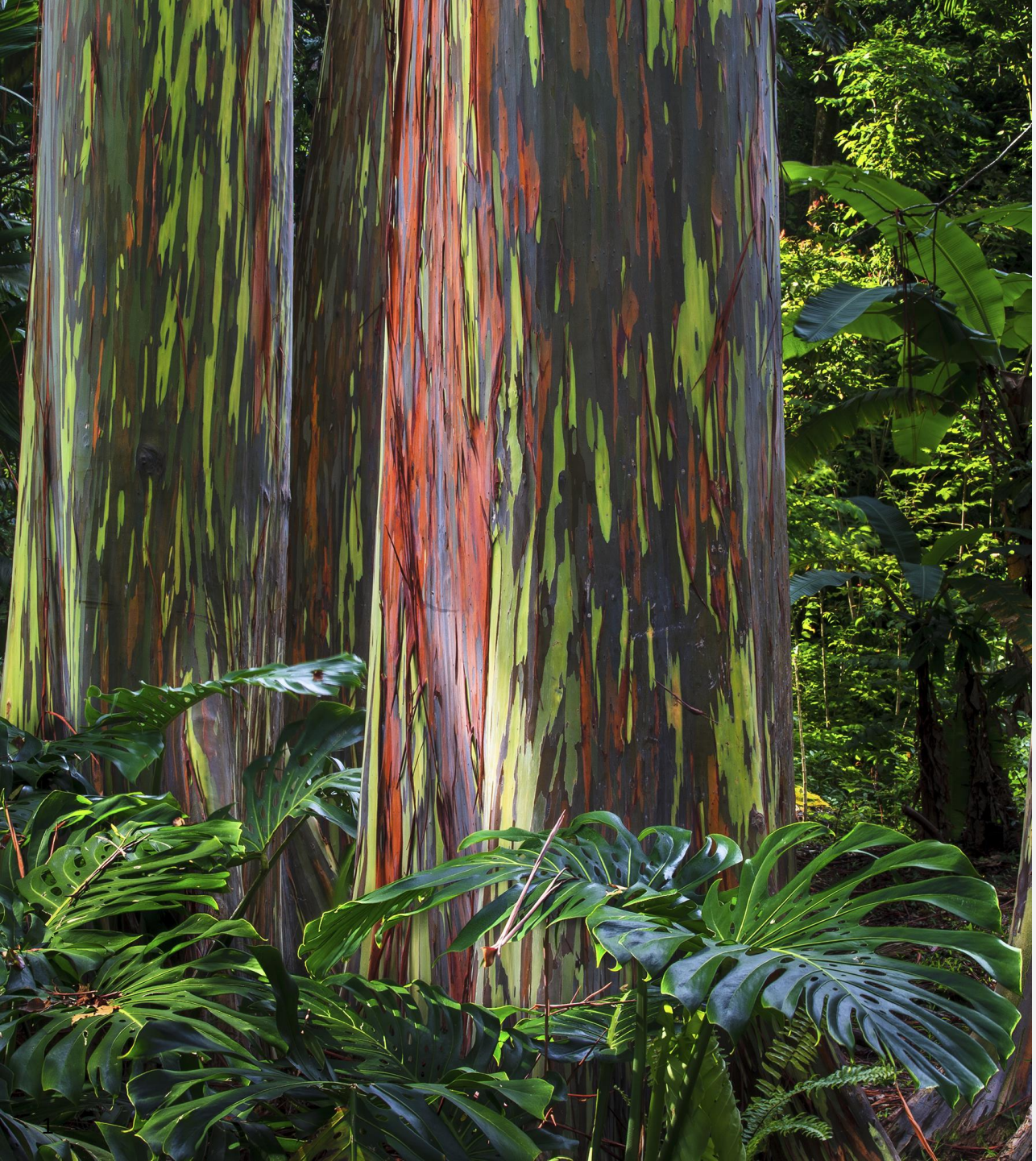


Agenda

1. Introductions
2. Overview of Stackpole
3. LCA & emission intensities background
4. Project ask & process to complete
5. Outcomes
6. Q&A

Introductions

Canadian Manager – Environment, Health and Safety
Stackpole International

Andrew Audit has been with Stackpole for over 12 years. Andrew has held various positions at Stackpole including EHS Specialist, Value Stream Leader-Maintenance and currently the Canadian Manager, EHS. Andrew is responsible for the development of best practices and continuous improvement EHS and Sustainability across Stackpole's 5 Ontario facilities.
Andrew has a Bachelors of Applied Science in Occupational Health and Safety from Ryerson University and a Honours Bachelor Science degree in Environmental Sciences from University of Toronto.

ESG-Sustainability Advisor
GHD

As an Advisor at GHD with the ESG-Sustainability team, Madelyn works for clients in a multitude of sectors, including energy, oil and gas, construction, and more. Her experience with these clients has included preparing strategic reports on ESG metrics and sector trends, reviewing and compiling corporate disclosure data for publication public facing reports (e.g., CDP, annual ESG reports, webpage communications) and expanding general ESG capabilities. Madelyn has an extensive understanding of environmental management techniques, legislation, policy, and reporting requirements, both in the US and Canada.

Madelyn has a Bachelor of Sciences Honours in Chemistry from Queen's University and a graduate certificate in environmental management and assessment from Niagara College.

Background on Stackpole

- Stackpole International is a world leader in hydraulic and mechatronic system production, and one of the largest North American powder metal component producers.

- We've developed a global footprint with manufacturing facilities in Canada, China, Korea and Turkey—supported by sales and technical centers in France, Germany, UK and USA.

Smart, flexible **fluid power solutions** for powertrain.

The **enabling technologies** for modern mobility.

Stackpole's Carbon / ESG Goals

CO_2 **-25%** absolute carbon emissions by 2030

-15% energy intensity by 2030

Operate with **100%** renewable energy by 2025

Target Zero Waste to Landfill

-2% annual reduction in Water Consumption

5 PILLARS OF SUSTAINABILITY

Environment

- Energy and climate
- Waste
- Water
- Emissions

Products

- Sustainable product
- Product carbon footprint
- Product quality
- Product safety
- Material management and use

Employees

- Health and Safety
- Talent attraction and retention
- Training and development
- Diversity
- Communication
- Labour rights

Communities

- Community engagement

Trust & Transparency

- Corporate governance
- Ethics
- Compliance
- Data protection
- Supply chain

Sustainability Goals

By 2025

Operate with 100% renewable energy

By 2030

-25% absolute carbon emission CO_2

By 2030

-15% energy intensity

Stackpole International

JOHNSON ELECTRIC
innovating motion

Stackpole's Overarching Drivers

- Sustainability is intrinsic to our product development, as a direct result of engineering for efficiency.

- Stackpole strives to develop products that consume few resources in their manufacture, use less energy to deliver the required performance/functionality and have longer operating life.

- Drivers for Carbon Management:
  1. GHG reductions in our products and operations
  2. Internal Decarbonization Goals

Sustainability Projects that Stackpole International has undertaken

Mississauga, Canada:

- Implemented acoustic imaging with a live sound map to rapidly identify and show the location of compressed air leaks – significantly reduces energy consumption in air compressors

Izmir, Turkey:

- Began using centrifuge to separate coolant from aluminium chips. The coolant is recycled and reused in production, extending its usable lift and reducing amount of hazardous waste.

Ochang, South Korea:

- Improvements to sintering furnaces reduced carbon emissions by nearly 500t CO_2 eq per year

Ancaster, Canada:

- Life Cycle Assessment Model for quantifying GHG Footprint on a per product – unit basis

Ochang, Korea Halla Stackpole Corporation JV (Powder Metal)

Izmir, Turkey (Fluid Power Solutions)

Mississauga, Ontario (Powder Metal)

GHD Advisory

→ Our Services

A global ESG offering

Our global, multidisciplinary services focus on **four key areas** designed to operationalise ESG and sustainability driven long term performance improvements:

Investing

Helping investors and clients align finance towards long-term value creation in an ESG focused world

Strategy

Guiding clients in supporting their ESG, sustainability and resilience projects and programs at scale

Climate

Supporting clients to understand their climate change impacts and vulnerabilities and deliver low carbon, adaptation solutions

Reporting

Measuring, managing and gaining insights from verifiable and actionable ESG and climate related data

Investing services include:

- ESG due diligence
- Financing/Investment decision making
- E&S De-risking (M&A, supply chains, ESMS)
- Investment and asset optimisation
- Sustainability / ESG linked financing

Strategy services include:

- Materiality assessment & corporate benchmarking
- Sustainability/ESG program development (including ESMS)
- Enterprise risk reduction & management
- Resource planning, goal setting & circular economy

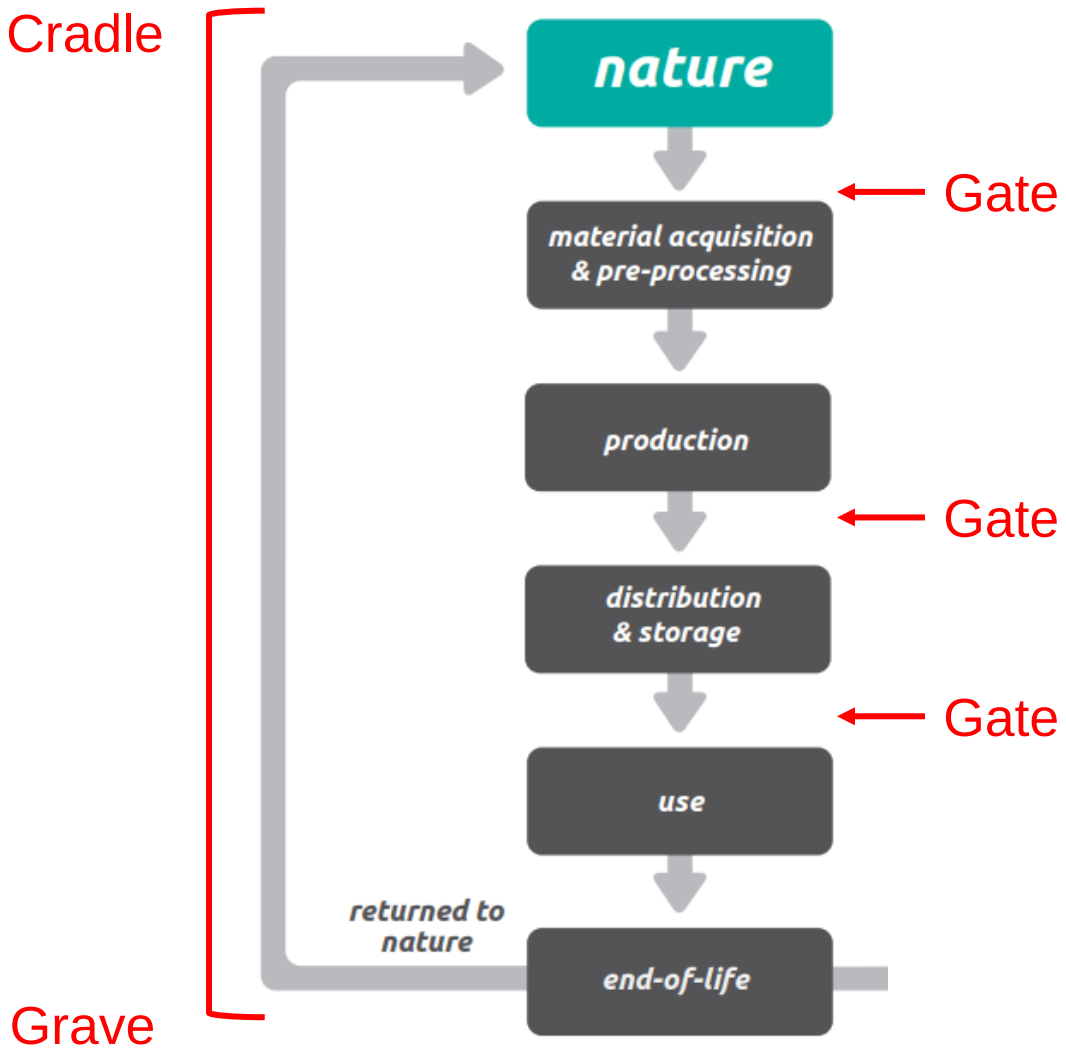
Climate services include:

- Climate risk, resilience & adaptation
- Carbon management & lifecycle analysis
- Climate change mitigation & decarbonisation strategies

Reporting services include:

- Sustainability reporting (GRI, SASB, DJSI)
- Climate disclosure (CDP, TCFD)
- ESG performance metrics

Carbon intensities and product lifecycles



Source: Product life cycle accounting reporting standard, WRI, Product-Life-Cycle-Accounting-Reporting-Standard_041613.pdf (ghgprotocol.org)

Life cycle assessment (LCA)	The evaluation of a product, process, or service performed and the inputs required to complete said activity for a specific boundary (cradle-to-gate, gate-to-gate, cradle-to-grave). May evaluate multiple outputs including: – Waste – Energy – GHG emissions – Other air emissions
Carbon intensity (CI) & emissions intensity (EI)	The amount of CO_2 produced when organizations or individuals perform a process or create a unit of product (tCO_2 / unit). May also evaluate broader GHG emissions (emissions intensity) (tCO_2e / unit).

Methods for completing an LCA

Industry level standards and accounting guidelines:

- Product Life Cycle Accounting and Reporting Standard, GHG Protocol, WRI
- ISO 14040: Life cycle assessment

Supplements to quantification of GHGs:

- The Greenhouse Gas Protocol, GHG Protocol, WRI
- ISO 14064: greenhouse gases – Part 1 and 2

Poll question:

Have you completed an LCA?

If yes, what were some of the biggest challenges that you faced?

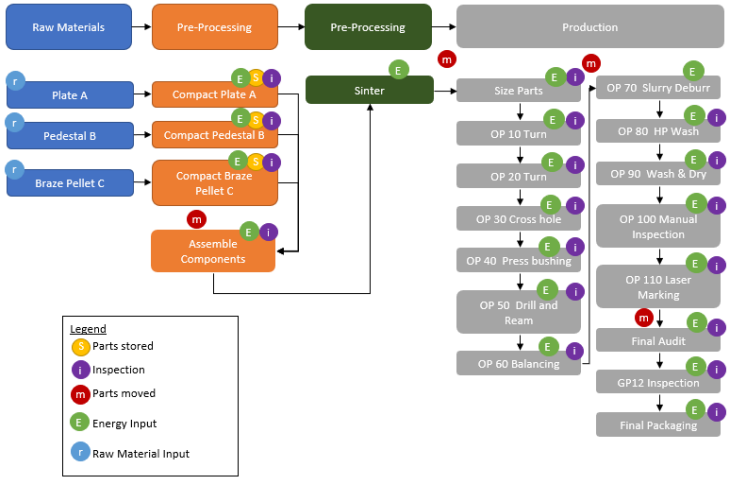
The project ask

Develop a per-product emissions intensity model that would be:

- Modular
- Adaptable for future reporting / estimations
- Define emissions on a scope by scope and process by process basis
- Quantify emissions and energy consumption per product

Summary of process

1 Boundary assessment



Evaluate the bounds of the assessment based on GHG Protocol

2 Model development & quantification

Process 1

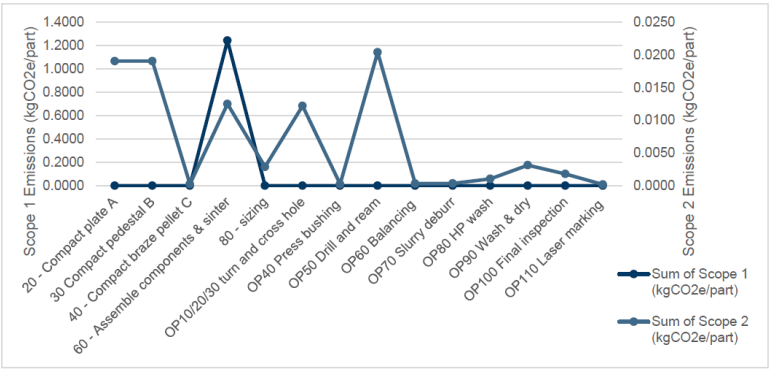
Location	[Select Location]
Facility Name	[Select Facility]
Product Line	[Enter Product]
Product Weight (g)	[Enter Weight]
Product Description	[Enter Description]
Stackpole Part No.	[Enter Part #]
Customer Part No.	[Enter Part #]
Supplier	[Enter Supplier]

Raw Materials	Material 1	Material 2	Material 3	Material 4	Material 5	Materi
Supplier	[Select Supplier]					
Raw Product Name	[Select Product]					
Percent Composition of Part	[Enter Percentage]					
Amount Used (g/unit)						
Distance (km)						

Process Step	Equipment Cateogry	Size	Type	Asset ID	Description
[Enter Information]	[Select from Drop-Down]	[Select from Drop-Down]	[Select from Drop-Down]	[Select from Drop-Down]	

Develop a model that evaluates the current process – include inputs for all processes included in the boundary

3 Analysis



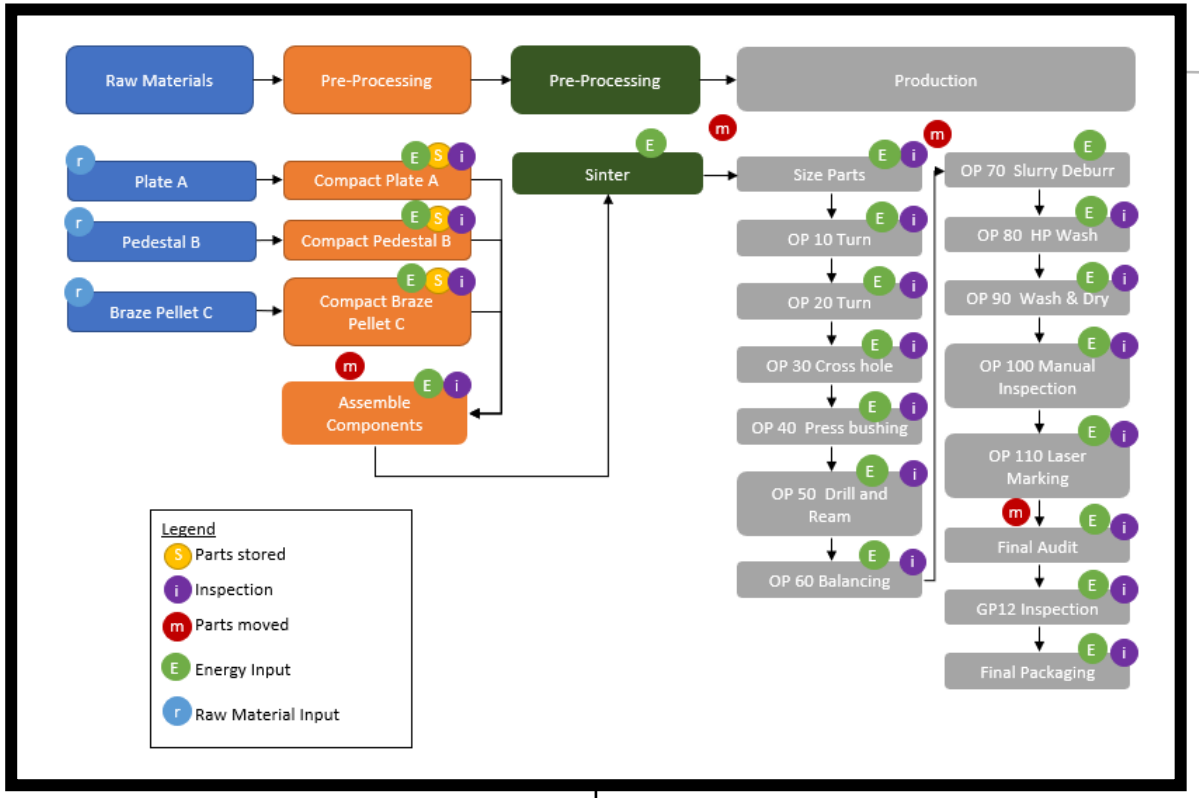
Evaluate the outcomes to understand high emissions intensity within the process and incorporate into future planning

1. Boundary assessment

Considerations

1. What is the functional unit? (e.g., 1 tonne of material, 1 unit, etc.)
2. What is the year of data?
3. Where should the boundary start and end?
   - What data do you have easily accessible and what will you need to find?
   - What are your drivers for completing this LCA?

Boundary



Outside boundary

- Storage
- Shipping
- Use
- End-of-life

Model outputs

Emissions (kg CO2e / part)

Scope 1: stationary combustion

Scope 2: purchased electricity

Scope 3: raw materials & upstream transportation

2. Model development

Functionality

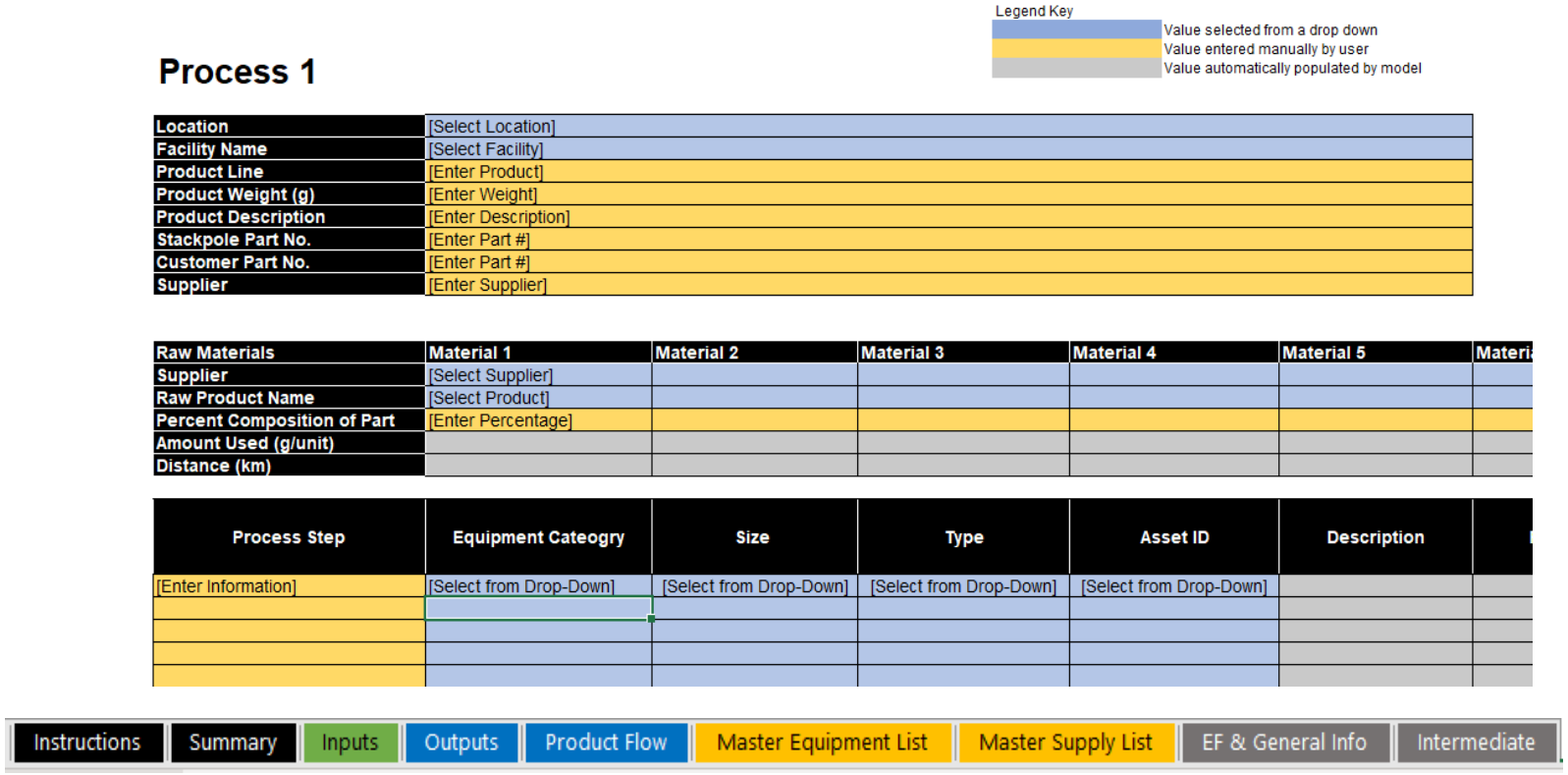
Purpose was to develop a model that could be used not only to model specific processes, but be built to estimate future processes or changes to existing processes.

Required the interchangeability of:

- Equipment,
- Materials,
- Distances

Challenges

- Standardization of the inputs
- Way to add new inputs
- Simplicity for user



Legend Key

Value selected from a drop down
Value entered manually by user
Value automatically populated by model

Process 1

Location	[Select Location]
Facility Name	[Select Facility]
Product Line	[Enter Product]
Product Weight (g)	[Enter Weight]
Product Description	[Enter Description]
Stackpole Part No.	[Enter Part #]
Customer Part No.	[Enter Part #]
Supplier	[Enter Supplier]

Raw Materials	Material 1	Material 2	Material 3	Material 4	Material 5	Materi
Supplier	[Select Supplier]					
Raw Product Name	[Select Product]					
Percent Composition of Part	[Enter Percentage]					
Amount Used (g/unit)						
Distance (km)						

Process Step	Equipment Cateogry	Size	Type	Asset ID	Description	
[Enter Information]	[Select from Drop-Down]	[Select from Drop-Down]	[Select from Drop-Down]	[Select from Drop-Down]		

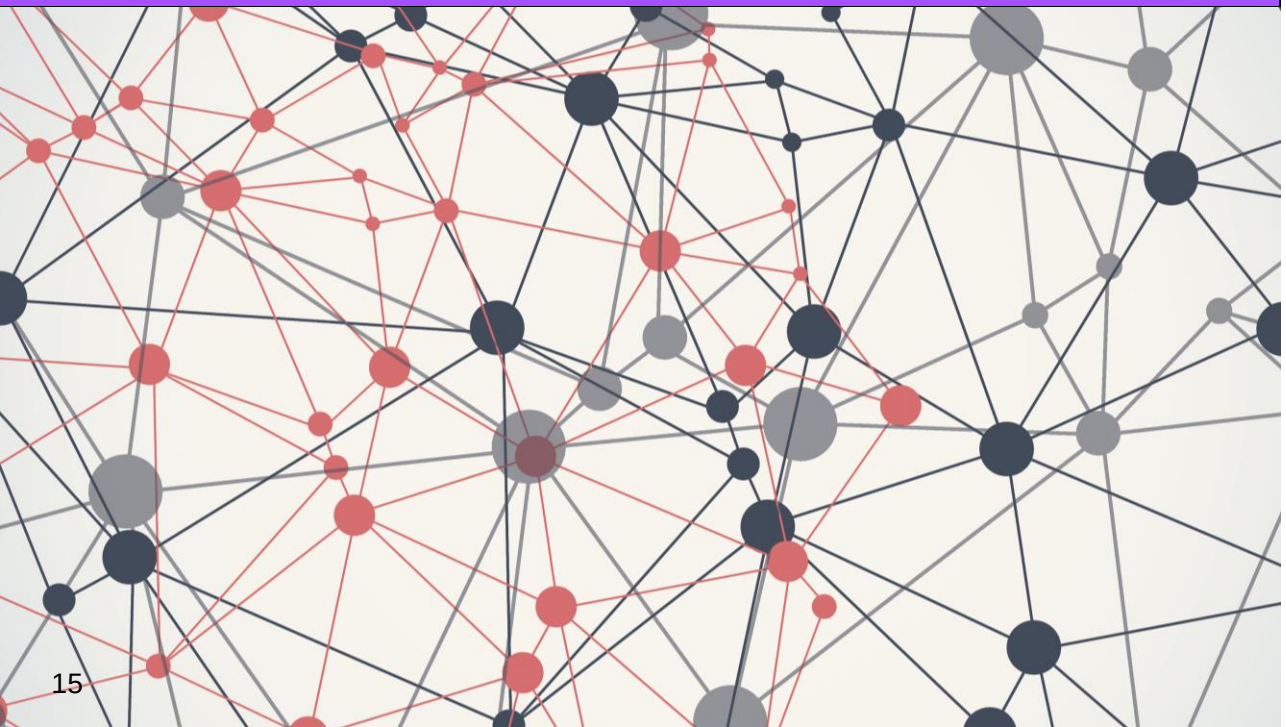
Instructions | Summary | Inputs | Outputs | Product Flow | Master Equipment List | Master Supply List | EF & General Info | Intermediate

2. Data collection

Poll question:

What kinds of data do you currently have?

- Run times for processes
- Process flow diagrams
- Energy inputs for equipment
- Material composition
- Equipment lists
- Other



Requirements for inputs:

- Weight of product & material composition
- Distance raw materials transported
- Equipment used in process
- Energy consumption data per piece of equipment (fuel, electricity, etc.)
- Approximate run time for a piece of material within the equipment

Tips for data collection:

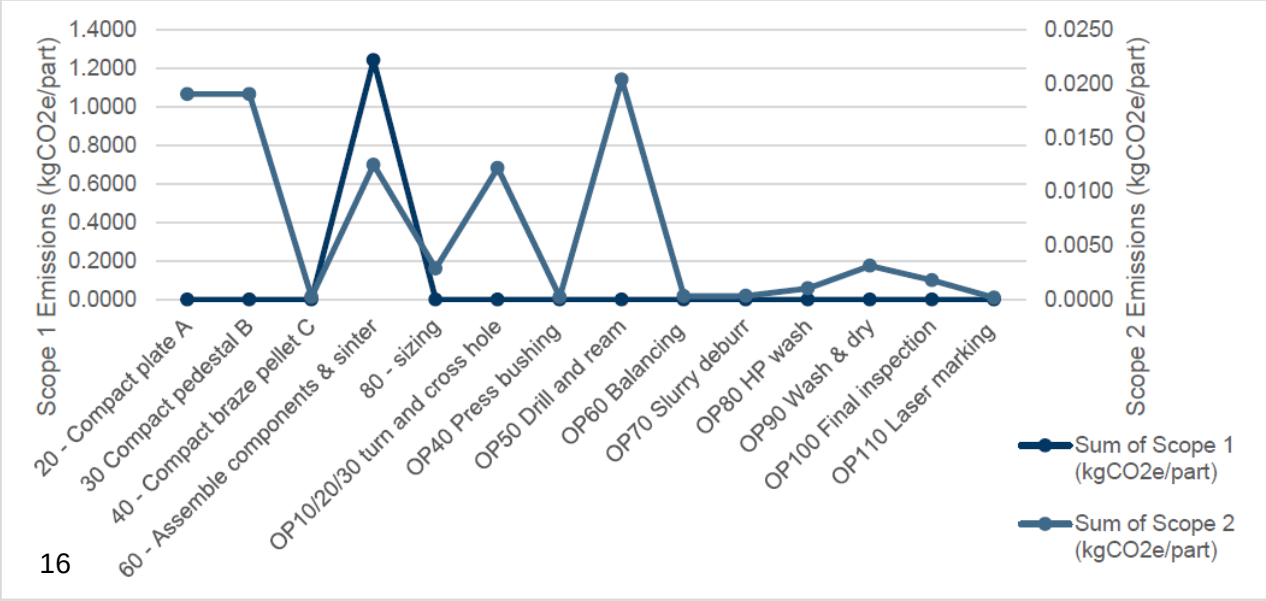
1) Involve the right people
2) Survey information you already have
3) Leverage data bases such as ecoinvent to provide appropriate and representative data where gaps may exist & make a plan to fill these in the future
4) Talk to your suppliers & customers

3. Analysis

Using this methodology can breakdown emissions profiles into emissions type:

- Scope 1
- Scope 2
- Scope 3

Can also break down emissions by an equipment basis.



How does this impact broader organizational decarbonization strategies?

Through carbon intensity models, LCAs, and general detailed data analysis, organizations can start to make strategic decisions regarding their carbon emissions.

Evaluations can influence how organizations approach:

- Asset lifecycle, end-of-life considerations, and replacement
- Materials & procurement processes
- Process optimization decisions
- & more

Value add outcomes

Rapidly changing customer expectations for sustainability

Customers no longer awarding business based upon traditional cost & delivery metrics but significant weight on sustainability metrics.

Baseline product emission intensity determination can be compared to the intensity of competitors (alternative metal forming/ iron casting/extrusion/deep drawing/forging).

Allows Stackpole the ability to present our carbon footprint value proposition to the customer!!!

Q&A