

Assessment 1

International Innovation Presentation

International Innovation Management

PG Cert Business Improvement with Innovation Management / MSc International Innovation Management

Module Code: ACPA 7003

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Scenario Assumptions

- The focus is on CSMW's **Automotive Interiors** sector activity.
- Current sales are made up of **90% domestic** (UK) and **10% EU**.
- The majority of CSMW automotive interior products are currently single shot, single polymer injection moulded component. (Currently all are **fossil-fuel** based and **virgin polymer** only grades).
- Some components and assemblies use **fabric** and/or **leather** inserts and industry standard **metal and plastic fixings**.
- **Composites** are currently only used in a small number of high-end seating and dashboard applications.

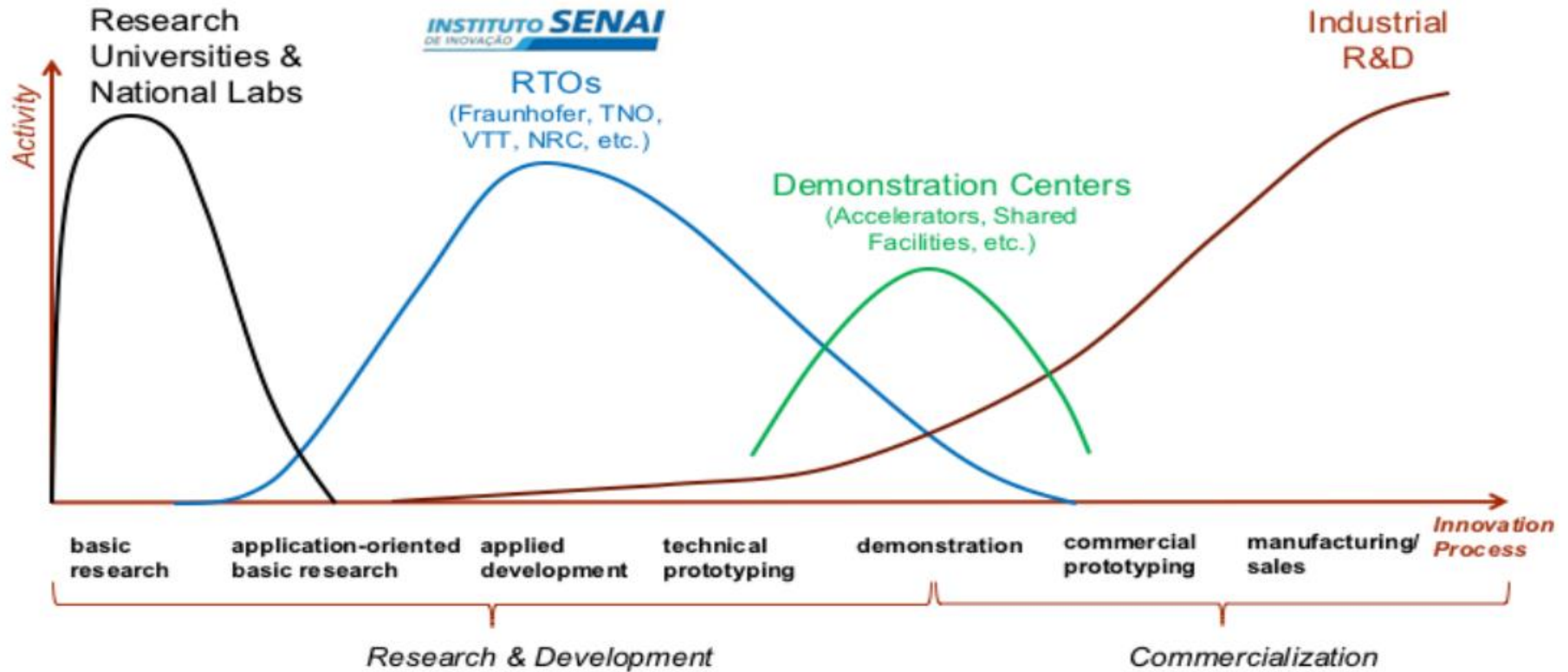
Examples of CMSW's Automotive Interior Products

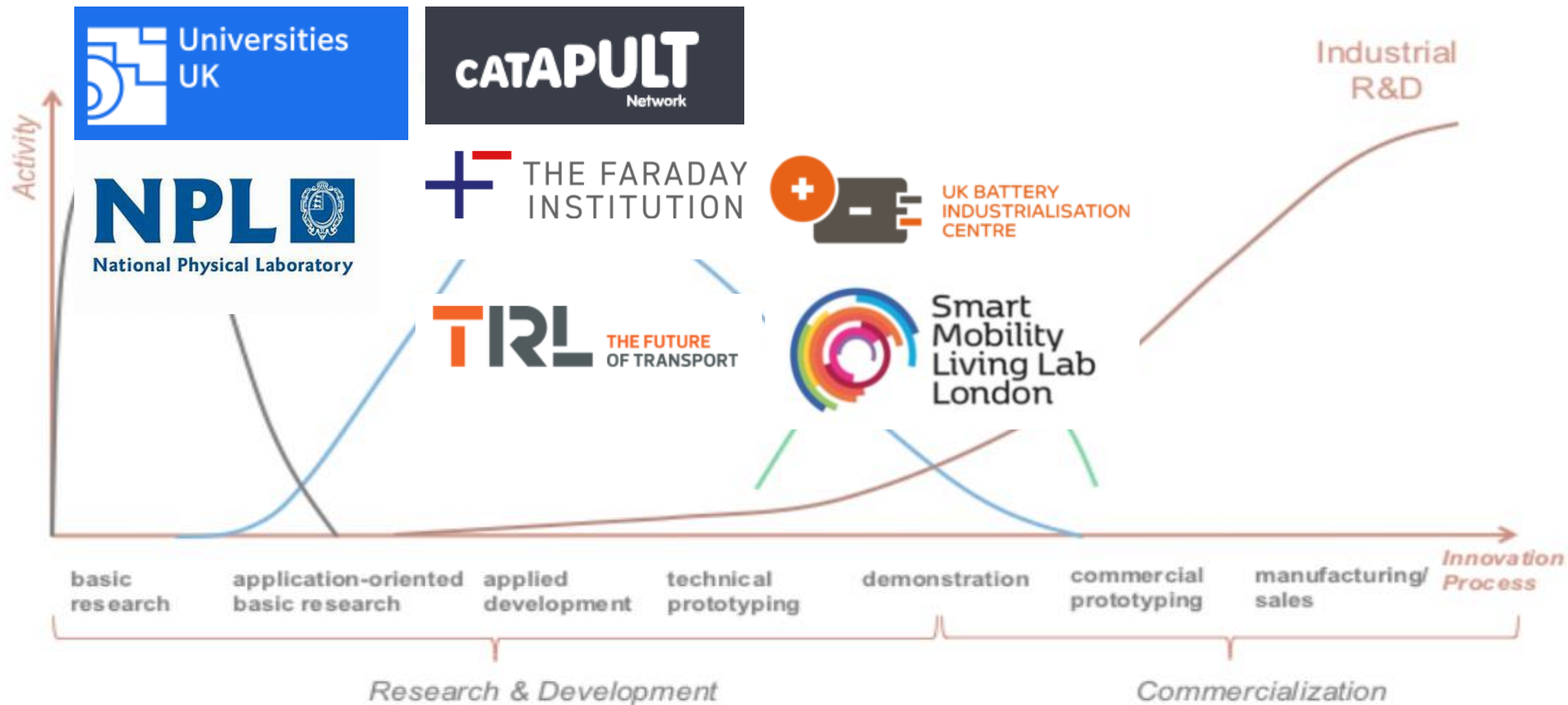


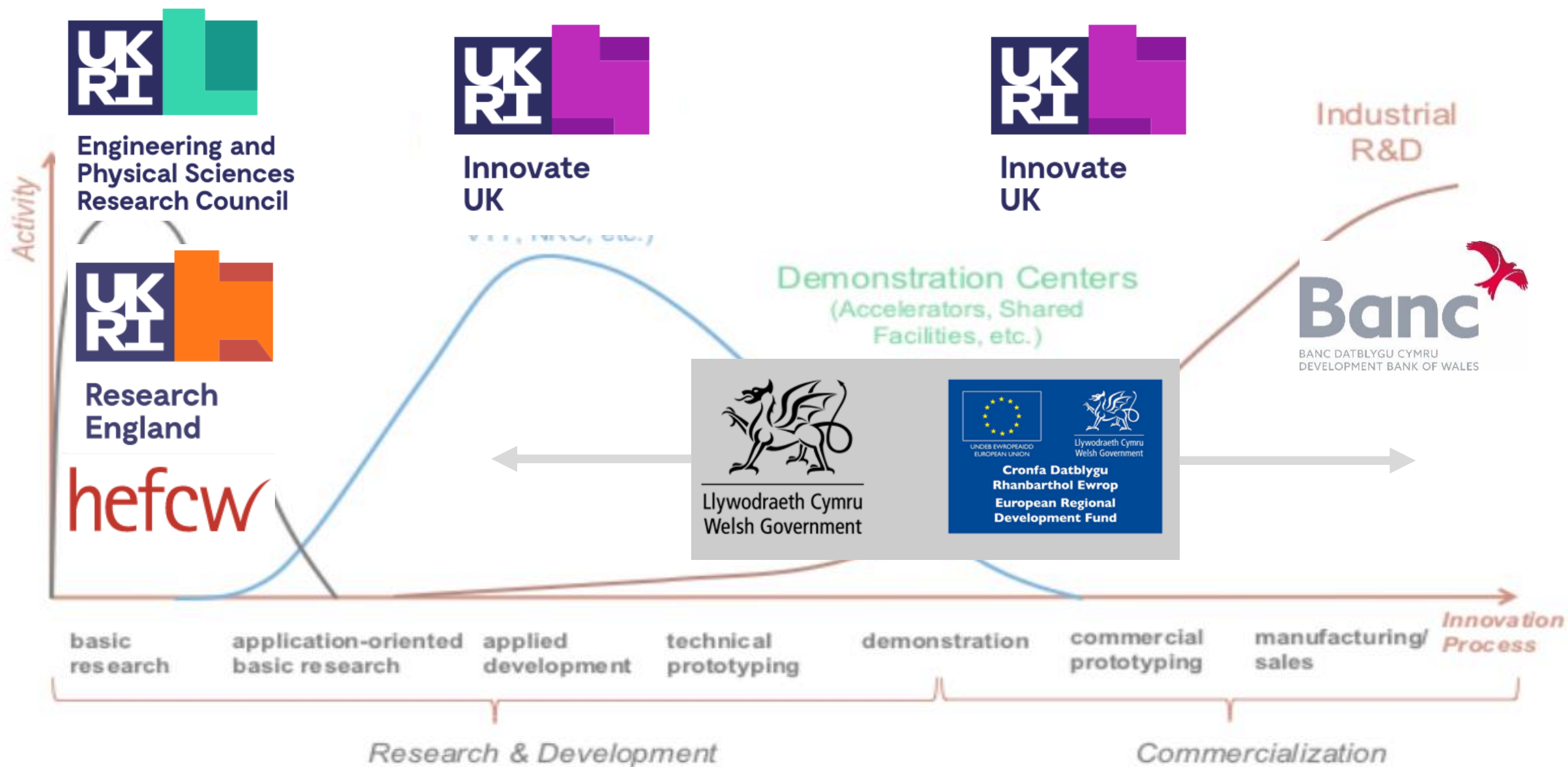
Group 5

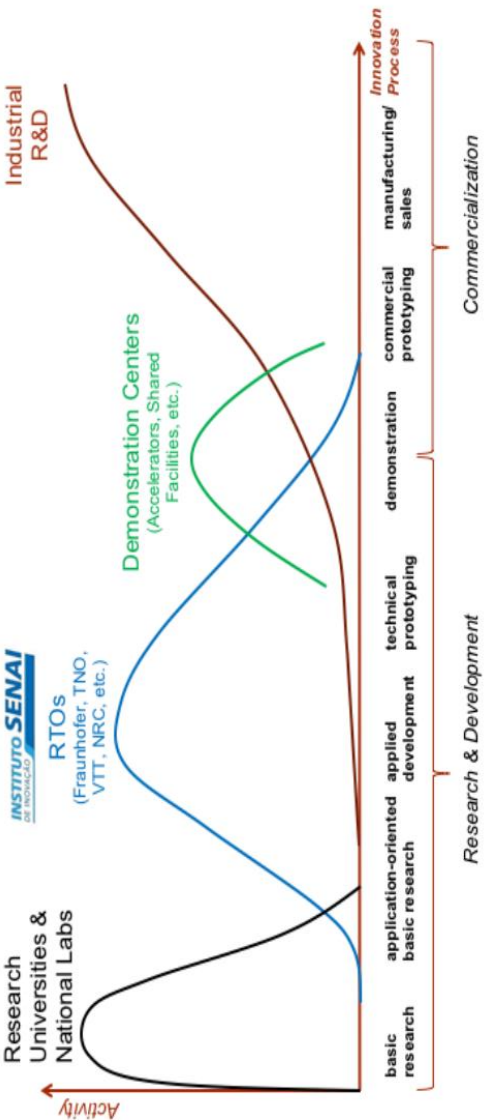
Global Review of Innovation Activities

Companies – Organisations – Government Support Agencies – Academia - Communities









TECHNOLOGY READINESS LEVEL (TRL)

RESEARCH	1	BASIC PRINCIPLES OBSERVED
	2	TECHNOLOGY CONCEPT FORMULATED
	3	EXPERIMENTAL PROOF OF CONCEPT
	4	TECHNOLOGY VALIDATED IN LAB
DEVELOPMENT	5	TECHNOLOGY VALIDATED IN RELEVANT ENVIRONMENT
	6	TECHNOLOGY DEMONSTRATED IN RELEVANT ENVIRONMENT
	7	SYSTEM PROTOTYPE DEMONSTRATION IN OPERATIONAL ENVIRONMENT
DEPLOYMENT	8	SYSTEM COMPLETE AND QUALIFIED
	9	ACTUAL SYSTEM PROVEN IN OPERATIONAL ENVIRONMENT

International Product Development Collaboration

VTT



Service
Biopolymers

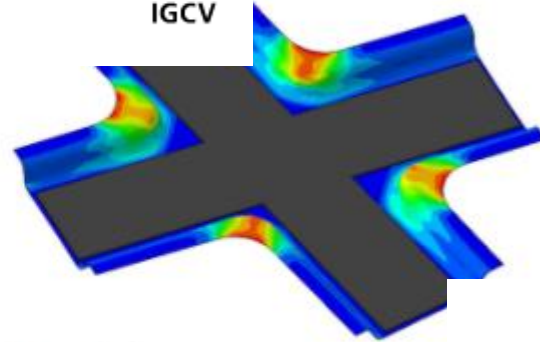


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Deep drawing of a CFRP/metal hybrid structure
(experimental)



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Deep drawing of a CFRP/metal hybrid str
(simulative)

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INTELLIGENCE
CENTER



Environmental Activities and Initiatives

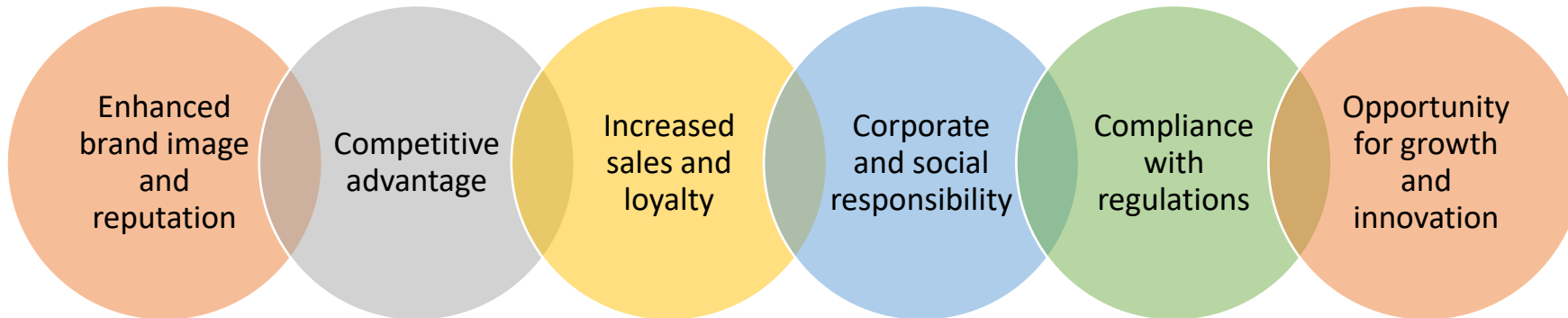
Sustainability – Organisations & Communities – Cultural & Political Considerations

Importance of Sustainability

Sustainability is increasingly becoming a necessity due to:

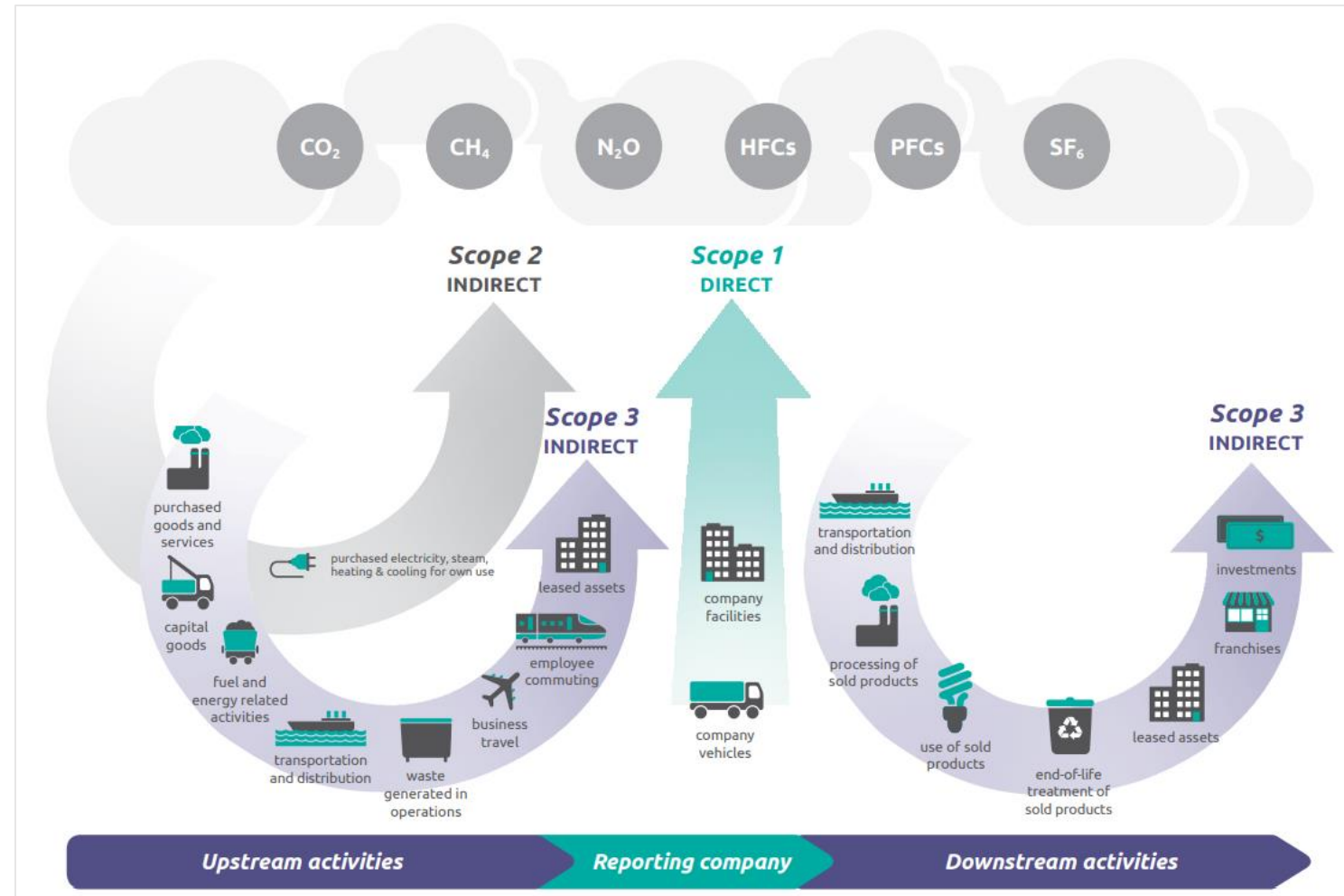
- Public perception
- Consumer demand
- Government legislations

Benefits of sustainability in business:



Greenhouse Gas (GHG) Protocol

- A framework for assessing GHG emissions across the value chain
- "What gets measured, gets managed"



(Aldridge, C. 2016)

Group 5

Image Source: [Greenhouse Gas Protocol, Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#)

Organisations supporting Circular Economy

Ellen MacArthur Foundation

- UK registered charity, founded in 2009
- Work with business and education to accelerate the transition to a circular economy
- **Network of organisations** dedicated to building a circular economy

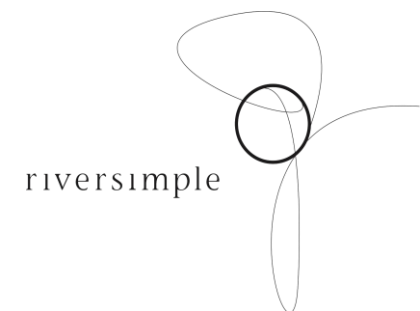


GROUPE RENAULT



WRAP Cymru

- Funded by the Welsh Government
- Provide sustainable procurement support to public bodies in Wales
- **Circular economy fund - £6.5mil**



Circular Economy

Automotive themes:

- Sustainable materials
- Product life extension
- Remanufacture
- Circular business models

Benefits:

- Increase competitiveness
- Stimulate innovation
- Secure raw material supplies

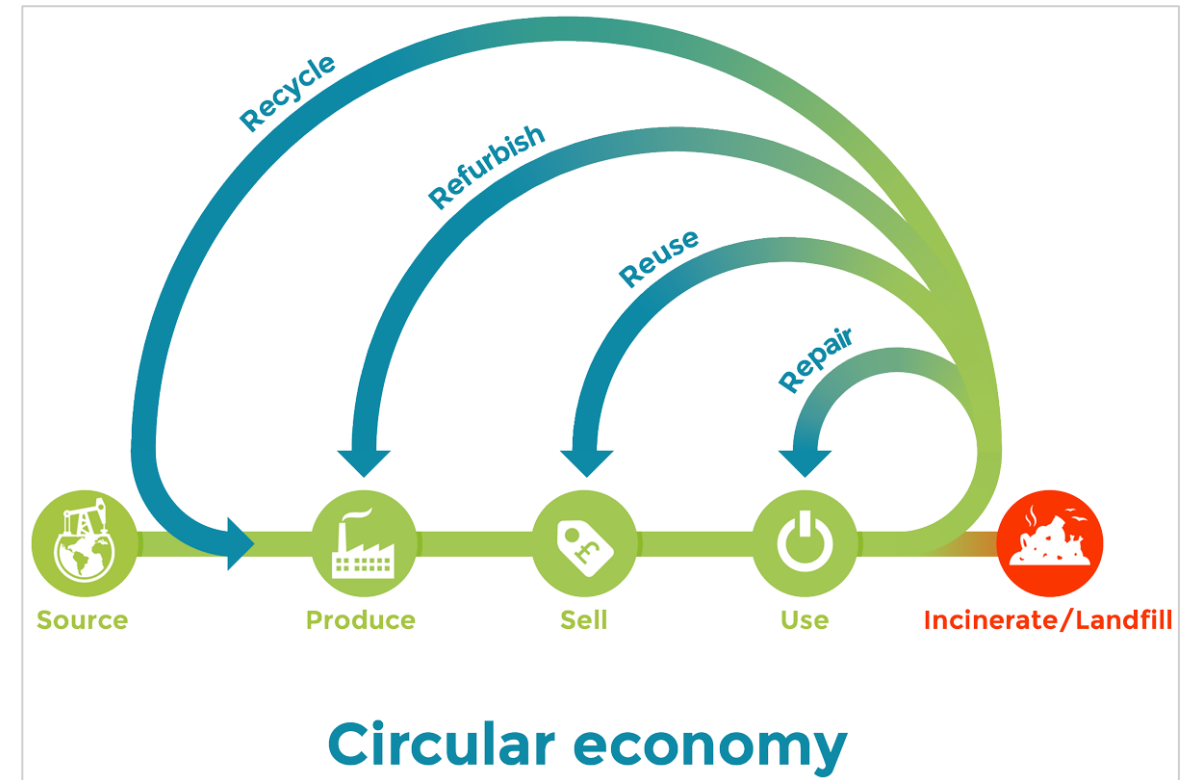


Image source: [Circular Tayside. \(2020\), What is the Circular Economy?](#)

Circular Economy | Case Studies

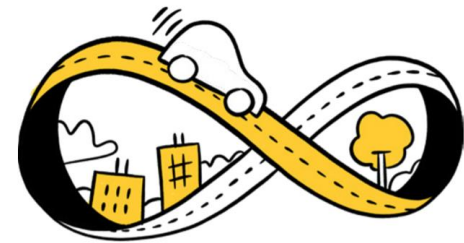
Piñatex by Ananas Anam

- Leather alternative
- Waste pineapple leaf fibre:
 - 13m tons per year, Philippines
 - 54 tons per year, Worldwide
- UK, Spain & Philippines



Groupe Renault

- Eco-conception of vehicles
- Recycling of parts and materials
- Reuse of parts
- Material close loops



Cultural & Political Considerations

ESG reporting provisions globally have nearly doubled in the last five years

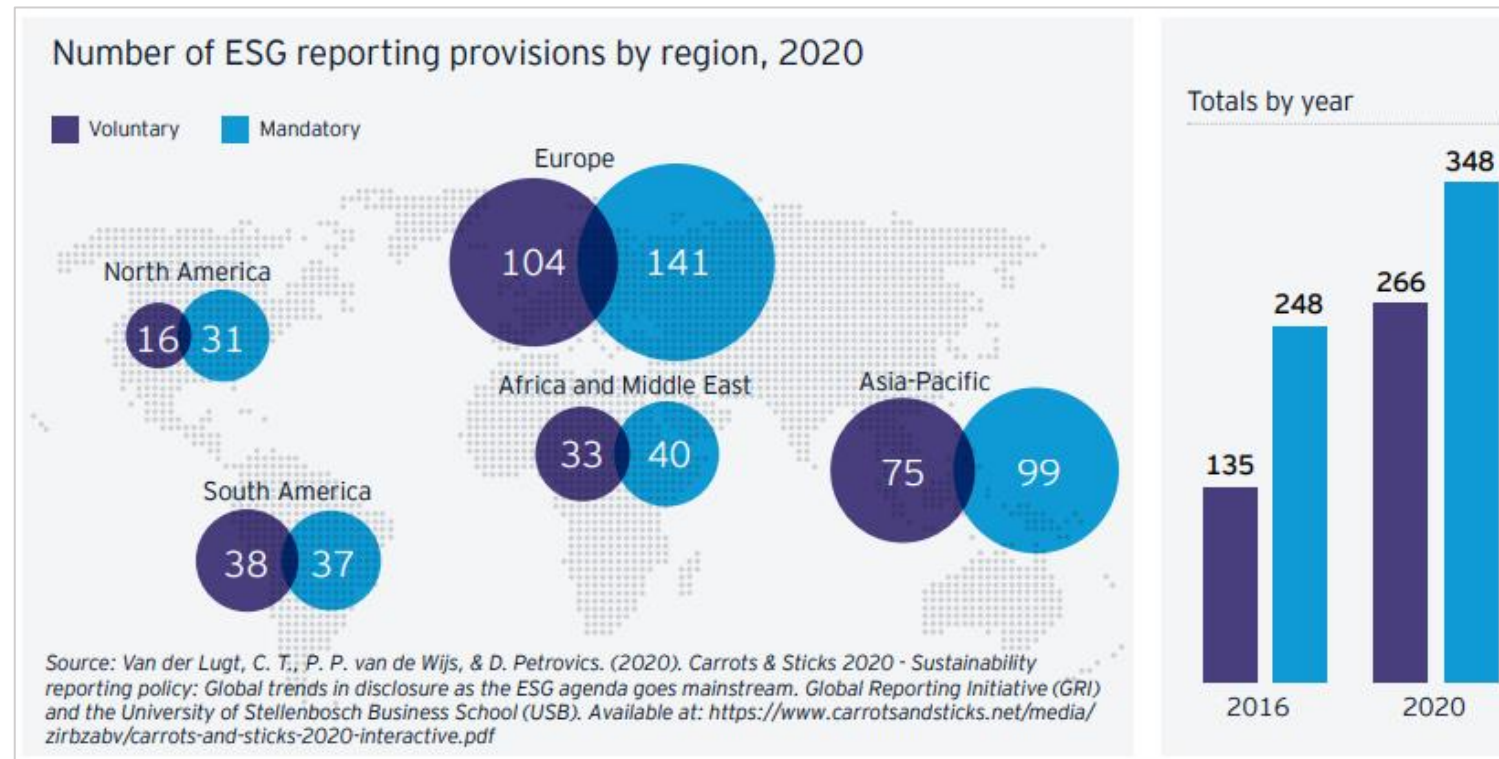
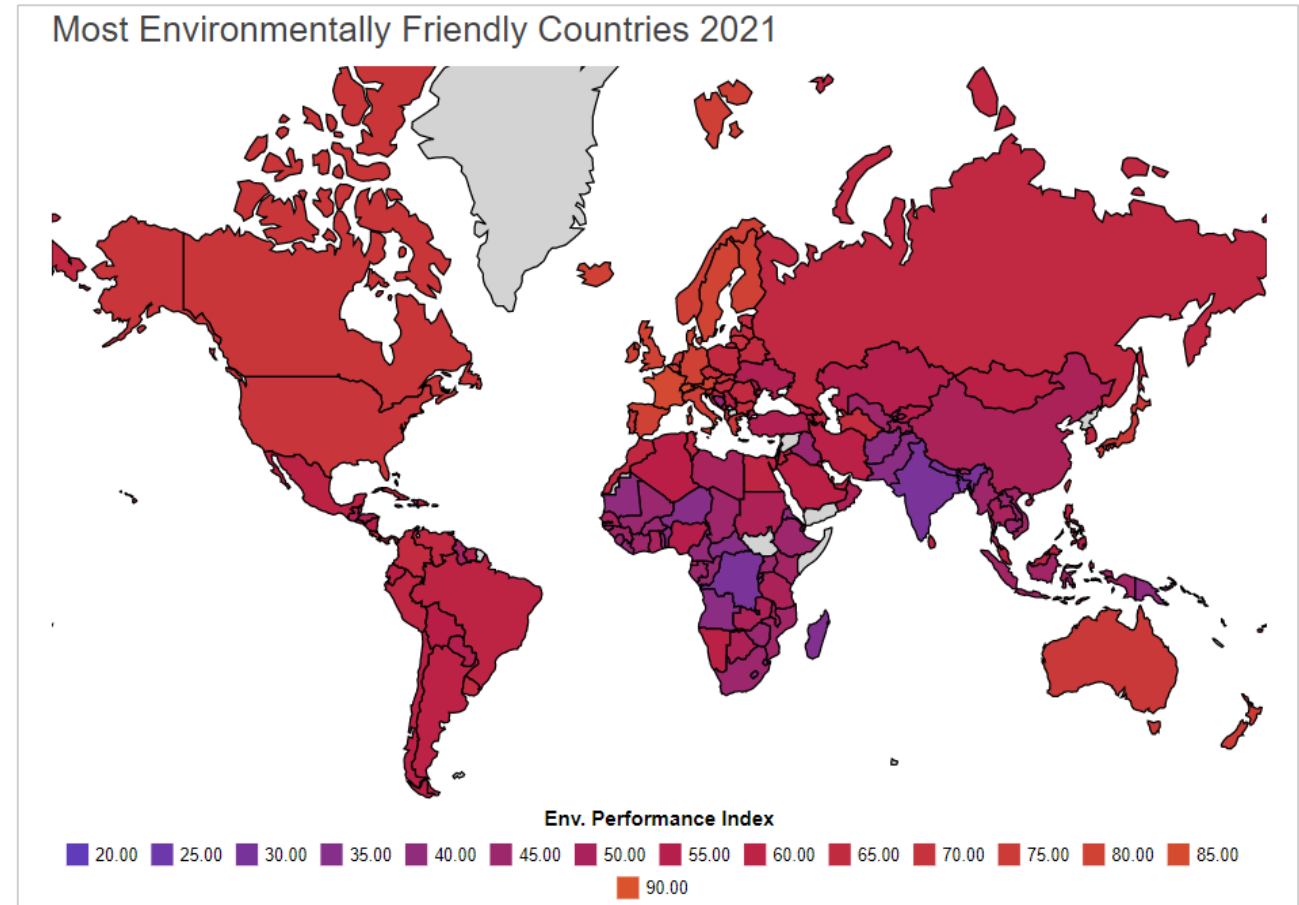


Image Source: [Ernst & Young \(2021\), The future of sustainability reporting standards](#)

Cultural & Political Considerations | EPI

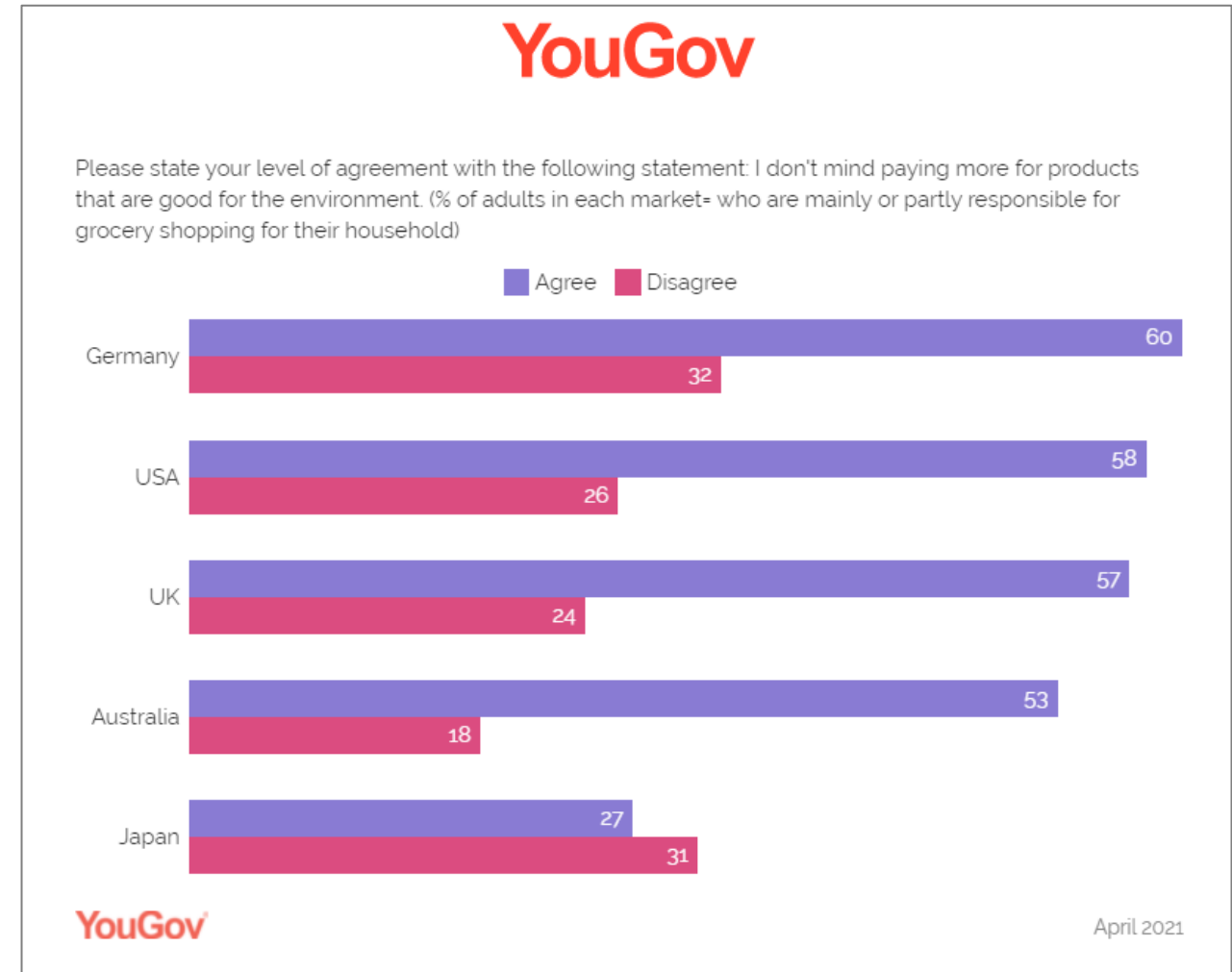
Environmental Performance Index (EPI) considers critical areas such as:

- Air and water quality
- Waste management
- CO2 emissions
- And other public health factors



Cultural Considerations

Many consumers are willing to pay a premium for products and services that align with their values and lifestyle



Specific Company Activities in the Automotive Industry

Ford – Volvo – Polestar – Toyota – Volkswagen

Ford Motor Company



- Reduce carbon footprint
- Uses **1.2 billion plastic bottles** per year in producing the recycled plastic that goes into many of their car parts (El-Bawab, 2019)
- Makes sense technically, economically and **environmentally**
- Ford also collects damaged plastic parts from their cars, such as bumpers, in order to repurpose them for new bumpers
- **Carbon neutral by 2050** (Ford, 2020)



Volvo Cars



- Aims for 25% recycled plastics in every new car from 2025 (Volvo Cars, 2018)
- Tested on XC60 T8 plug-in hybrid SUV
- **Tunnel console** made from renewable fibres and plastics from discarded fishing nets
- **Carpet** contains fibres made from PET plastic bottles and a recycled cotton mix from clothing manufacturers' offcuts
- **Seats** also use PET fibres from plastic bottles



Polestar

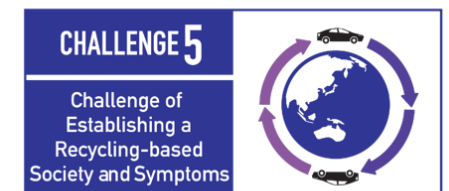
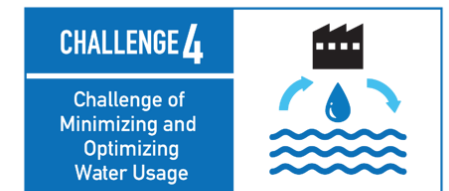
- Build sustainable electric cars
- Climate-neutral car by **2030**,
Climate-neutral company by **2040**
(Polestar, n.d.)
- Build better batteries
- Ensure responsible sourcing
- Cars to contain more **recycled materials**
- **Circular design:** Longevity, Repairability, Remanufacturing, Repurposing, Recycling



Toyota



- **Toyota Environmental Challenge 2050** (Toyota, 2015)
 - New Vehicle Zero CO₂ Emissions
 - Life Cycle Zero CO₂ Emissions
 - Plant Zero CO₂ Emissions
 - Minimising and Optimising Water Usage
 - Establishing a Recycling-based Society and Systems
 - Establishing a Future Society in Harmony with Nature
- Maximise recyclability
- 20% of all plastics used in their vehicle production efforts are **made from recycled plastics or plant-derived plastics** (Plastic Expert, n.d.)



Volkswagen Emissions Scandal (Dieselgate)

- Launched 'clean diesel car' range in 2009 for sale in US and Europe (France-Presse, 2019)
- Sold around **11 million** 'clean diesel cars' worldwide from 2009-2015
- Used a software to cheat pollution tests
- VW admitted in 2015
- More than 30 billion euros in fines (Atiyeh, 2019)

VW admitted to fitting 11 million diesel vehicles worldwide with software to cheat pollution tests

The software in the motor is designed to fool pollution tests



- ▶ Detects the moment when a car undergoes a pollution test
- ▶ Reduces harmful emissions of **nitrogen oxides (NOx)** but only during the test

Under normal operation

- ▶ The car's emissions controls are turned down. It emits up to **40 times the legal limit** of NOx

Legal limit of NOx in the United States: 31 mg/km



Effects of NOx



- ▶ Asthma attacks, breathing and heart problems
- Excess NOx from improperly configured diesel vehicles had contributed to about **38,000 premature deaths globally in 2015**: study published in May 2017

Source : USEPA/Autonews.com/ICCT/CarThrottle.com

© AFP

Key Recommendations

- As CMSW, we need to be exploring how we can benefit from government funding streams and support structures.
- CMSW now needs to consider investing time in building relationships with the organisations that best-fit our technology and strategy roadmaps.
- CMSW should adopt the TRL definitions across the organisation to better communicate the maturity of our RD&I activities both internally and externally.
- CMSW needs to seek the best solutions and find the best collaborators wherever they are. Despite Brexit there are still funding opportunities for UK companies to collaborate with entities within the EU 27 and other nations.
- Utilise Greenhouse gas (GHG) protocol.
- Join Circular Economy networks/communities; Ellen MacArthur Foundation.
- Sign up to Circular Revolution Wales (fully funded support for designing and transitioning to a Circular Business Model).
- Start being green! Maximise recyclability and be more sustainable.
- Do it the right way and be transparent.
- Create company sustainability goals and share internally and externally.

Thank you.

Q & A

References (1/3)

Automotive Intelligence Center (2022) *About AIC*. Available at: <https://www.aicenter.eu/> (Accessed: 2nd January 2022).

Fraunhofer IGCV (2022) *Profile, Your Partner for sustainable lightweight design through holistic competence and intelligent processes*. Available at: https://www.igcv.fraunhofer.de/en/about_us/fraunhofer_igcv/composites/profile.html (Accessed: 2nd January 2022).

Fraunhofer IGCV (2022) *HybCar | Resource-efficient lightweight construction for the automotive industry*. Available at: https://www.igcv.fraunhofer.de/en/research/reference_projects/hybcars.html (Accessed: 2nd January 2022).

Matinez-Vela, C. (2016) *Benchmarking Research and Technology Organizations (RTOs): A Comparative Analysis*. Cambridge: MIT Industrial Performance Center

Policy Links (2021) *UK Innovation Report. Benchmarking the UK's Industrial and Innovation Performance in a Global Context*. IfM Education and Consultancy Services (IfM ECS). Institute for Manufacturing, University of Cambridge. Available at: <https://www.ciip.group.cam.ac.uk/reports-and-articles/uk-innovation-report/> (Accessed: 2nd January 2022).

PoliticsHome (2021) *Catapults are making UK innovation happen – the future of UK R&D and innovation capability*. Available at: <https://www.politicshome.com/members/article/catapults-are-making-uk-innovation-happen> (Accessed: 2nd January 2022).

TWI Ltd (2022) *What are Technology Readiness Levels (TRL)?* Available at: <https://www.twi-global.com/technical-knowledge/faqs/technology-readiness-levels> (Accessed: 2nd January 2022).

UK Government (2020) *UKRI list of approved research organisations*. Available at: <https://www.gov.uk/government/publications/ukri-endorsement-employing-or-hosting-institutions-global-talent-visa/ukri-list-of-approved-research-organisations> (Accessed: 2nd January 2022).

VTT Research (2021) *Circular Economy of Plastics*. Available at: <https://www.vttresearch.com/en/ourservices/circular-economy-plastics> (Accessed: 2nd January 2022).

References (2/3)

- Aldridge, C. (2016, April 4). *You, too, can master value chain emissions*. Available at: Greenhouse Gas Protocol: <https://ghgprotocol.org/blog/you-too-can-master-value-chain-emissions>
- Ananas Anam, (n.d.) *About Us: Anamas Anam*. [Online]
Available at: <https://www.ananas-anam.com/about-us/>
(Accessed 6 December 2021).
- Circular Tayside. (2020). *What is the Circular Economy?* Available at Circular Tayside: <https://circulartayside.co.uk/what-is-the-circular-economy/>
- Drolet, S. W., Elsner, M., Bunn, I. D. & Hasmath, R., (2021). *The future of sustainability reporting standards*, s.l.: Oxford Analytica.
- EIC, 2021. *The journey to and benefits of Scope 3 emissions reporting*. [Online]
Available at: <https://www.eic.co.uk/the-journey-to-and-benefits-of-scope-3-emissions-reporting/>
- Ellen MacArthur Foundation, (2018). *Case studies on Circular Economy models and integration of Sustainable Development Goals in business strategies in the EU and LAC*, s.l.: EU-LAC Foundation 2018.
- Ellen MacArthur Foundation, (2021). *Circular Example: Europe's first circular economy factory for vehicles: Renault*. [Online]
Available at: <https://ellenmacarthurfoundation.org/circular-examples/groupe-renault>
(Accessed 6 December 2021).
- Ellen MacArthur Foundation, (2021). *What we do*. [Online]
Available at: <https://ellenmacarthurfoundation.org/about-us/what-we-do>
(Accessed 6 December 2021).
- Ellen MacArthur Foundation, (n.d.) *A New Textiles Economy: Redesigning fashion's future*. [Online]
Available at: <https://ellenmacarthurfoundation.org/a-new-textiles-economy>
(Accessed 6 December 2021).
- Greenhouse Gas Protocol, (2019). *Corporate Value Chain (Scope 3): Accounting and Reporting Standard*.
- Haller, K. & Lee, J., (2020). *Research Insights: Meet the 2020 consumers driving change*, New York: IBM Institute for Business Value.
- Hijosa, C., (2015). *Piñatex, the design development of a new sustainable material*. s.l.:Royal College of Art.
- Nguyen, H. & Dsouza, R., (2021). *Global: Consumer willingness to pay for environmentally friendly products*.
- plan A, (2021). *What are Scopes 1, 2 and 3 of Carbon Emissions?*. [Online]
Available at: <https://plana.earth/academy/what-are-scope-1-2-3-emissions/>
- Renault Group, (n.d.) *Our Commitments: Circular Economy*. [Online]
Available at: <https://www.renaultgroup.com/en/our-commitments/respect-for-the-environment/circular-economy/>
(Accessed 12 December 2021).
- Richardson, E., (2020). *Why UK Businesses Should go Green in 2020*. [Online]
Available at: <https://www.renewableenergyhub.co.uk/blog/why-uk-businesses-should-go-green-in-2020/>
(Accessed 6 December 2021).
- Science Based Targets, (2018). *Value Change in the Value Chain: Best Practices In Scope 3 Greenhouse Gas Management*, s.l.: Science Based Targets.
- Stafford, M., (2018). *The New Sustainability: Regeneration*, s.l.: Innovation Group J. Walter Thompson Intelligence.
- WRAP Cymru, (2021). *What we do: Making the biggest impact to ensure people and planet thrive*. [Online]
Available at: <https://wrapcymru.org.uk/what-we-do-0>
(Accessed 6 December 2021).

References (3/3)

- Atiyeh, C. (2019). *Everything you need to know about the VW diesel-gate emissions scandal*. [Online]
Available at: <https://www.caranddriver.com/news/a15339250/everything-you-need-to-know-about-the-vw-diesel-emissions-scandal/>
[Accessed 2nd January 2022].
- Butcher, L. (2020). *Polestar to use natural composites for interior*. [Online]
Available at: <https://www.automotiveinteriorsworld.com/news/sustainability/polestar-to-use-natural-composites-for-interior.html>.
[Accessed 2nd January 2022].
- El-Bawab, N. (2019). *Ford recycles 1.2 billion plastic bottles a year for auto parts*. [Online]
Available at: <https://www.cnbc.com/2019/05/31/ford-recycles1point2-billion-plastic-bottles-a-year-for-auto-parts.html>.
[Accessed 2nd January 2022].
- Ford, (2020). *Ford expands climate change goals, sets global target to become carbon neutral by 2050*. [Online]
Available at: <https://media.ford.com/content/fordmedia/feu/en/news/2020/06/25/Ford-Expands-Climate-Change-Goals.html>.
[Accessed 2nd January 2022].
- France-Presse, A. (2019). *VW 'dieselgate' fraud: Timeline of a scandal*. [Online]
Available at: <https://ednh.news/vw-dieselgate-fraud-timeline-of-a-scandal/>.
[Accessed 2nd January 2022].
- Plastic Expert, (n.d.). *Which car manufacturers use the most recycled plastic?*. [Online]
Available at: <https://www.plasticexpert.co.uk/which-car-manufacturers-use-the-most-recycled-plastic/>.
[Accessed 2nd January 2022].
- Polestar, (n.d.). *Sustainability*. [Online]
Available at: <https://www.polestar.com/uk/sustainability/>.
[Accessed 2nd January 2022].
- Sergeev, A. (2018). *Volvo To Use 25 Percent Recycled Plastics Starting 2025*. [Online]
Available at: <https://www.motor1.com/news/249571/volvo-25-percent-recycled-plastics/>.
[Accessed 2nd January 2022].
- Toyota, (2015). *Toyota Environmental Challenge 2050*. [Online]
Available at: <https://www.toyota.co.uk/world-of-toyota/environment/environmental-challenge-2050>.
[Accessed 2nd January 2022].
- Volvo Cars, (2018). *Volvo Cars aims for 25 per cent recycled plastics in every new car from 2025*. [Online]
Available at: <https://www.media.volvocars.com/global/en-gb/media/pressreleases/230703/volvo-cars-aims-for-25-per-cent-recycled-plastics-in-every-new-car-from-2025>.
[Accessed 2nd January 2022].
- Yap, C. (2019). *Ford Uses 1.2 Billion Plastic Bottles For Auto Parts Each Year*. [Online]
Available at: <https://www.piston.my/2019/09/17/ford-uses-1-2-billion-plastic-bottles-for-auto-parts-each-year/>.
[Accessed 2nd January 2022].