



FIFTY SHADES OF SUSTAINABILITY

Dr. Alex Galkin

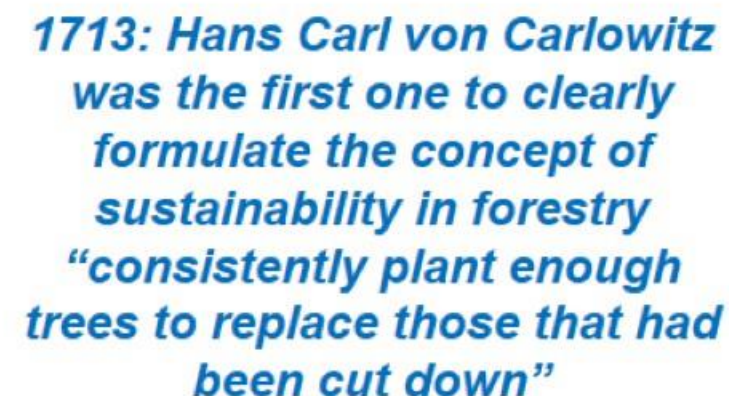
Sydney, NSW

AGENDA

- **What is sustainability?**
- **Climate change**
- **Sustainability and consumer**
- **Greenwashing**
- **Sustainable product design and development**



The history



Fifty shades of sustainability

What is Sustainability?

UN sustainable development goals

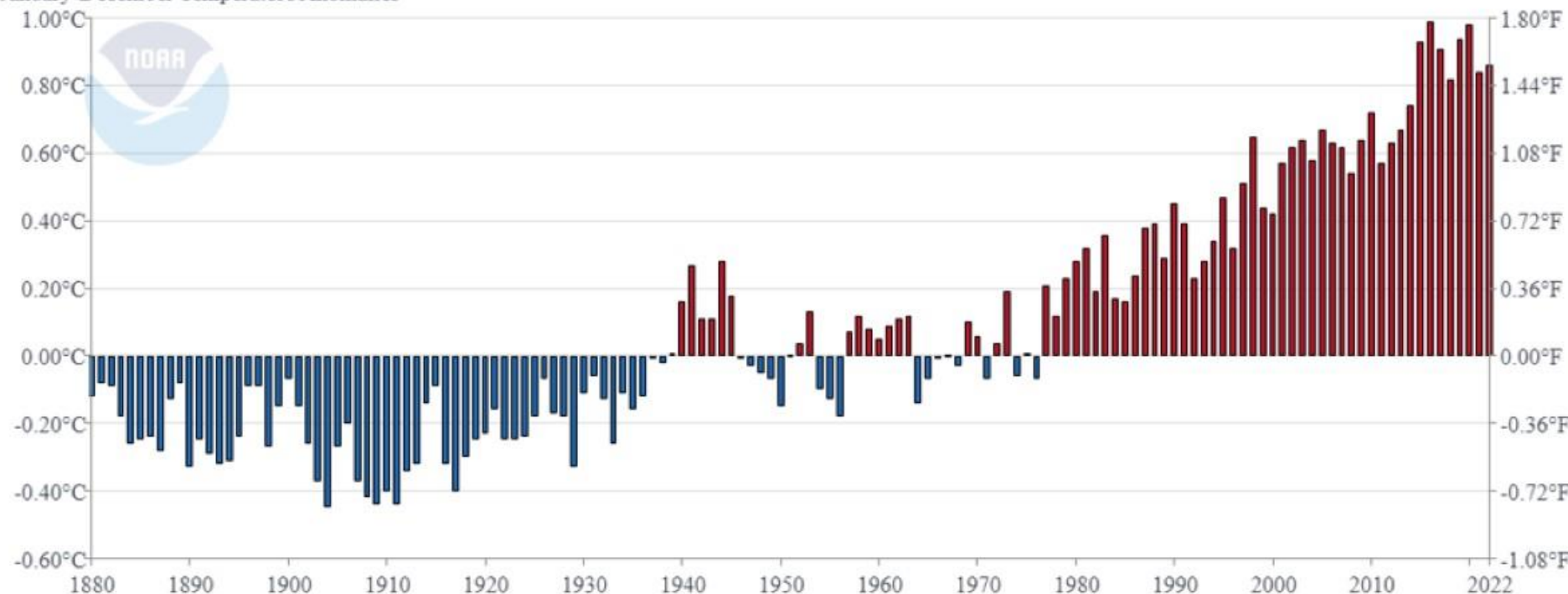


Climate Change

Global surface temperature change

Global Land and Ocean

January-December Temperature Anomalies







Global warming is happening, but the worst effects still can be prevented if we keep temperature rises below 1.5 degrees

The 2021 Global Carbon Budget Report estimates that we only have until 2030 to prevent irreversible damage from climate change

<https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202213>

Climate Change

Greenhouse gases average lifetime in the atmosphere and global warming potential

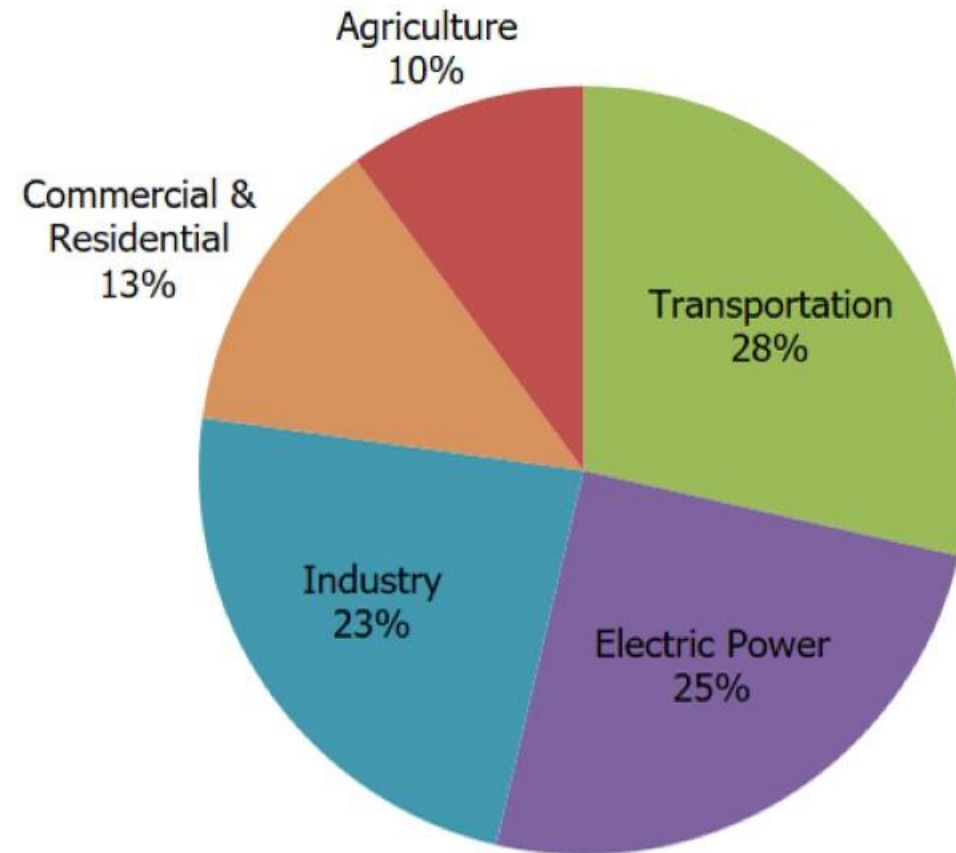
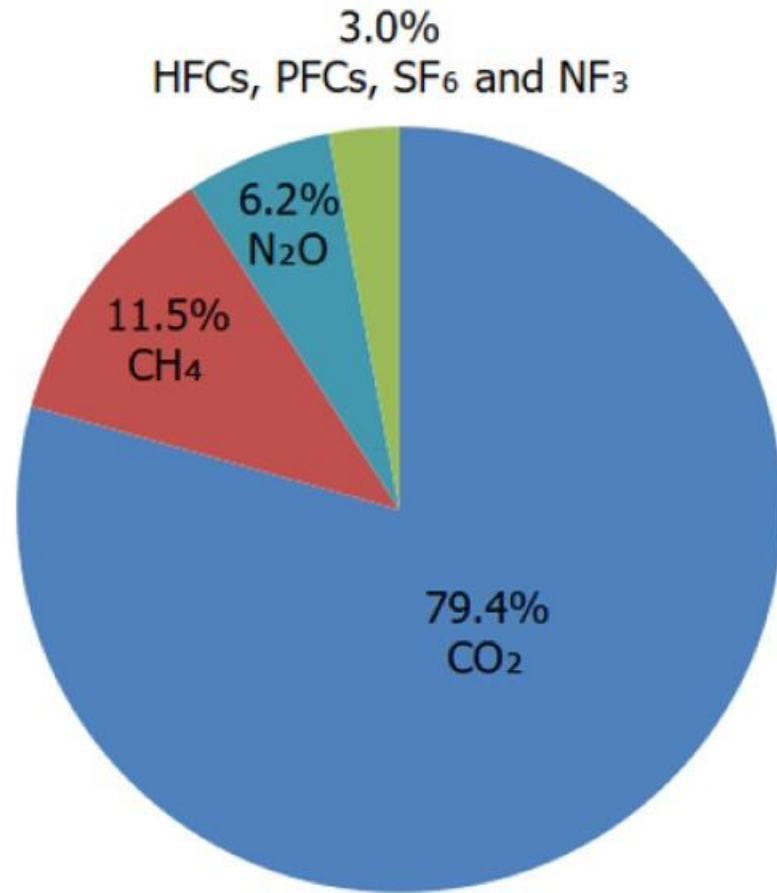
Greenhouse gases	METHANE	CARBON DIOXIDE	NITROUS OXIDE	FLUORINATED GASES
				
Lifetime	~12 years	Up to thousands of years	109 years	A few weeks to thousands of years
Global warming potential	27-29.8	1	273	Up to 25,200 for SF ₆

GHG we emit today will affect our planet for many generations to come!

<https://www.epa.gov/climate-indicators/greenhouse-gases>

Climate Change

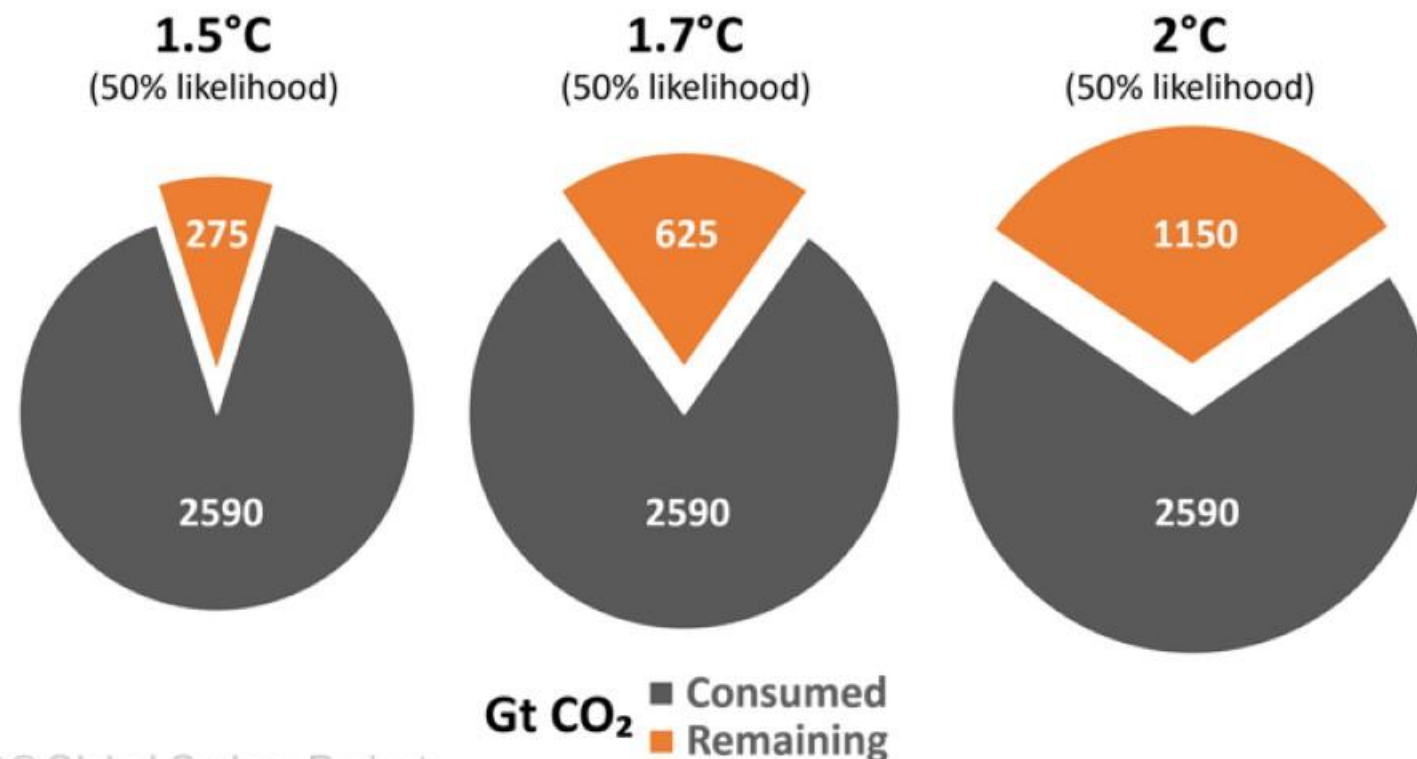
Greenhouse gas emissions



<https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

Climate Change

Remaining carbon budget



© Global Carbon Project

- The remaining carbon budget to limit global warming to 1.5°C, 1.7°C and 2°C
- 275 GtCO₂, 625 GtCO₂, and 1150 GtCO₂ are equivalent to 7, 15 and 28 years from 2024
- 2590 GtCO₂ have been emitted since 1850

Climate Change

Paris agreement and our journey to 2030

- The Paris Agreement is a legally binding international treaty on climate change adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris on 12 December 2015
- The goal is to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels
- To limit global warming to 1.5°C, greenhouse gas emissions must peak before 2025 at the latest and decline 43% by 2030
- As of today, national climate action plans remain insufficient to meet the goals of the Paris Agreement

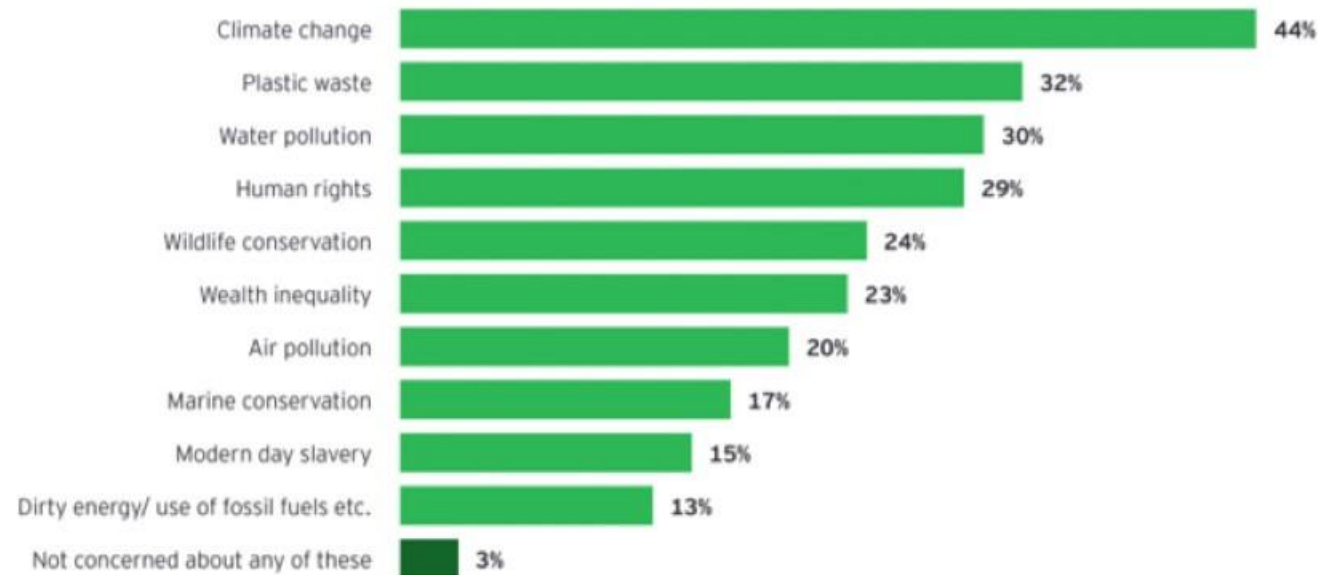


<https://unfccc.int/news/new-analysis-of-national-climate-plans-insufficient-progress-made-cop28-must-set-stage-for-immediate#:~:text=UN%20Climate%20Change%20News%2C%2014,goals%20of%20the%20Paris%20Agreement>

Sustainability and Consumer

Sustainability issues of most common concern

AUSTRALIA AND NEW ZEALAND



https://www.ey.com/en_au/climate-change-sustainability-services/greater-expectations-why-consumers-won-t-stand-for-corporate-greenwashing

Sustainability and Consumer

Values and beliefs

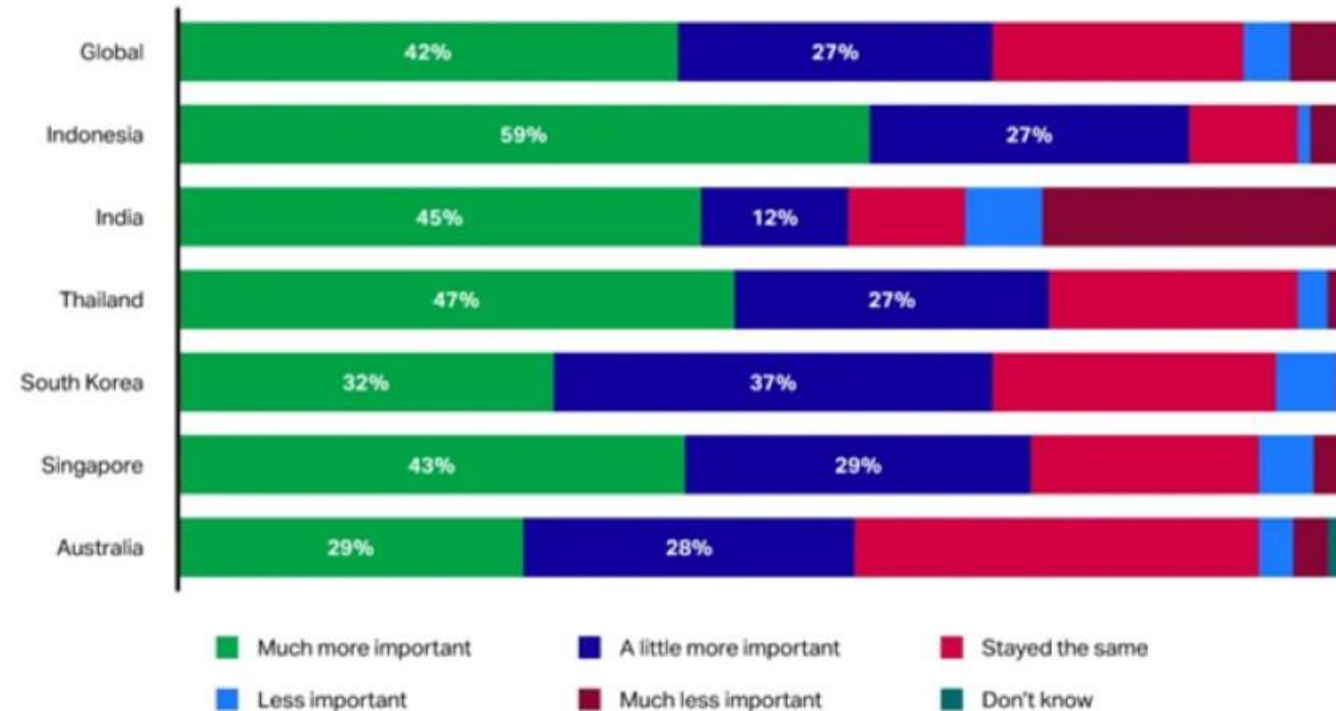
- Consumers often select products or services that align with their own values
- Consumer behavior changes and evolves in response to climate change concerns
- Environmental sustainability becoming an important value for increasing number of consumers
- Many consumers may prioritize both sustainability and price, but often willing to pay more for sustainable products
- Choices are heavily impacted by exposure to marketing messages
- “Greenwashing” causing skepticism towards green marketing claims

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Sustainability and Consumer

Consumer sentiment about change in importance of sustainability versus 2 years ago

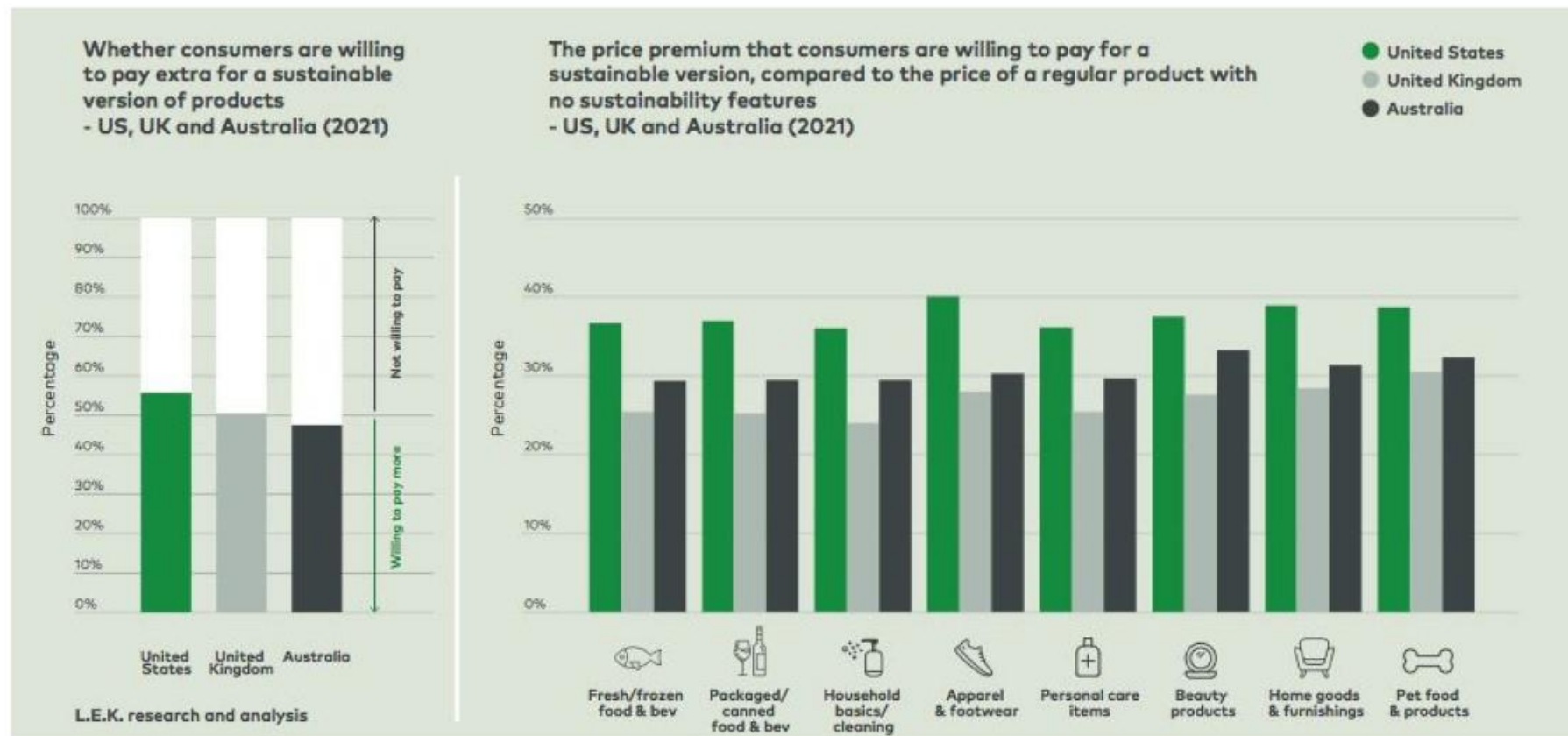


NielsenIQ

Source: NielsenIQ 2023 Sustainability Report
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Sustainability and Consumer

Consumers are willing to pay extra for sustainable products



Sustainability and Consumer Behaviors of Australian consumers

51%	85%	62%	59%	96%	62%
Consider sustainability as an important factor when making a retail purchase	Durable or long-lasting claim is important	Stated importance of ethically produced products	Recyclable packaging materials are important	Engage in sustainable practices	Recycle product waste

- Australian shoppers, aged 55 and over, tend to bring their own shopping bags to stores, recycle product waste, buy locally-sourced or produced products, and compost food waste significantly more than other age groups
- Younger Aussies, aged 18-34, take public transport, buy second-hand products, and recommend eco-friendly products to friends, family, and peers more than other age groups

<https://lens.monash.edu/@business-economy/2023/08/16/1386034/sustainability-attitudes-and-behaviours-of-australian-shoppers>

Greenwashing

A new alarming trend

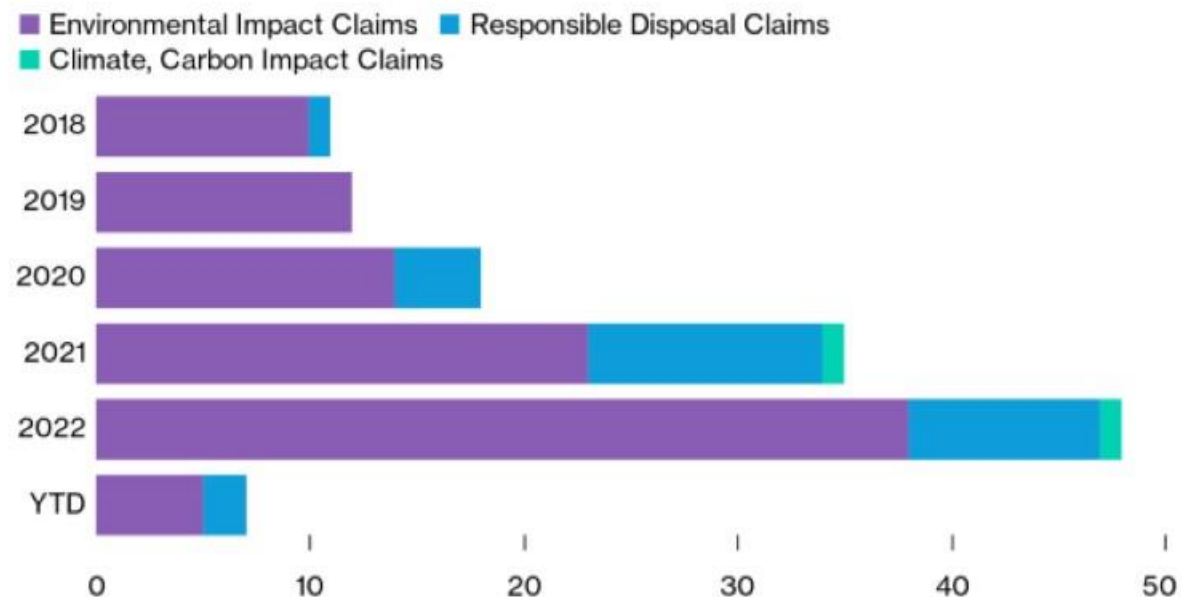


***“If the product allows you to behave in the exact same way that we always have, but suddenly its eco, it’s probably too good to be true”
— Hannah Blumhardt, The Rubbish Trip***

Greenwashing

Products with sustainability claims encounter fraud allegations

Federal complaints mentioning false/misleading sustainable product claims



Source: Bloomberg law keyword docket search as of March 9, 2023. Complaints filtered by nature of suit code 370. Complaints with multiple product sustainability claims are included in all relevant categories.

Bloomberg Law

Companies are constantly inventing new and brilliant ways to tell us lies

Greenwashing

Common signs

- Broad claims, e.g. “green”, “environmentally friendly” or “eco-friendly”: these vague and fluffy words do not explain real product benefits
- Vague use of environmental words, e.g. “natural” or “organic”: they cover a broad range of harmful chemicals (e.g. heavy metals are natural)
- Non measurable or not explained environmental claims (e.g. contains recycled materials - it can be a very small amount)
- Use of green colors and images of nature: they may have nothing to do with environmental benefits of the product
- Fake certifications not endorsed by a third party
- Using green recycle triangle: anyone can put this image of the public domain on the label without the obligation for product being recyclable
- Environmental claims not backed by supporting information and instructions (e.g. how to compost or recycle)



<https://www.pinterest.com.au/pin/greenwashing-combines-the-term-whitewashing-with-green-referring-to-environmental-friendliness-coined-by-environmentalis-in-2023-1068056867857556176/>

Greenwashing

Australian Competition & Consumer Commission (ACCC) view

- 57% of businesses reviewed were making potentially misleading environmental claims
- False or misleading claims can undermine consumer trust in all green claims, particularly when consumers are often paying higher prices based on these claims
- Businesses that are taking genuine steps to adopt sustainable practices are put at a competitive disadvantage by businesses that engage in “greenwashing” without incurring the same costs
- Businesses must provide clear, accurate and trustworthy information to consumers about any environmental or sustainability claims and be able to provide evidence to back them up
- Claims like “Green”, “Environmentally friendly” or “Eco-friendly” “could potentially misled the consumers into thinking that the product causes no harm to the environment in its production, usage and disposal. Few, if any, products could make this claim. Almost all products have some adverse impact on the environment in their manufacture, packaging, use and disposal”



<https://www.accc.gov.au/media-release/accc-publishes-draft-guidance-to-improve-businesses-environmental-claims>

Greenwashing

Ecolabels and 3d party certificates

TYPE I	TYPE II	TYPE III
ISO 14024	ISO 14021	ISO 14025
Classic ecolabels	Self-declaration claims	Environmental declarations
<ul style="list-style-type: none"> Consumer-friendly and easily understood Awarded by a 3d party organization Based on a set of clear criteria determined by independent experts Certification is time limited, with the need for periodic renewal Product lifecycle impact consideration 	<ul style="list-style-type: none"> Self-declared by manufactures or retailers Specific focus on one area (may leave an impression of positivity whilst masking deficiencies in other areas) Not necessarily independently verified 	<ul style="list-style-type: none"> Can be third party certified, but not always Quantified data related to the environmental load Cover specific aspects of the product using a lifecycle approach Enable comparison between different products
Gold standard	Risk of greenwashing	Quantified information



Too many and too confusing!

> 260 active sustainability standards across 15 different business sectors

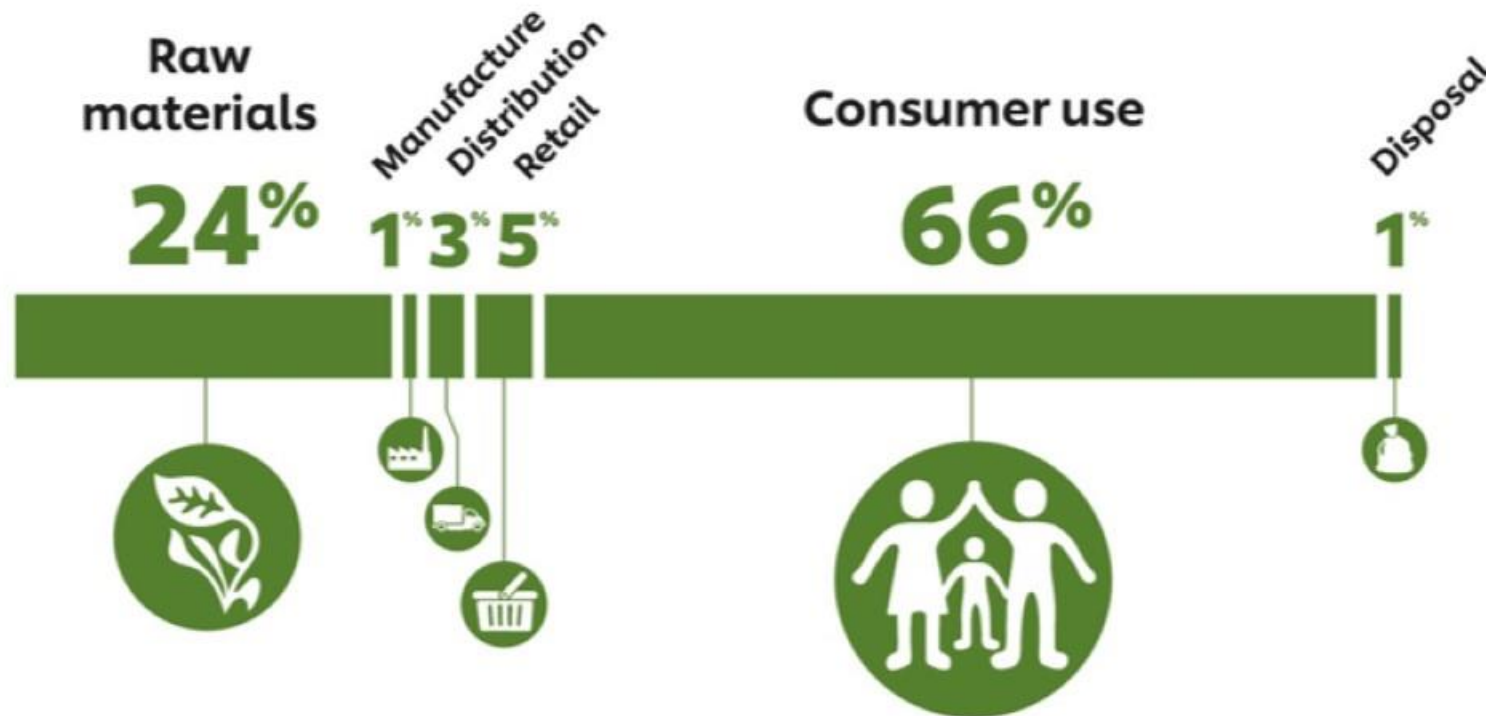
>450 ecolabels in use

Sustainable Product Design and Development

Added value at reduced footprint



Greenhouse gases



- A product carbon footprint is the full inventory of all greenhouse gas emissions released throughout the product life-cycle
- Most of the environmental impact of many consumer products is incurred while the consumer uses the product

<https://www.icis.com/explore/resources/news/2020/07/17/10531480/carbon-footprint-labelling-a-growing-trend-among-consumer-goods-companies/>

Sustainable Product Design and Development

Benefits of GREEN design

ENVIRONMENTAL

- Addressing climate change (GHG emission reduction)
- Minimize impact on ecosystems
- Reduce waste send to landfill
- Protecting natural resources

SOCIAL

- Better quality of life due to advanced products and technologies
- Promotion of ethical practices
- Responsible consumption
- Fair labor practices and improved working conditions

ECONOMIC

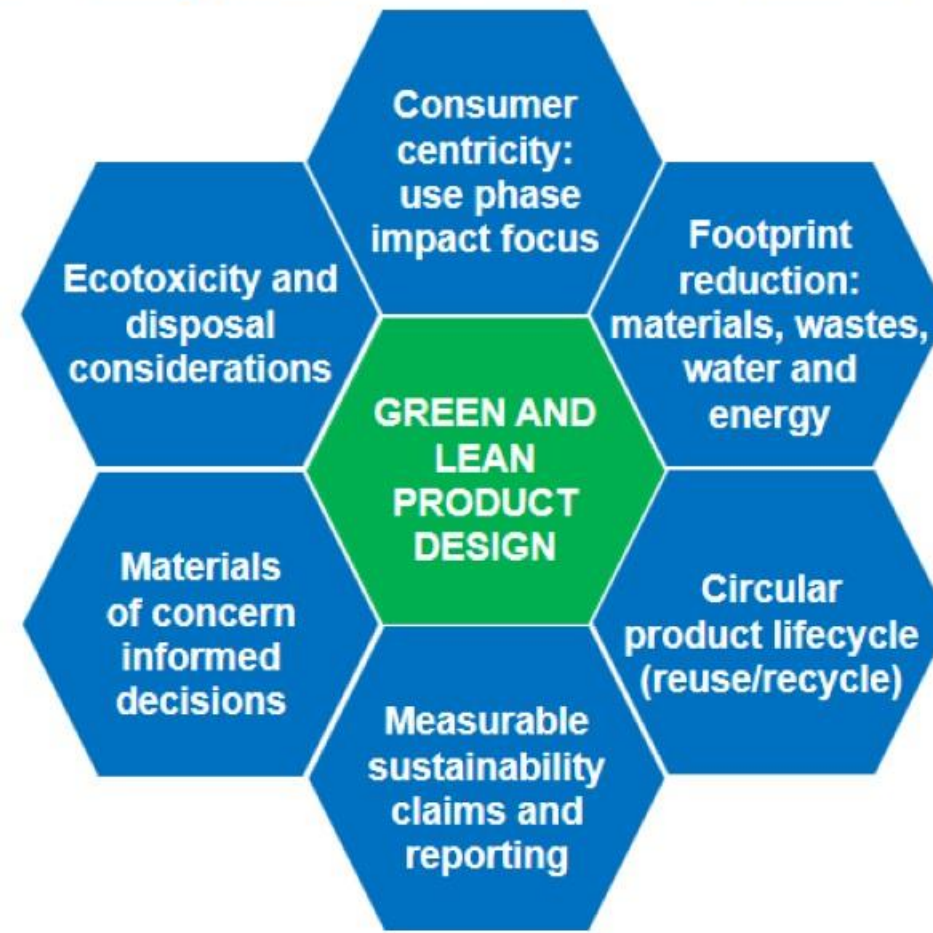
- Economic growth
- Resources and energy efficiency
- Sustainable infrastructure
- Enhanced brand reputation

Sustainable product provides environmental, social and economic benefits while protecting public health and environment over it's whole life cycle, from the extraction of raw materials until the final disposal

Sustainable Product Design and Development

GREEN and LEAN

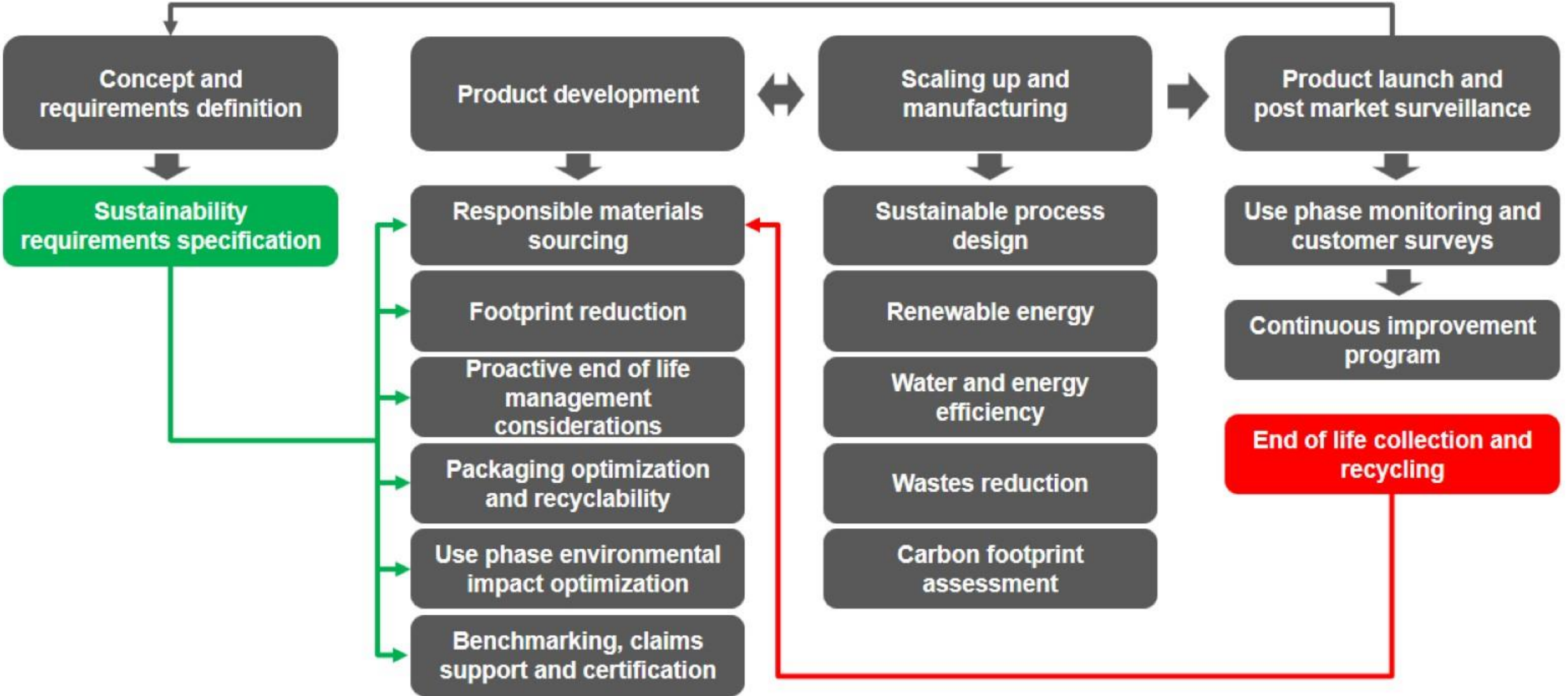
“A designer knows he or she has achieved perfection, not when there is nothing left to add, but when there is nothing left to take away” – Antoine de Saint-Exupery



“If it doesn’t add value, it’s waste” – Henry Ford

Sustainable Product Design and Development

Circular framework



Sustainable Product Design and Development

Sustainability requirements specification aligned with ESG

United Nation Sustainable Development goals	Footprint reduction (materials, water, energy, waste)	Reduced primary and secondary packaging and its recyclability	Product use phase impact optimization (water, energy, waste)
Chemicals of concern (PROP 65, EU REACH SVHC, EU POP, RoHS, OSPAR, US EPA PBT's)	Recycled content maximization	Health and environmental impact assessment (toxicity and ecotoxicity)	Product end of life recycling program (e.g. separable design, take back, EU WEEE)
Product lifecycle extension (spare parts, repair and refills)	Local sourcing and optimized logistics	Carbon footprint reduction and carbon neutral certificates	Water and energy efficiency
Environmental claims (ISO 14021/14024/14025)	Credible 3d party certifications	National guidelines and programs consideration (e.g. APCO)	Renewable energy

“If it can’t be reduced, reused, repaired, rebuilt, refurbished, refinished, resold, recycled or composted, then it should be restricted, designed or removed from production” - Pete Seeger

There is no Planet B

“The future of mankind can be assured only if we rediscover ways in which to live as a part of nature, not apart from her”

King Charles III





THANK YOU!