Integrating Climate into Credit Risk Assessments

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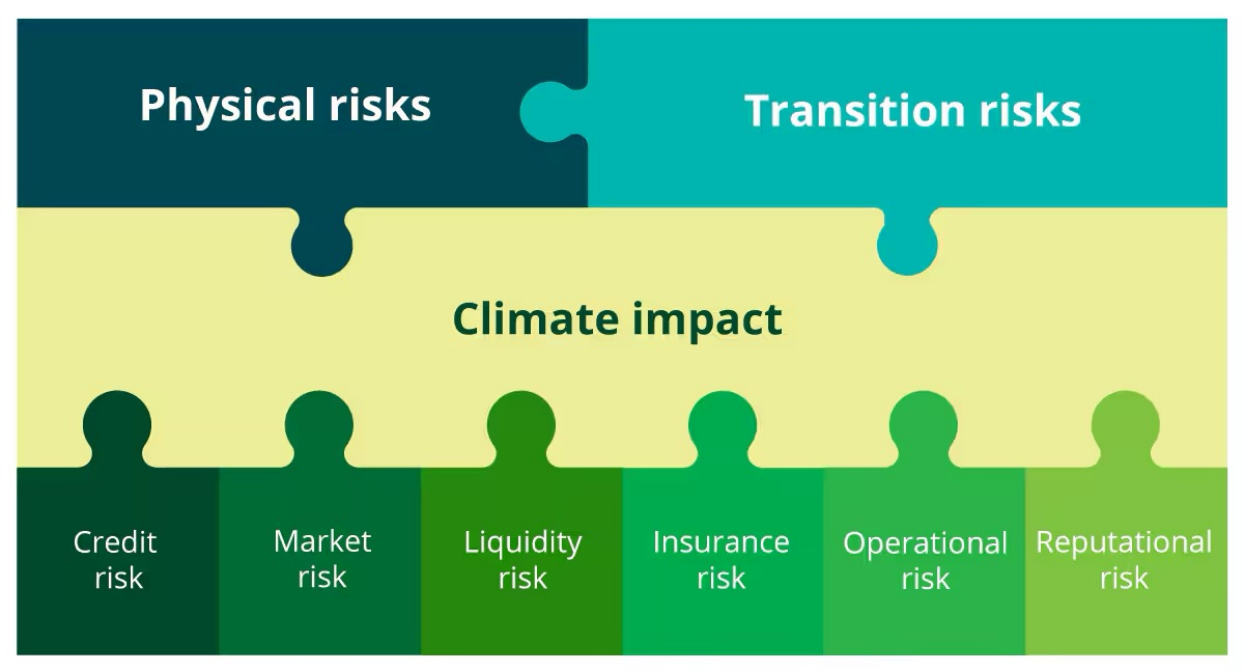
Disclaimer

The information shared in this presentation is from personal knowledge and from publications of sources such as Bank for International Settlements (Basel Committee), United Nations Environment Programme, Govt. of India, Reserve Bank of India and others. Given the space in itself is still evolving, none of the information contained herein should be considered prescriptive or definitive. Best attempt has been made to cover currently accepted good practices, and they may change any time in the future.

01
Foundational Aspects

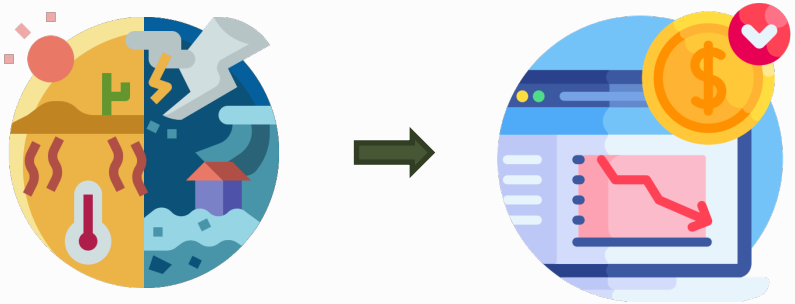
Risks



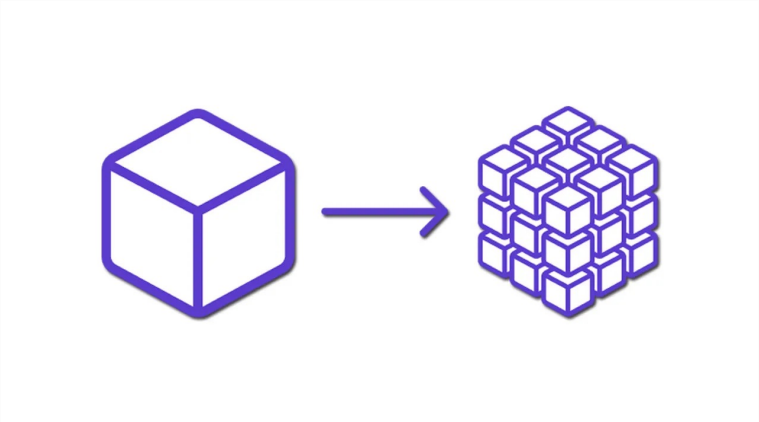
https://www2.deloitte.com/us/en/pages/consulting/articles/linking-climate-related-financial-risk.html

Credit risk in the context of Climate Change

Rising frequency and severity of extreme weather events can impair the value of assets held by the banks' customers, or impact supply chains affecting customers' operations, profitability and viability thereof.



Granularity



Aspects of interest

- Identifying specific physical or transition risk drivers
- Availability of relevant data for these drivers
- Risk management decision being supported

Why is granularity important

Because increased granularity means (disproportionately) increased computational complexity

Heterogeneity

Aspects of interest

- Geographic location
- Sectoral context
- Jurisdictional exposure

Why is heterogeneity important

Because no two enterprises are the same

02
Mapping Climate Risk to Financial Risks

What are Physical Risks

Risk	Examples
Extreme weather events	Cyclones, floods, winter storms, heat waves, droughts, fires, hailstorms, others
Ecosystem pollution	Soil pollution and degradation, air pollution, water pollution, marine pollution, environmental accidents
Sea-level rise	Chronic sea-level rise or sea surges
Water scarcity	Droughts or insufficient water supply
Deforestation/Desertification	Deforestations leading to extinction of species, changes to climatic conditions, desertification, and displacement of populations

What are Transition Risks

Risk	Examples
Public policy changes	Energy transition policies, pollution control regulations, resource conservation regulations
Technological changes	Clean energy technologies, energy saving technologies, clean transportation, and other green technologies
Shifting sentiment	Changes in consumer preference for certain products, changes in investor preference for certain asset classes
Disruptive business models	New ways to run business that can rapidly gain market share from traditional businesses (e.g. virtual meetings, vertical farming, etc.)

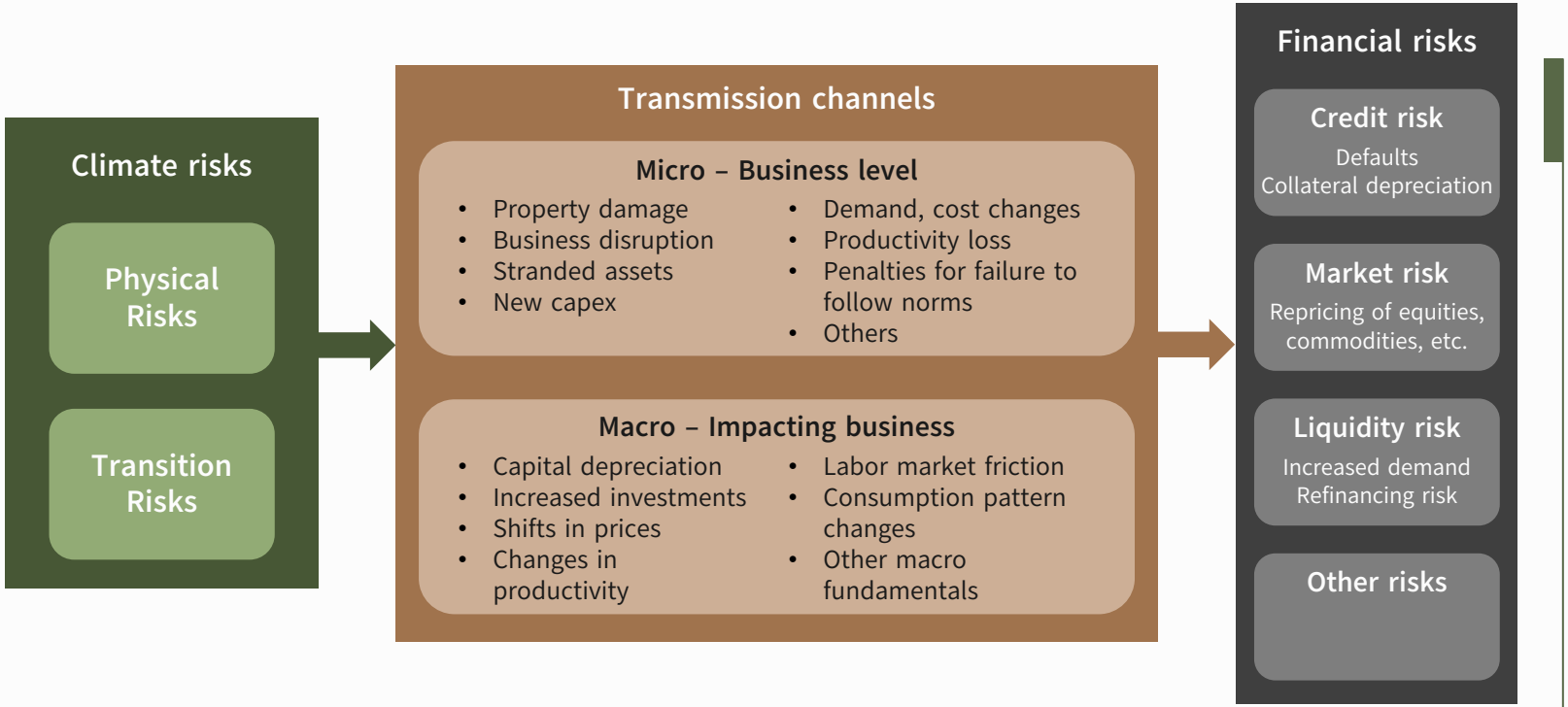
Mapping Physical Risk

Risk	Sub-category	Market Risk	Credit Risk	Liquidity Risk	Others
Extreme weather events	Cyclones				
	Floods				
	Winter storms				
	Heat waves				
	Droughts				
	Wildfires				
	Hailstorms				
Ecosystem pollution	Soil degradation and pollution				
	Water pollution				
	Marine pollution				
	Environmental accidents				
Sea-level rise					
Water scarcity					
Deforestation					
Desertification					

Mapping Transition Risk

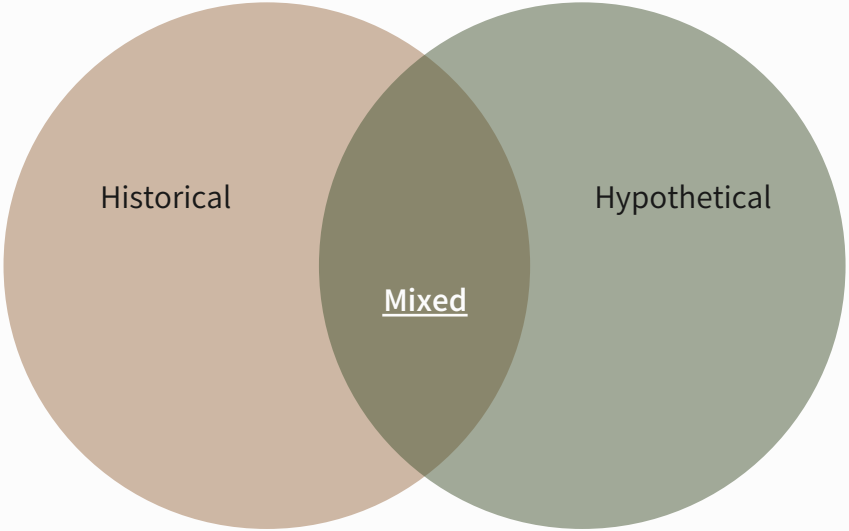
Risk	Sub-category	Market Risk	Credit Risk	Liquidity Risk	Others
Public policy change	Energy transition policies				
	Pollution control regulation				
	Policies on resource conservation				
	Regulatory capping				
Technological changes	Clean energy technologies				
	Energy saving technologies				
	Clean transportation				
	Environmental accidents				
	Alternative materials				
	Other green technologies				
Shifting sentiment					
Disruptive business model(s)					

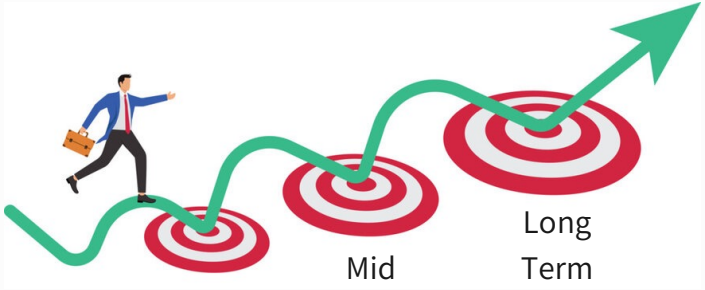
Transmission Channels



03
Evaluating implications

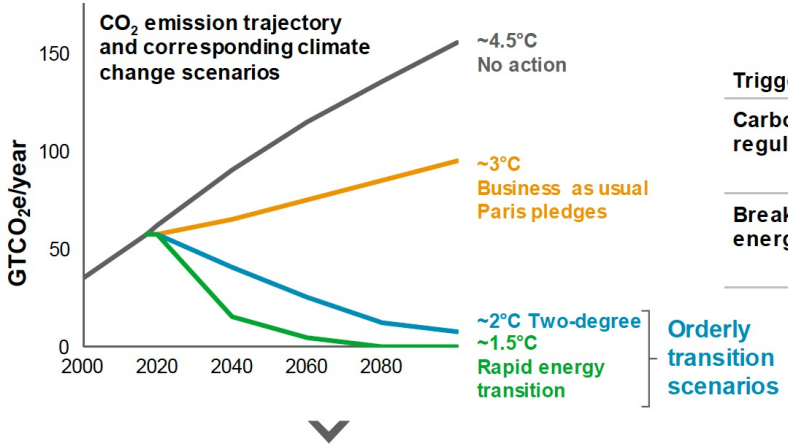
Scenarios: Recommendations





Building scenarios

Temperature-based / Integrated scenario



- Holistic scenarios/cross-sector
- Often developed for policy purposes to describe an orderly transition, not a stress scenario
- Requires long-term modeling and assumptions
- Explicitly refers to the TCFD and the 2°C scenario

Event-based scenarios / Disorderly transition scenarios

Triggering event	Type of risk	Key metric	Example exposed sector
Carbon price regulation	Transition (policy)	Carbon price	Oil & Gas
Breakthrough in energy storage	Transition (technology)	Battery capacity	Car manufacturers

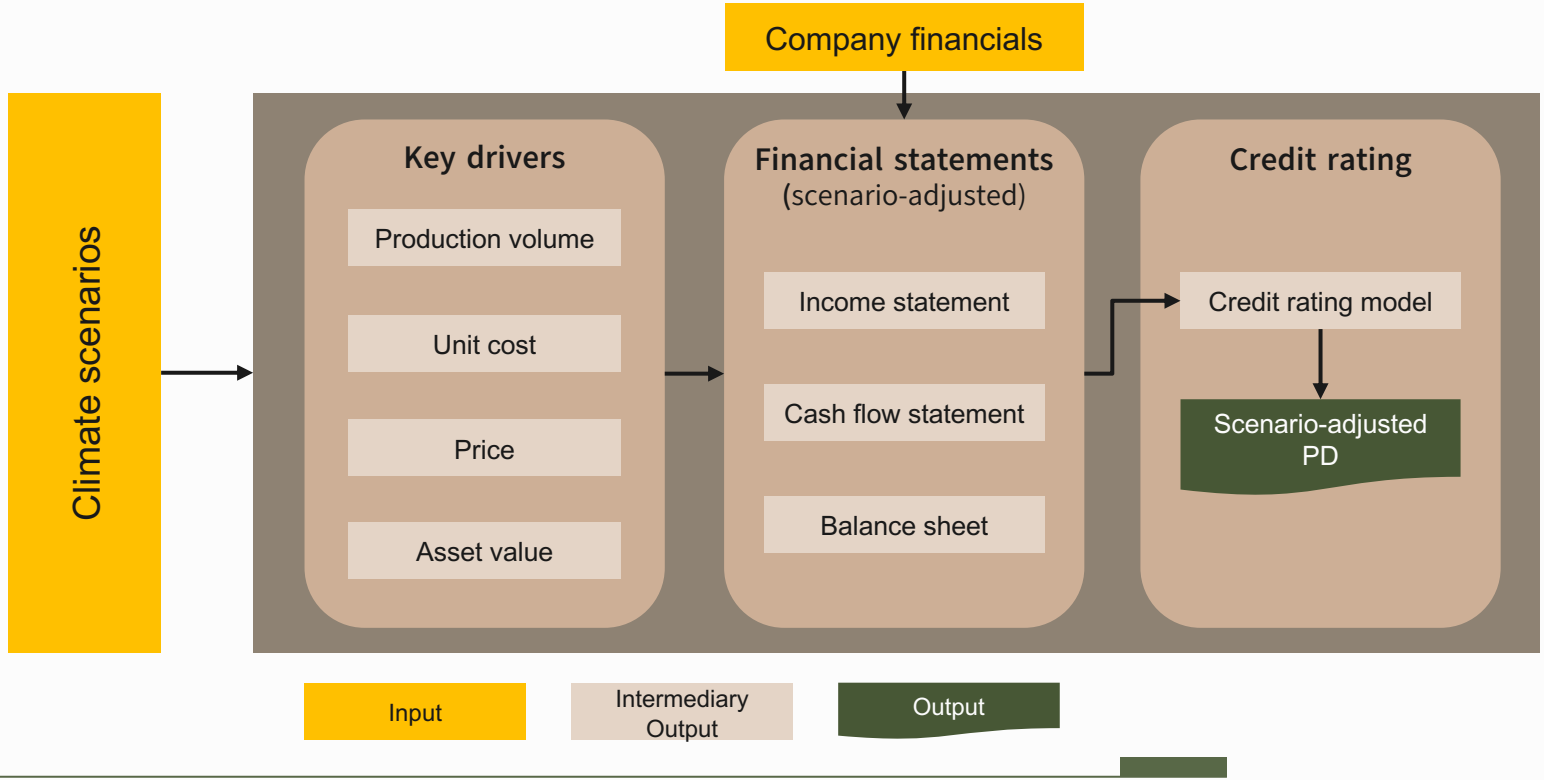
- Scenarios focused on potential impact of one triggering event (e.g. carbon price regulation)
- Focus on understanding current portfolio exposure to the specific event – timing considered as "near-term" for simplification of analysis

Modeling using scenarios

Transition risk – Carbon tax led scenario for Oil & Gas industry

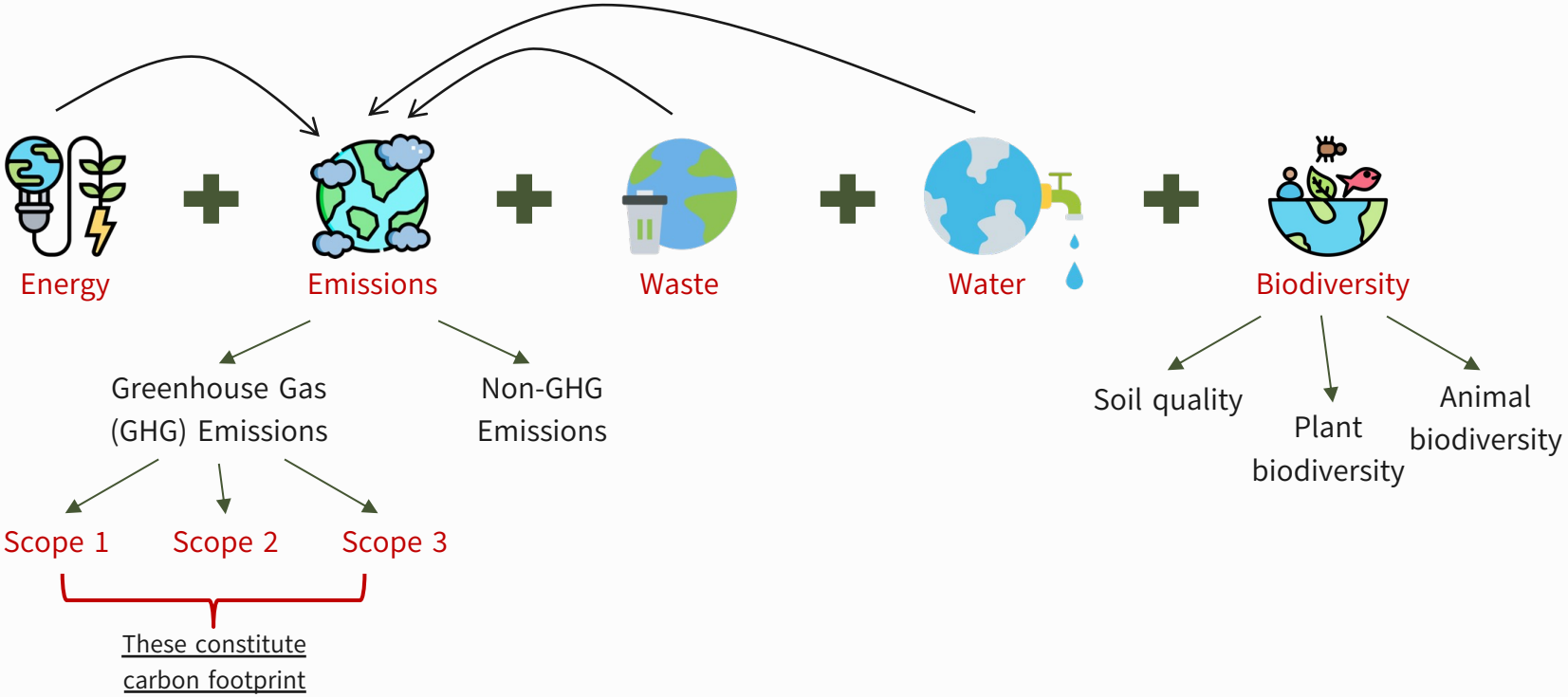
Item	Expected scenario impact	Modeling approach
Production volume	Additional costs borne by producers due to the tax will be passed on to customers; increased prices will lead to decrease in demand, thereby production	Decrease production volume forecast proportionately
Unit cost	Margins in unit economics will be impacted by additional carbon tax	Shift cost curves upwards
Price	Price paid by consumers will increase, however margins for the producer will reduce	Assess dynamics, elasticity using historical data to forecast
Asset value	Some high cost assets may become uneconomical due to changes in unit economics	Apply impairment on balance sheet of borrowers with such assets

Credit rating



04
Additions for Net-zero thinking

Environmental impact



What is covered under each

Energy	GHG	Non-GHG	Waste	Water
Renewable	Carbon dioxide (CO2)	Nitrogen oxides (NOx)	Plastic waste	Surface water
Non-renewable	Methane (CH4)	Sulphur oxides (SOx)	Electronic waste	Ground water
	Hydrofluorocarbons (HFC)	Particulate matter (PM)	Bio-medical waste	Sea water
	Nitrogen trifluoride (NF3)	Persistent organic pollutants (POP)	Construction and demolition waste	Purchased water
	Nitrous oxide (N2O)	Volatile organic compounds (VOC)	Battery waste	Other sources
	Perfluorocarbons (PFC)	Hazardous air pollutants (HAP)	Radioactive waste	
	Sulphur hexafluoride (SF6)		Other hazardous waste	
			Other non-hazardous waste	

Mitigation avenues

Terminology used

Carbon footprint

Total GHG emissions in CO_2 equivalents

Carbon neutral

Has reduced CO_2 emissions, remainder offset using credits

Carbon positive

At least 150% of CO_2 emissions offset

Net zero

90% of all GHG emissions reduced, remainder offset using credits

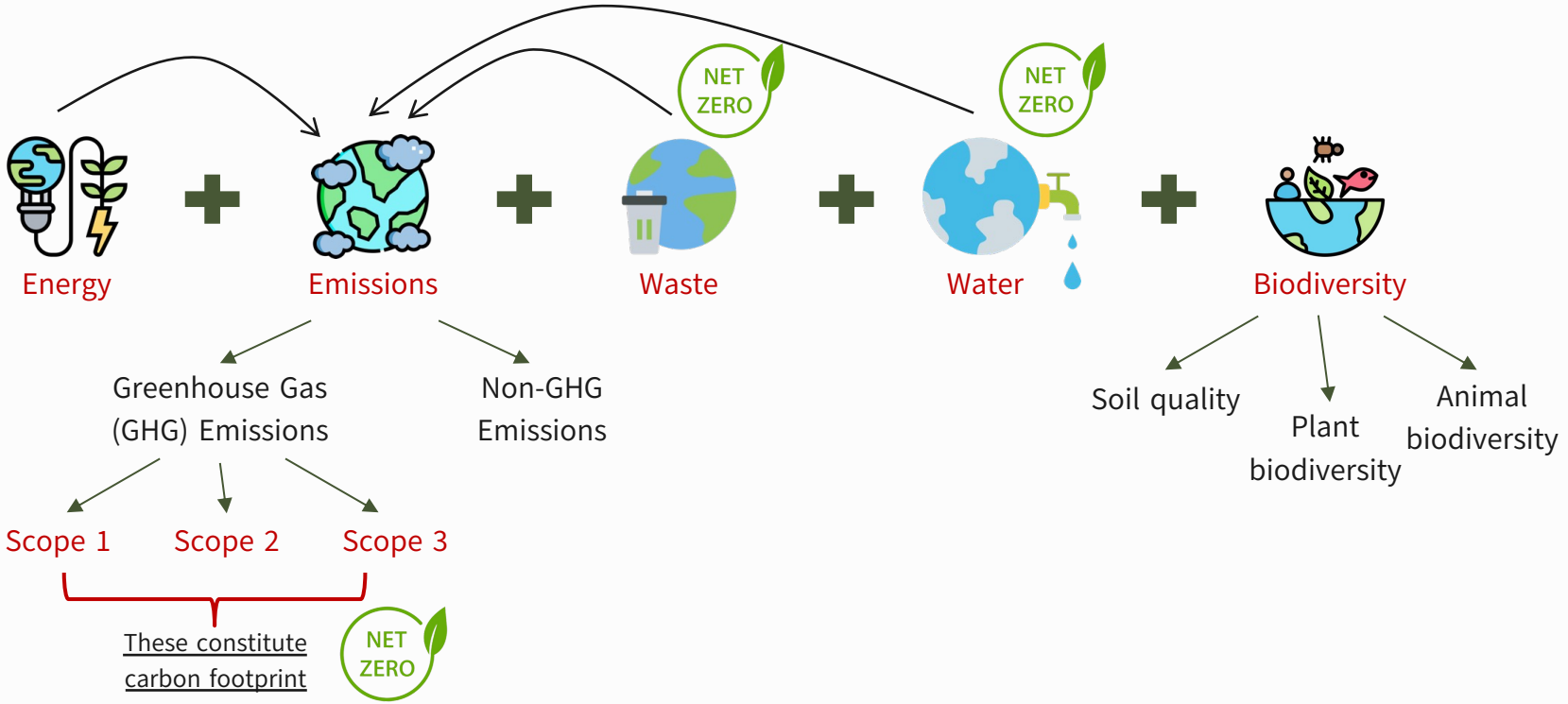
Climate positive

Removing more CO_2 beyond net-zero; acting beyond GHGs only

Decarbonize

Reduce consumption of carbon

Where can net-zero be achieved



Calculating carbon footprint

Activity-based

Map each activity that has a potential carbon footprint, and measure it's carbon footprint

Detailed, complex exercise, esp. for lifecycle analysis

However, data is always accurate, and can be used to identify hotspots and create best fit mitigation strategies

Spend-based

Use financial value of good or service, and translate it into corresponding emissions

Especially used for Scope 3 emissions

Aggregate analysis, based on 3rd party (public or licensed) emission factors

Accuracy of actual footprint is questionable; doesn't provide much insight for mitigation

Assessing net-zero proposals

Baseline

Quality assessment of environmental impact

Independent assessment or validation

Well identified ‘hotspots’ across value chain

Mitigation plan

Scientific selection of mitigation strategy

Direct impact on ‘hotspots’

Analysis of impact on business KPIs

Mitigation monitoring

Processes in place for tracking progress

Reporting cadence established

Assurance

Readiness for verification of data at any stage

Beware of

Green hushing

Unwillingness to share data on environmental impact

Green washing

Providing misleading data, information on environmental impact

Green wishing

Wishful targets and commitments, without the wherewithal to achieve them

05
Helping clients with Transition roadmap

Understand the drive

Customer interest in greener products

Studies show 72% more willing to buy eco-friendly products than 5yrs ago

Growing ESG Investments

AUM to touch USD 40Tn by 2030

Growing ESG regulations

More than 75% countries have mandates in some form

Customers willing to pay premium

Studies show 68% willing to pay more for greener products

Accelerated market growth

Sustainable products grow 2.7x faster

Brand and Loyalty

92% customers more likely to trust a sustainable brand

Seek info on landscape

Policy

Policies that impact in all jurisdictions of business

Regulation

Regulations that impact in all jurisdictions of business

Market

Trends of product portfolio

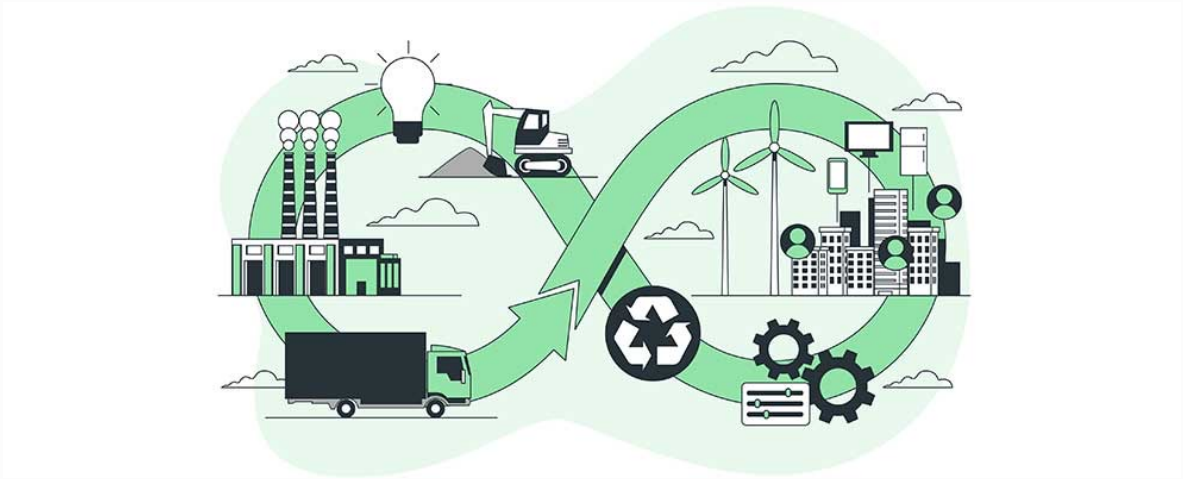
Technology

Relevant technology (product, production) trends and outlook

Competition

What is competition doing – market leader, closest competitors

Establish baseline



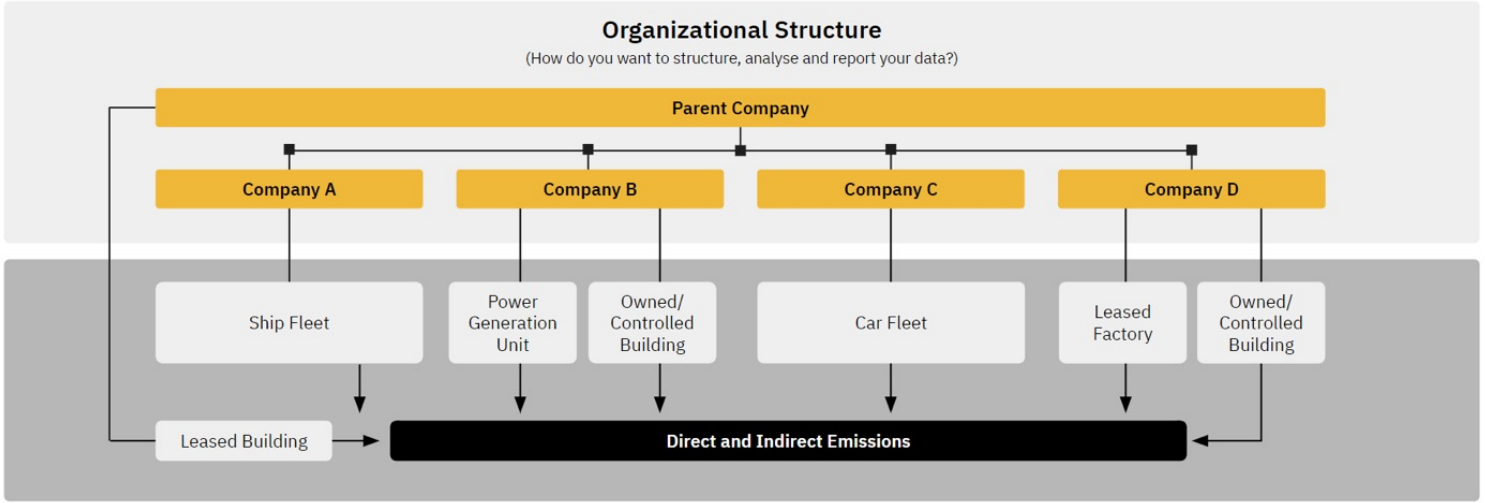
Best effort, complete lifecycle

Try to map every stage, every aspect/partner across raw material/component mfg., prod. mfg., usage/maintenance, disposal and recycling. Collect authentic data of environmental impact across as many aspects as possible.

Establish boundaries

1 Organizational Boundary

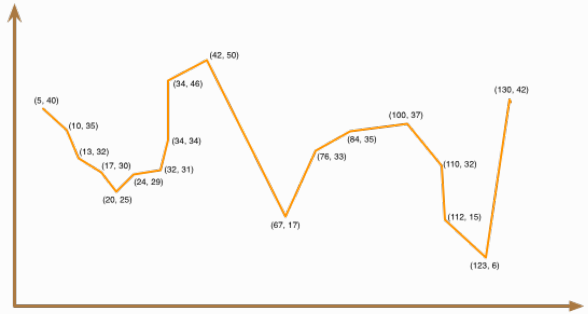
(What parts of my organization are in scope for accounting?)



2 Operational Boundary

(What emission sources are in scope for accounting?)

Identify material hotspots



Identify hotspots

- Best, worst performers w.r.t. all aspects of environmental impact
- Responsible activity, process, factory, partner

Map to aspects that have material impact on business

Hotspot	Prod. volume	Unit cost	Price	Others
HS 1				
HS 2				
HS 3				
HS 4				
HS 5				
HS 6				

Set KPIs & Mitigation targets

KPIs

Relevant, material to the business, of high strategic significance to the future business

Consistently quantifiable and measurable

Able to be benchmarked

Mitigation targets

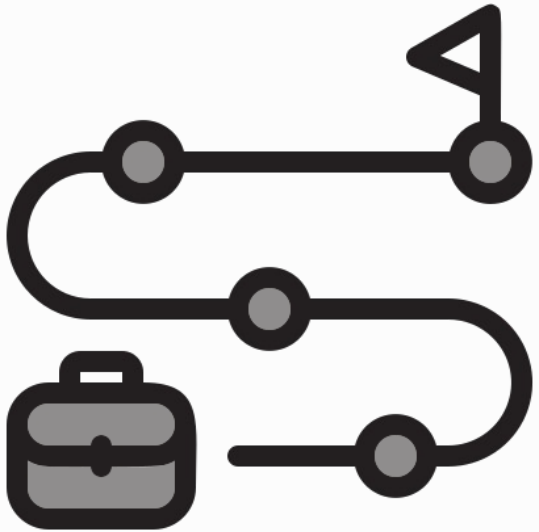
Representing material improvement in respective KPIs, beyond ‘business as usual’

Consistent with overall sustainability strategy of business, and quantifiable

Benchmarked with market, competitors where possible

Pre-determined timeline set before or concurrently with credit origination

Create oversight cadence



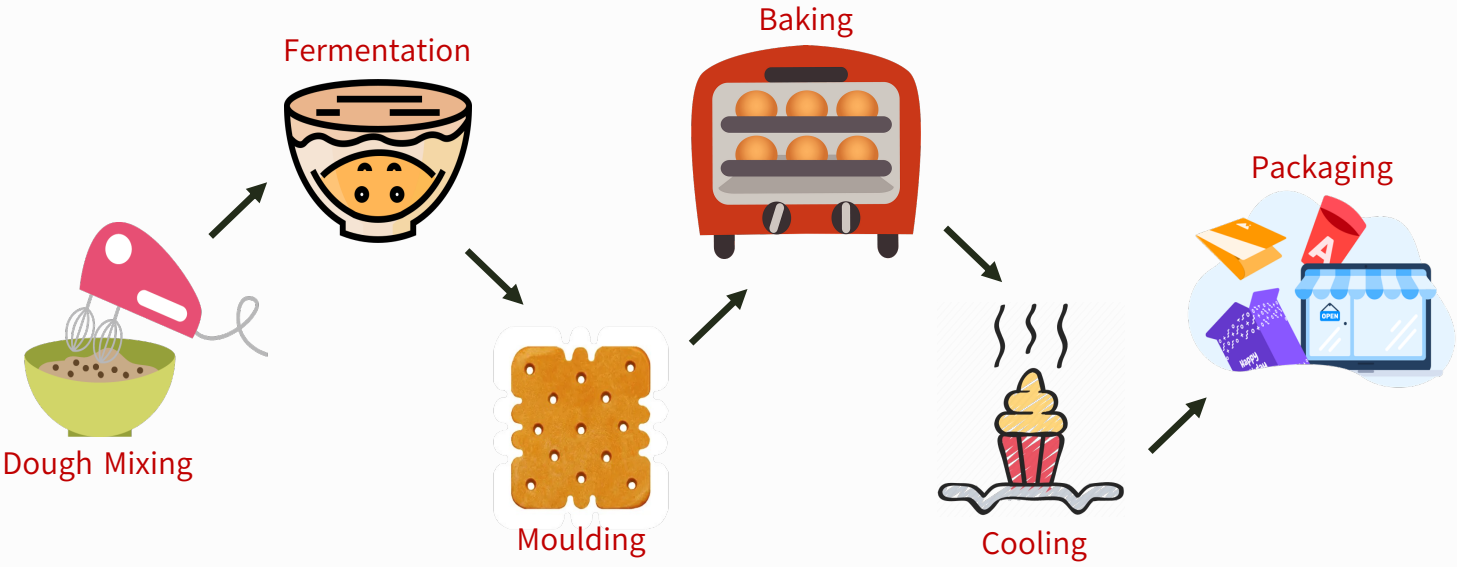
In tune with roadmap & milestones therein

- Standardized reports for mitigation targets set
- Standardized reports for business KPIs identified

06

Working example

Biscuit Making



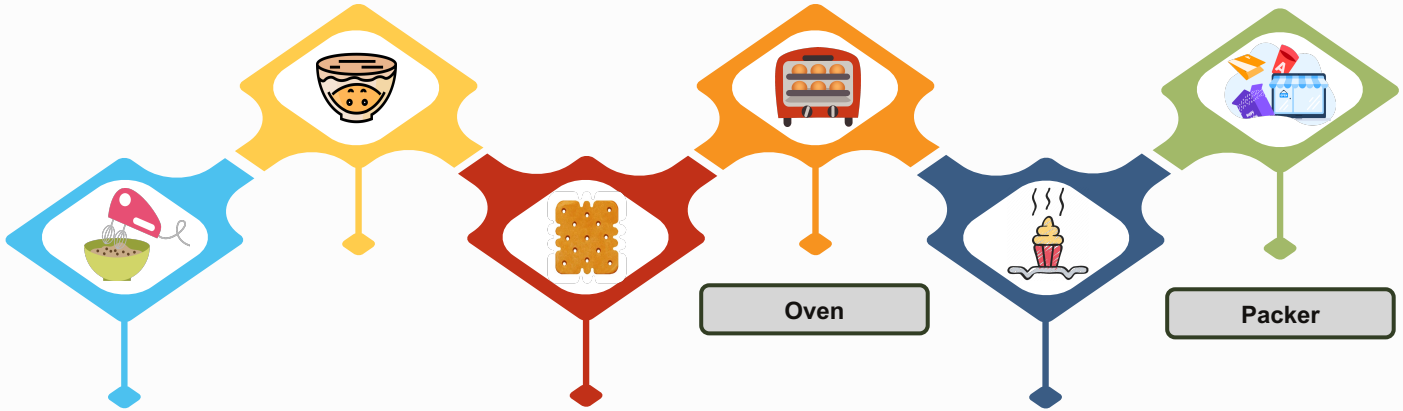
Landscape

- Policy
- Regulation
- Market
- Technology
- Competition

Activity breakdown

Activities

Machines



Mixer

Laminator

Gauge Roll

Rotary Cutter

Oven

Conveyor

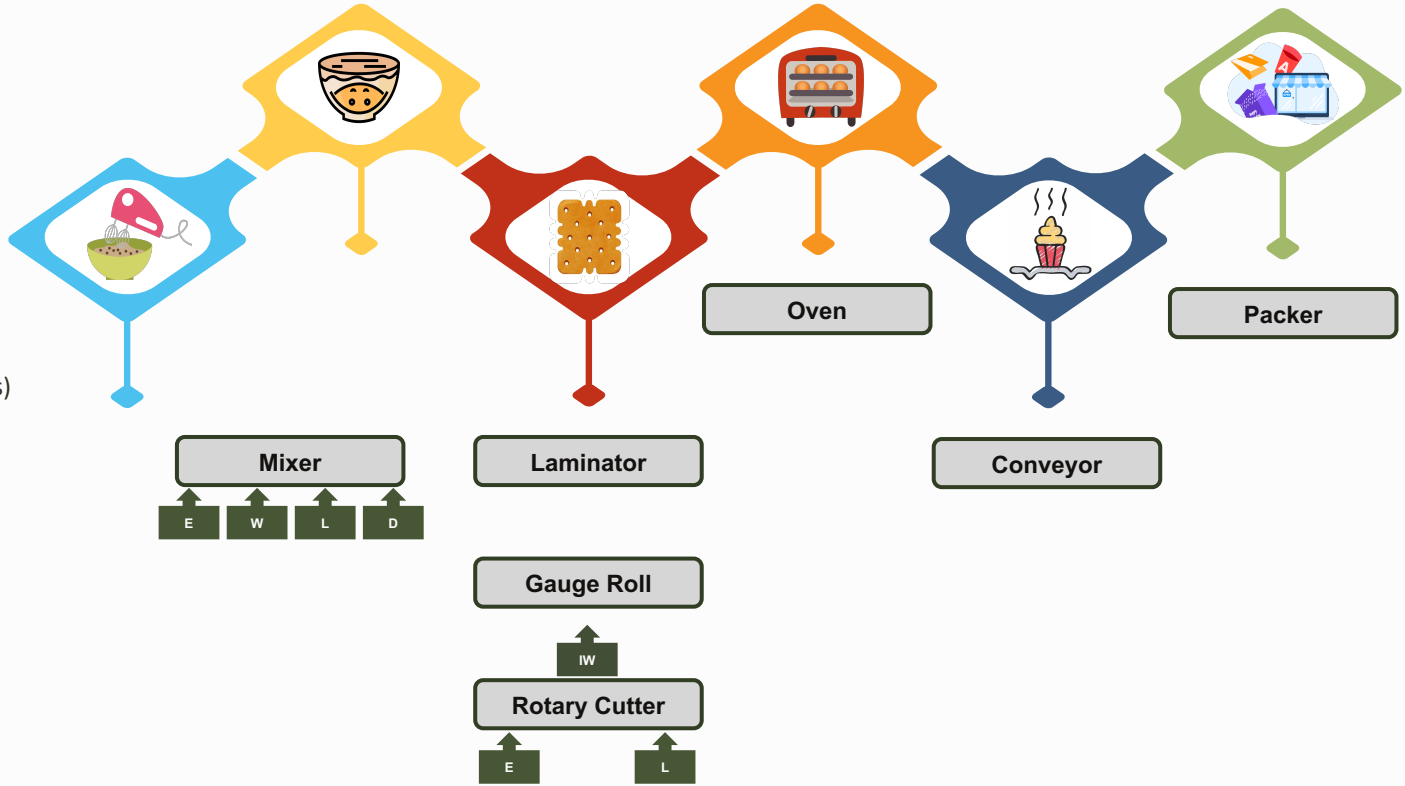
Packer

Machine I/O → Env. Impact

Inputs
Materials, Utilities, Resources

Outputs
All outputs other than product

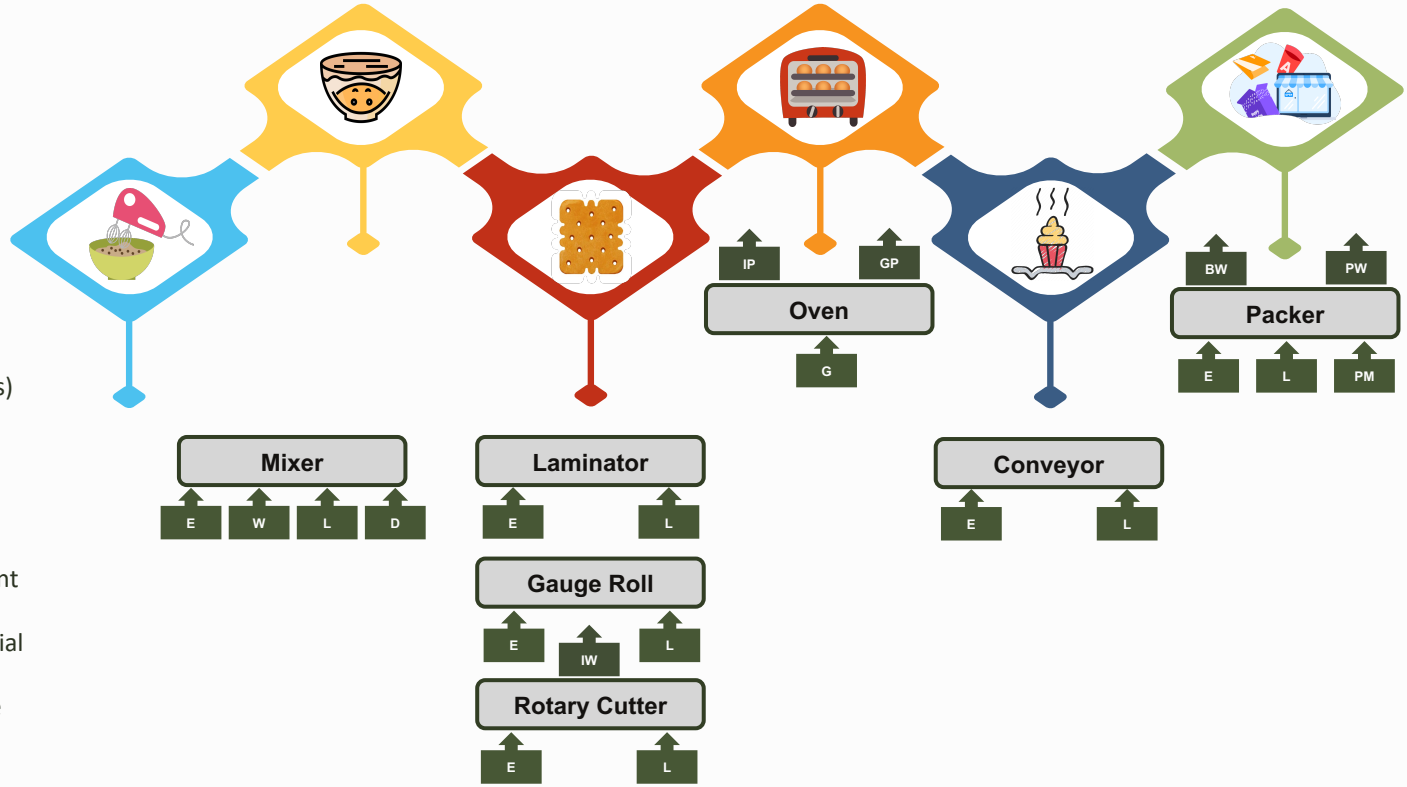
D : Dough (ingredients)
E : Electricity
W : Water
L : Lubricant
IW : Ingredient Waste



Machine I/O → Env. Impact

Inputs
Materials, Utilities, Resources

Outputs
All outputs other than product



D : Dough (ingredients)
E : Electricity
W : Water
L : Lubricant
IW : Ingredient Waste
G : Gas
IP : Ingredient Pollutant
GP : Gas Pollutant
PM : Packaging Material
BW : Waste Biscuits
PW : Packaging Waste

Categorize Env. Impact

D : Dough (ingredients)
E : Electricity
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Activity	Machine	GHG			Non-GHG	Waste	Water
		Scope 1	Scope 2	Scope 3			
Dough Mixing	Mixer						
Fermentation							
Moulding	Laminator						
	Gauge Roll						
	Rotary Cutter						
Baking	Oven						
Cooling	Conveyor						
Packaging	Packer						

Categorize Env. Impact

D : Dough (ingredients)
E : Electricity
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Activity	Machine	GHG			Non-GHG	Waste	Water
		Scope 1	Scope 2	Scope 3			
Dough Mixing	Mixer		E	D			W
Fermentation							
Moulding	Laminator		E	L			
	Gauge Roll		E	L			
	Rotary Cutter		E	L		IW	
Baking	Oven	IP	E	G	IP, GP		
Cooling	Conveyor		E	L			
Packaging	Packer		E	L, PM		BW, PW	

Populate with data: Baseline

D : Dough (ingredients)
E : Electricity
W : Water
L : Lubricant
IW : Ingredient Waste
G : Gas
IP : Ingredient Pollutant
GP : Gas Pollutant
PM : Packaging Material
BW : Waste Biscuits
PW : Packaging Waste

Activity (Daily)	Machine	GHG			Non-GHG (cu. m)	Waste (kgs)	Water (kl)
		Scope 1 (kgCO2e)	Scope 2 (kgCO2e)	Scope 3 (kgCO2e)			
Dough Mixing	Mixer		81	146			1,000
Fermentation							
Moulding	Laminator		6	18			
	Gauge Roll		15	21			
	Rotary Cutter		19	10		94	
Baking	Oven	1.1	95	13	10 - VOC		
Cooling	Conveyor		10	4			
Packaging	Packer		18	5		47	
Total		**1.1**	**244**	**217**	**10**	**141**	**1,000**

Follow through

Hotspots

Identification

Materiality

Assessment of hotspots

KPIs

To track

Mitigation targets

Set targets

Roadmap

With milestones

What is a good instrument for this credit ?

Thanks!

Do you have any questions?

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