



ICE Database: Status Update Webinar

26th September 2024

Your Presenters Today

Dr Craig Jones

Director

- Original author of the ICE database
- 20 years' experience of embodied carbon assessment
- Founder of Circular Ecology

Jon Burrow

Head of Carbon Accounting

- Over a decade's experience in carbon footprints
- Expertise in developing Carbon Reduction Strategies for organisations
- Background in UK / EU carbon regulatory compliance

Circular Ecology – Introduction



Environmental consultancy, founded in 2013

Hosts the Inventory of Carbon & Energy (ICE) database

- Free embodied carbon database for materials
- Trusted by over 50,000 professionals globally

Offer a range environmental services:

- Organisational Carbon Footprints, Scope 1, 2 & 3
- Product Carbon Footprints
- Whole-Life Embodied Carbon Assessments for Construction Projects
- Life Cycle Assessments (LCA)
- Net Zero Carbon Strategy
- Verification and Peer Review
- Online E-Learning Training Courses
- Carbon Offsetting and Tree Planting
- Carbon Footprint Database (library) Development

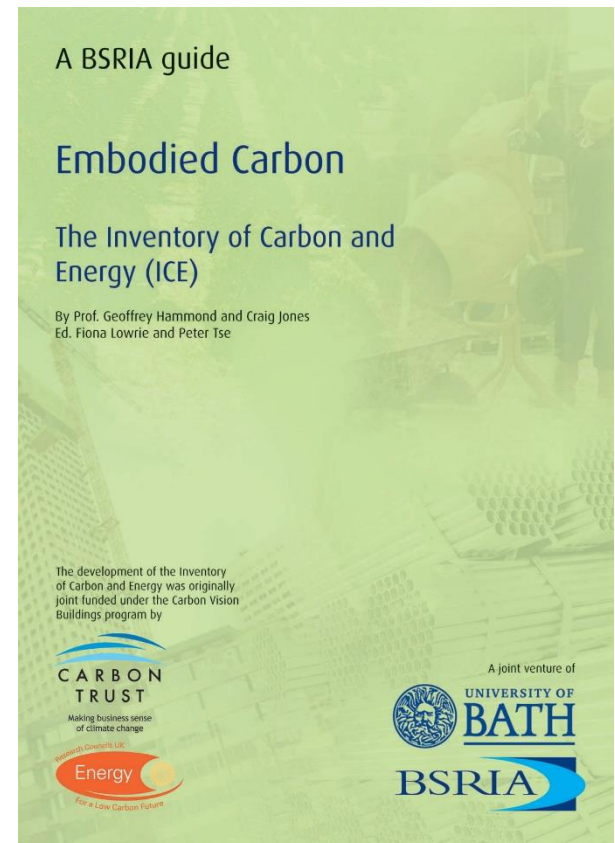




Background & Journey To Date

The Inventory of Carbon & Energy (ICE)

- An **embodied energy and carbon database** for building materials
 - First version 2005 released by Dr Craig Jones and Professor Geoff Hammond, University of Bath
- Data for over 200 materials
 - Primarily for Construction Materials
- Over 50,000 worldwide users
- BSRIA hardcopy published in January 2011
- Excel version free to download from www.circularecology.com/ice-database.html



Journey to Date – Net Zero Flow

- Latest version ICE V3 (2019)
- In 2021 we had a part funded research grant from Innovate UK
 - A project called “Net Zero Flow”, led by xbim
 - Aimed to align BIM with embodied carbon modelling
- Part of the project allowed us to collect embodied carbon data for the ICE database
 - We doubled the size of the background ICE dataset size
 - Despite data needing to be extracted manually from pdf EPDs
 - Digital EPDs started to come out in notable quantities towards the end of this project
 - We also put in place the foundations for a team to update the database
 - Although over the short 9-month project duration, we didn’t have the resource to complete the analysis and cleansing of the data
 - Which is a time consuming and important part of the process
- Further funding would be needed to fund a database update...

Journey to Date – BCIS Funding

- In 2023, we obtained the further funding needed to update the ICE Database
 - Sponsored by BCIS (bcis.co.uk)

BCIS

- Circular Ecology were also appointed as the consultants to prepare embodied carbon data for the BECD database for products
- Built Environment Carbon Database (BECD) - www.becd.co.uk



Journey to Date – BECD Data

- The BECD product database currently contains data for over 28,000 materials and products
 - Compiled from digital EPDs, Primarily from:
 - EC3
 - Ecoportal
- This has become an important data source for the ICE Database
- The source data is taken from digital EPD file formats
- However, it still takes a lot of time for analysing, cleansing and categorisation of the data

Current Status

- We have a team working hard on the ICE Database update
 - Since May our team have spent ~1,200 hours on the ICE Database
- Current version remains ICE V3 (2019)
 - Half of the data is still ICE V2.1 (2011)
 - The landscape has also changed significantly, even since 2019
 - The ICE Database is very much in need of an update
- In the next part of this webinar, we will provide some insights on the road towards ICE V4.0...



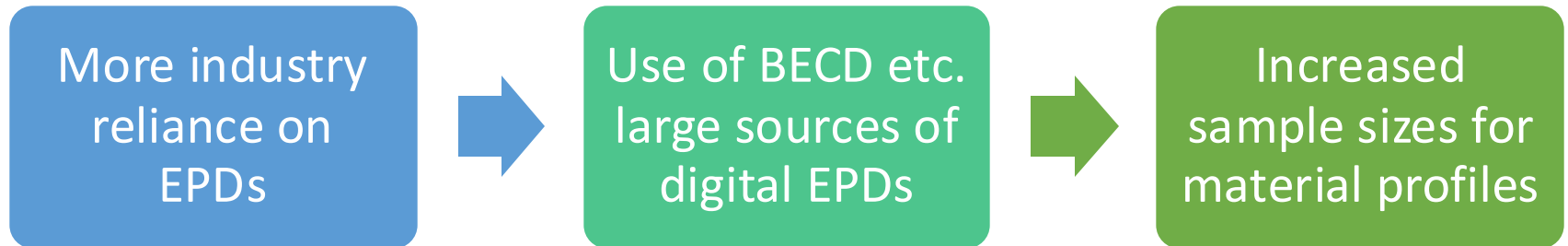
Looking Forward: Road to ICE V4.0

Road to V4.0 - Interesting Insights

Access to digital EPD libraries has significantly increased size of datasets we can draw from

Digital EPDs can still contain errors... how can these be analysed and cleansed at scale?

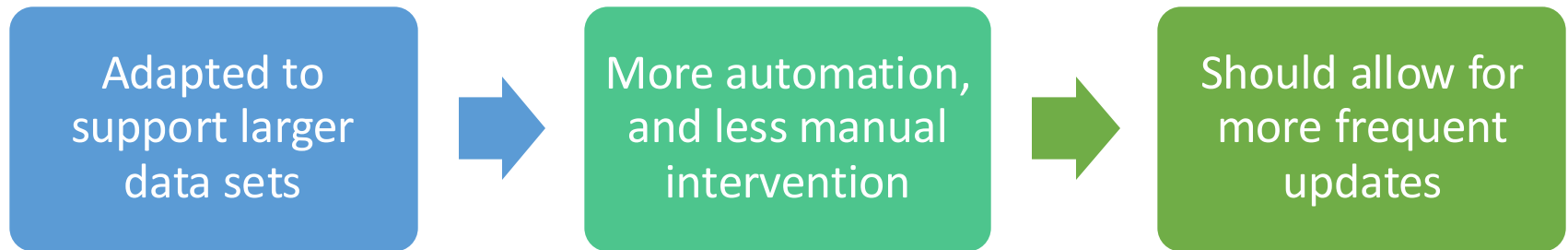
Road to V4.0 – Data Sources



We want to:

- Allow for inputs from new and different sources
- Facilitate the increased sample sizes for materials
- Ensure ICE Database remains futureproofed

Road to V4.0 - Data Analysis



We want to:

- Reduce time spent on manual extraction of data
- Focus any manual intervention to key analysis areas
- Provide new data & DQIs for more detailed insights

Challenges with Updated Approach



Digital EPDs do not categorise by material



Some EPDs can cover "products" made from several different materials




Accounting for different reporting methodologies, boundaries, and standards



Key data missing from EPDs e.g., mass of functional unit...

Example: Cleansing a Dataset



How confident are we that the dataset fairly represents the material we are profiling?

Identify possible erroneous entries from digital EPDs



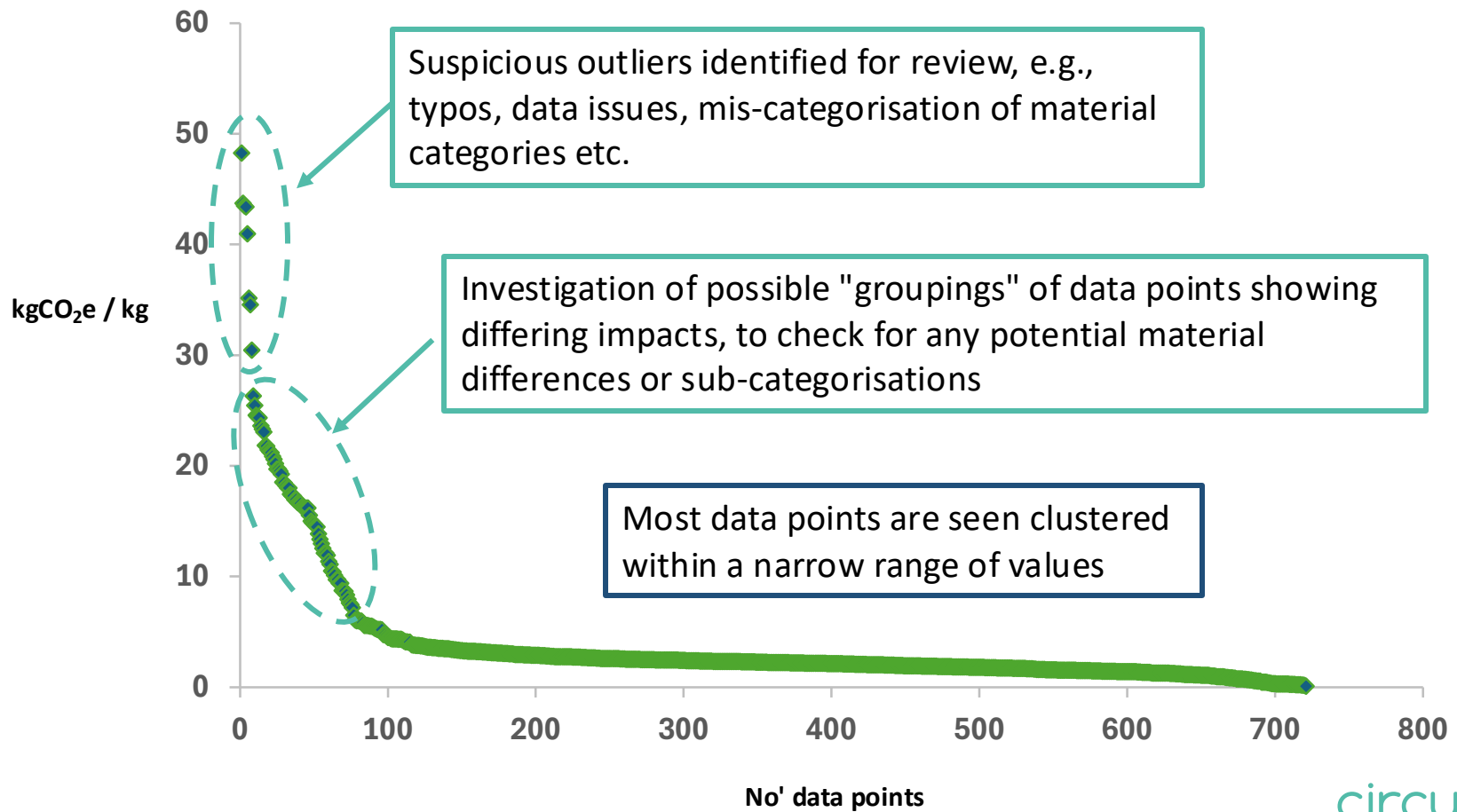
Analyse identified data points for appropriateness and accuracy



Remove any unresolved or problematic data points from the sample

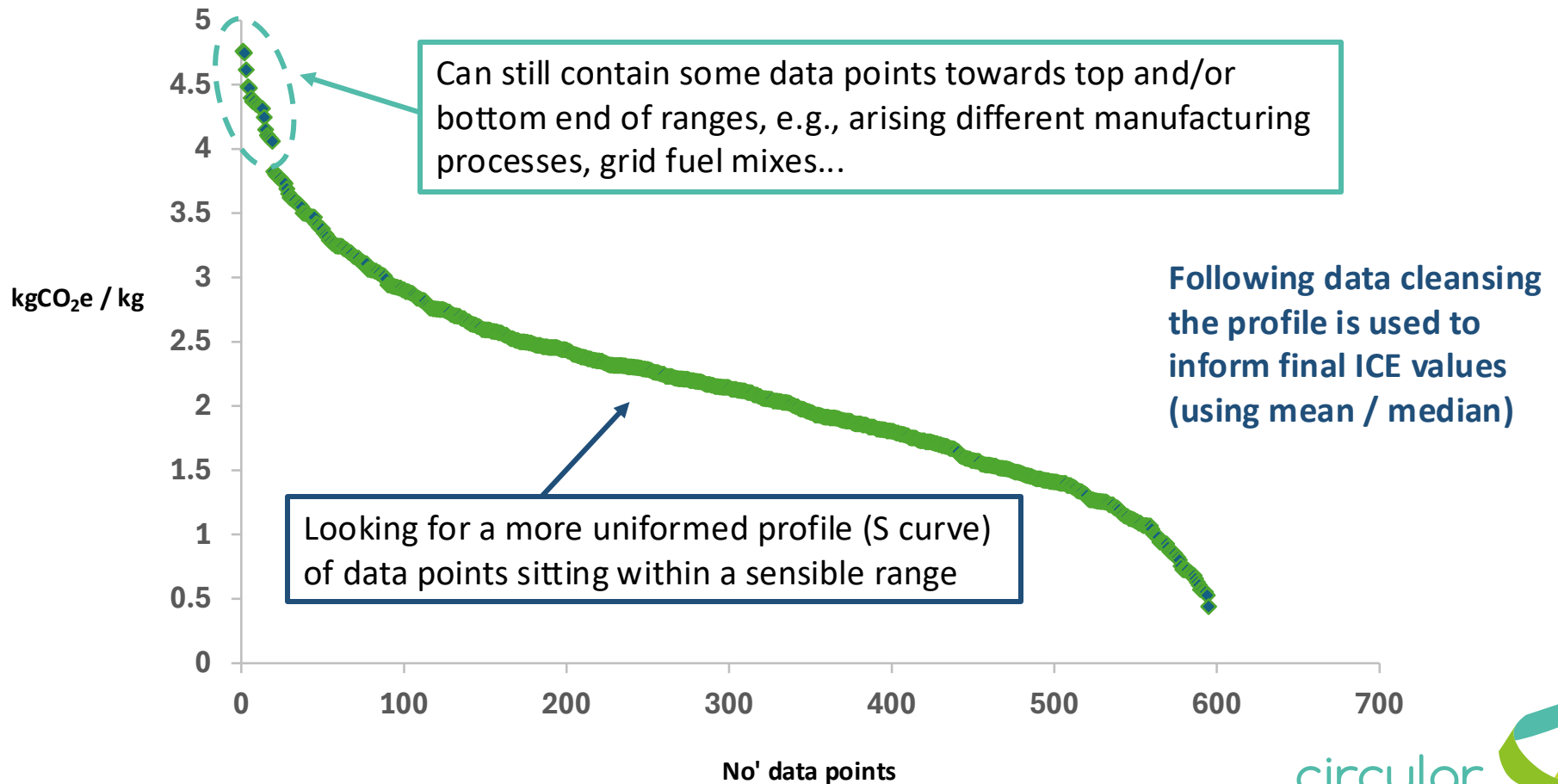
Example: Cleansing a Dataset

Before Cleansing



Example: Cleansing a Dataset

After Cleansing





Looking Forward: ICE V4.0 Launch

ICE V4.0 Launch

- Targeting V4.0 launch in **late November 2024**
- Accompanied by an ICE V4.0 launch webinar
- Updated terms of use & registration process
- Future webinars on material profiles & data insights
- Possibility of paid ICE webinar series in 2025
 - towards funding of further updates

Expected Updates for V4.0

Material Profiles

Targeting updates for -

- Cement / Concrete
- Ceramic
- Insulation
- Linoleum
- Paint
- Plaster
- Rubber
- Steel
- Stone
- Vinyl

Other Updates

- Fixes made to ICE machine readable version
- "Misc" category data will be removed
- **Note** - Data not yet updated from V3.0 will still be available to view in V4.0.

Future Material Profile Updates – *Pending Funding for Further Revisions*

Material categories that could benefit from future updates:

- Aggregates
- Aluminium
- Asphalt / Bitumen
- Bricks
- Copper
- Glass
- Iron
- Lime
- Plastics

We welcome discussions on funding of future updates

Summary

- ICE V4.0 launch & webinar - **targeting late Nov 2024**
- Expect updates to several material profiles
- More information on new terms of use to follow
- Further funding needed for any future updates
- Paving the way for more regular maintenance & improvements to the ICE database



Q&A

**Please use the Q&A interface to ask
your questions**



Acknowledgements:

BCIS

&

The Circular Ecology Team



Thank you for watching

Sign up for more information on ICE database and the V4.0 Launch

<https://circularecology.com/newsletter.html>