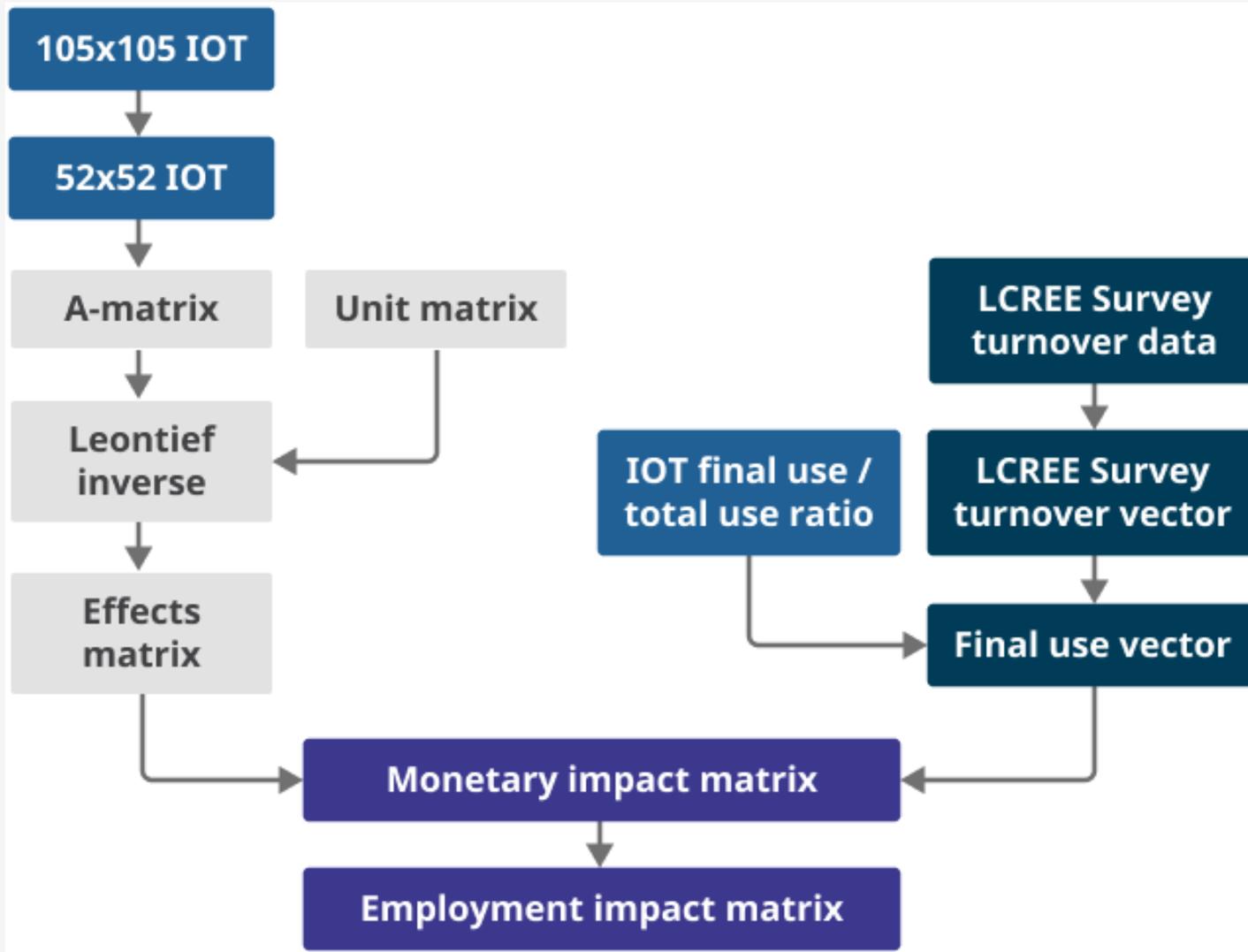
Key equations:

$$Leontief\ inverse\ =\ (I - A)^{-1}$$

$$Effects\ =\ A\ x\ Leontief\ inverse$$

$$Final\ use\ =\ LCREE\ T/O\ \times\ \frac{final\ use\ by\ industry\ *}{total\ use\ by\ industry\ *}$$

$$Monetary\ impact\ =\ effects\ \times\ final\ use$$

$$\textbf{Direct effect} + \textbf{Indirect effect} = \textbf{Total effect}$$

*taken from the IOTs

Structure of monetary & employment impact matrices

LCREE Sector Final Use

52 x 17 matrix

Industry (SIC) Input

Sector totals → Grand total
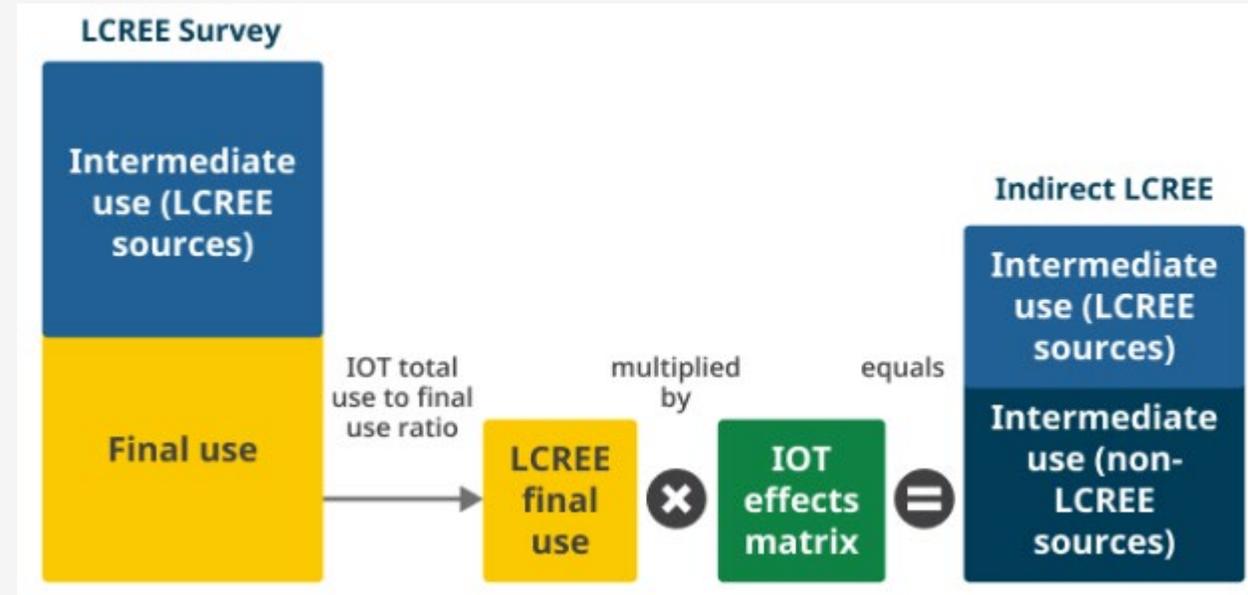
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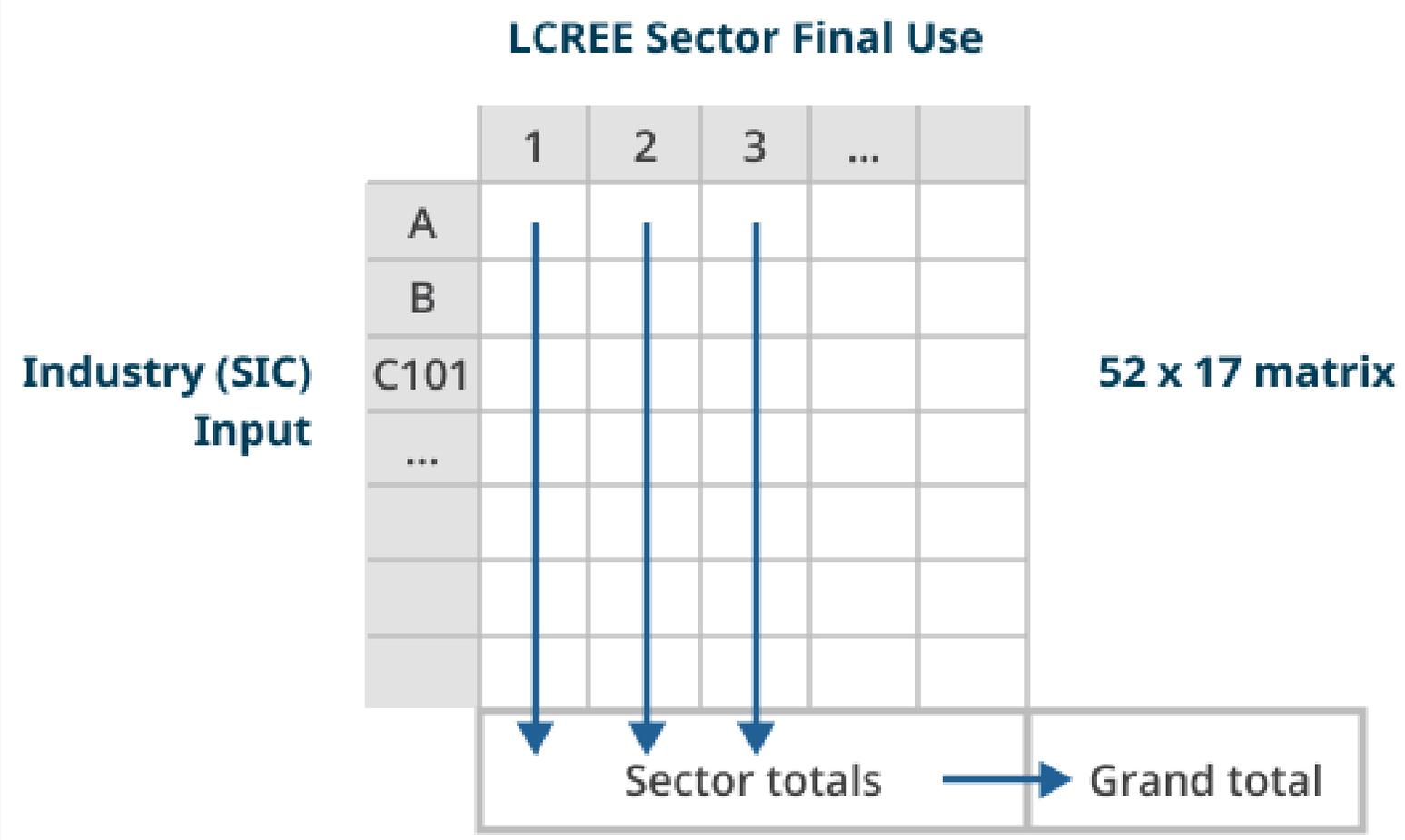
Developing further

- Although we have removed double counting from indirect calculations, looking at where there could be further potential overestimation of total LCREE effect

- **DIAGRAMS NOT TO SCALE**

- Also using turnover as a proxy for total economic output (which would also include e.g. work in progress, unsold goods etc…)

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Thank you!
Any questions?

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