



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Circular Economy *"Closing the Loop"*

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Oseng-Rees Reflection

11th October 2019

UWTSD

- Introduction
- Economic systems
- Circular economy
- Wellbeing of future generation act
- Case study

Hva er ordet MILJØ ?

Ordet miljø blir mye brukt i dag.

Det er klassemiljø, utemiljø, innemiljø og forskjellige slike ting.

I markedsføring av varer er det veldig mange miljøprodukter.

Så dette tyder på at de fleste er svært opptatt av miljø.

Det jeg vil ta opp, er mer om miljø og forurensing.

Lokalt har Saltdal lite betydning for "omværa."

Vi har ikke industri som forurenser noe spesielt.

Men lokalt er det alltid noe å gjøre bedre. Som f.eks. kloakken under Torrissenbrygga,

som slipper ut urensset kloakk, og kloakken ved camping plassen som også er urensset.

Vi har en søppelplass som ligger ved elva. Og der kommer det sivende avfall fra innbyggerne, også her kommer det urensset kloakk ut.

Men når det gjelder urensset kloakk har jeg og noen andre tatt et interju av Arne Hals.

Og her er de.

-Er det lov å slippe ut urensset kloakk ut i fjorden?

Både ja og nei.

Ja, det er lov å slippe kloakk ut; men ikke på den måten vi gjør det.

Vi har jo en sil som gjør at det blir opptil 20-30% mindre kloakk.

Det er et problem og vi skal prøve å ta det til dypere vann, men det er usikkert om det blir gjort.

-Enn fjorden?

-Tåler den det?

Ja, det gjør den, den tåler mer enn ellers.

Den tar hva den kan ta.

Elva

-Er det søppel eller kloakk som kommer drivende nedover elva?

Det er kloakk som kommer drivende nedover elva.

Men det er et vannrør lenger ned, og det kan se guffent ut, ja.

Og det er snakket om at det skal ta vannprøver, men det koster penger, sier Arne Hals.



What is an Economic System?

1. Traditional economic system

- Relies a lot on people, and there is very little division of labor or specialization. In essence, the traditional economy is very basic and most ancient of all four types.
- Some parts of the world still run a traditional economic system. Particularly, rural settings in second- and third-world nations, where economic activities are predominantly farming or other traditional income-generating activities.
- Because of its primitive nature, the traditional economic system is highly sustainable. In addition, due to its small output, there is very little wastage compared to the other three systems.

2. Command economic system

- A dominant and centralized authority, usually the government, which controls a significant portion of the economic structure. Also known as the planned economic system, is common in communist societies since production decisions are a preserve of the government.
- If an economy enjoys access to many resources, the chances are that it will lean towards a command economic structure. In such a case, the government comes in and exercises control over the resources.
- In theory, the command system works well if the central authority exercises control with the general population's best interest in mind. However, command economies face many challenges, and they are slightly rigid compared to other systems. That is, they react slowly to change because power is centralized.

What is an Economic System?

3. Market economic system

- Very little government interference. The government exercises no control or say over resources, and it does not interfere with important segments of the economy. Instead, regulation comes from the people and the relationship between supply and demand.
- The market economic system is mostly theoretical. A pure market system doesn't really exist. Why? Well, all economic systems are subject to interference from a central authority. For instance, most governments enact laws that regulate fair trade and monopolies.
- A market economy facilitates substantial growth. However, its greatest downside is that it allows private entities to amass a lot of economic power, particularly those that own resources of great value. Thus, the distribution of resources is not equitable because a select few enjoy most of them, while a huge part of the remaining population fight for the little that is left.

4. Mixed economic system

- Combine the characteristics of the market and command economic systems, also known as dual economic systems.
- Mixed systems are the norm globally. Most industries are private, while the rest, comprising of public services, is under the control of the government. Thus, the government and the private sector serve a significant role in maintaining a mixed economy.

Socialism vs. Capitalism?

Opposing schools of thought, central arguments touch on the role of government in the economy and economic equality among the citizens.

- Socialists believe that the government is responsible for ensuring economic equality by introducing programs that benefit the poor such as free education, higher taxes for the rich, and subsidized healthcare systems.
- The citizens of the country work to generate wealth, which is then distributed to everyone.
- The government manages the education and healthcare systems, and the citizens pay for the resources through higher taxes.
- Capitalists believe that the government is better off when the free market determines who wins and who loses, and prices of goods and services are determined by the competition in the free market economy.
- Capitalism gives businesses more incentives to work hard since they enjoy all the profits and wealth they generate from the economy.
- The only role that the government plays in a capitalistic market is to enforce laws and regulations with the aim of creating a level playing field for businesses to operate.

Capitalism; pros and cons

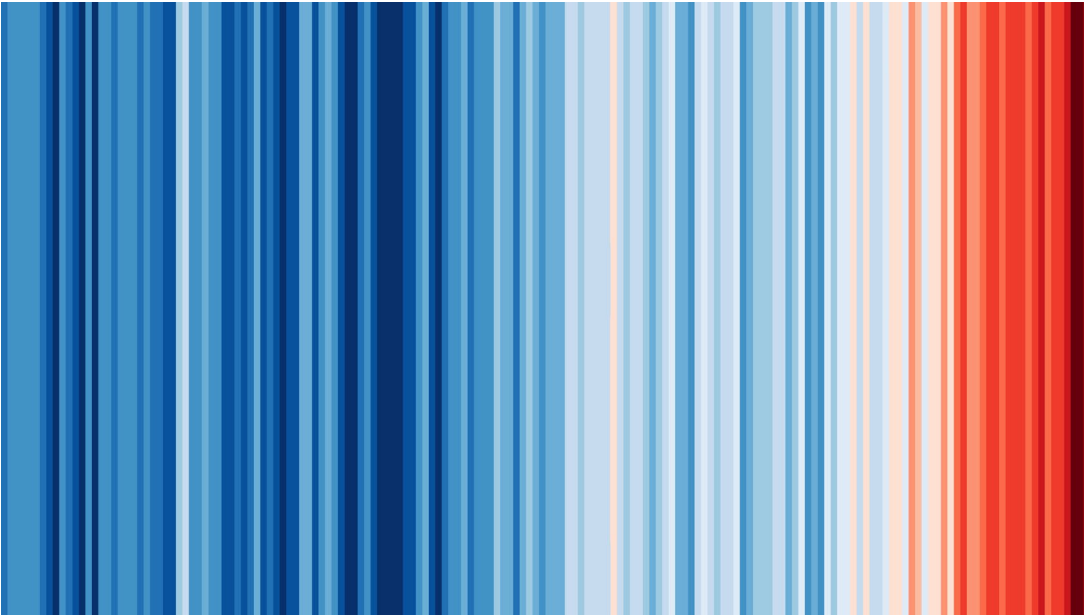
- Consumer choice - Individuals choose what to consume, and this choice leads to more competition and better products and services. Efficiency of economics - Goods and services produced based on demand create incentives to cut costs and avoid waste.
- A profit maximising **capitalist** firm is likely to ignore negative externalities, such as pollution from production; this can harm living standards. Similarly, a free market economy will under-provide goods with positive externalities, such as health, public transport and education.



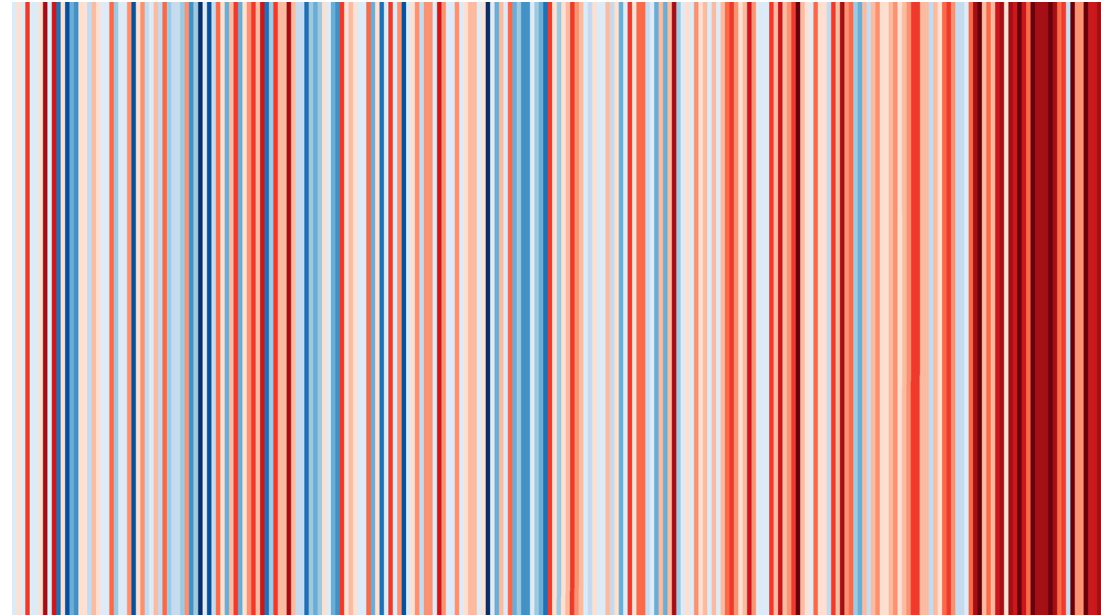


Climate crisis

Temperature rise



Annual global temperatures from 1850-2017



Annual temperatures in central England
from 1772-2017



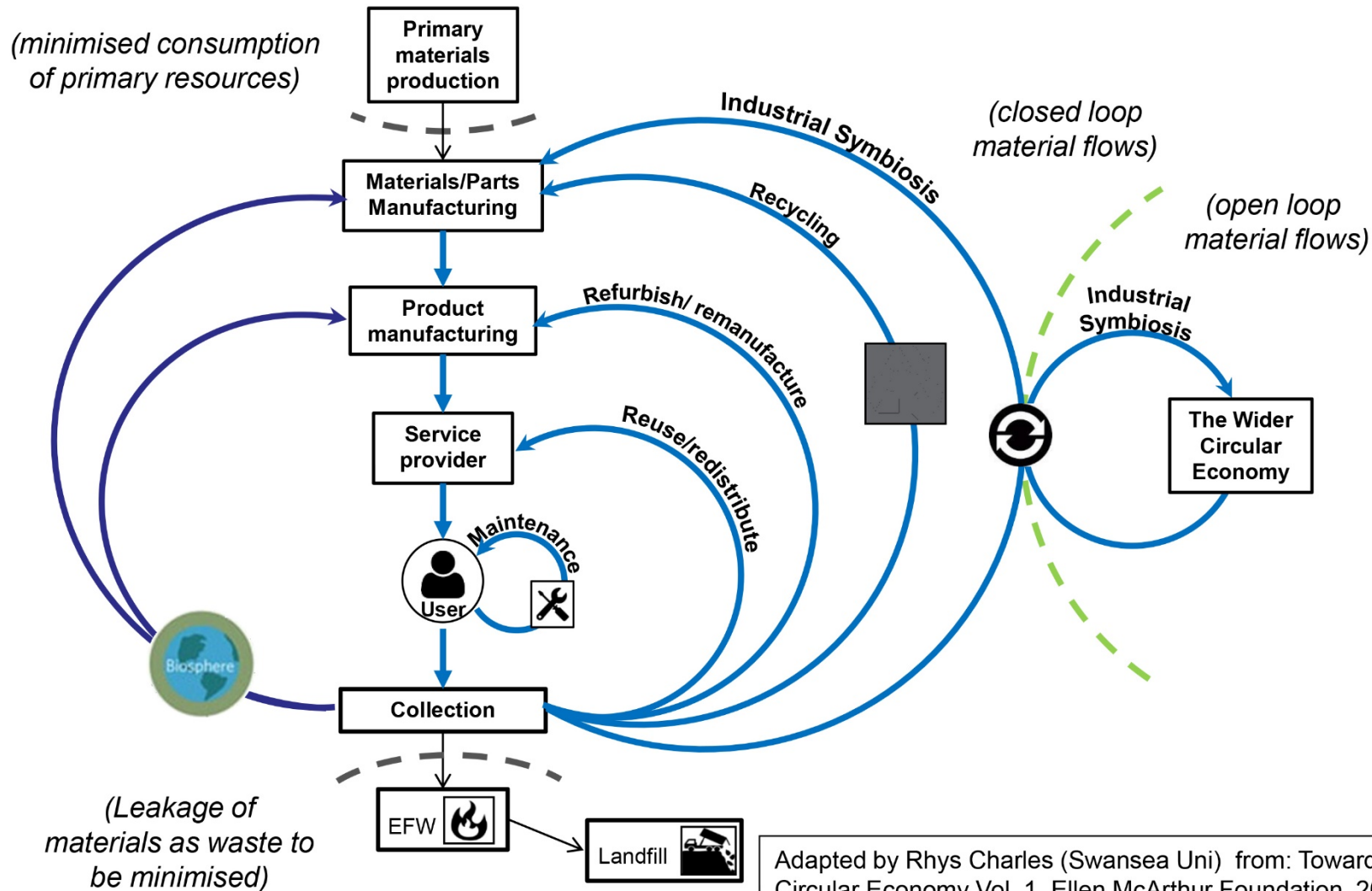
Circular economy

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Circular economy:

- An Alternative for the “Take, Make, Consume and Dispose” Mindset
- Traditional business models are mostly built on the presumption of cheap, unlimited natural resources
- 80% materials from the \$3.2 trillion consumer goods is unrecovered yearly, McKinsey (2014).
- What used to be regarded as “waste” can be turned into a resource.
- William McDonough is an architect, designer and thought leader, and co-creator of the Cradle to Cradle framework
- https://www.youtube.com/watch?time_continue=143&v=wjgN5ZXUC58

Material flows in a Circular Economy



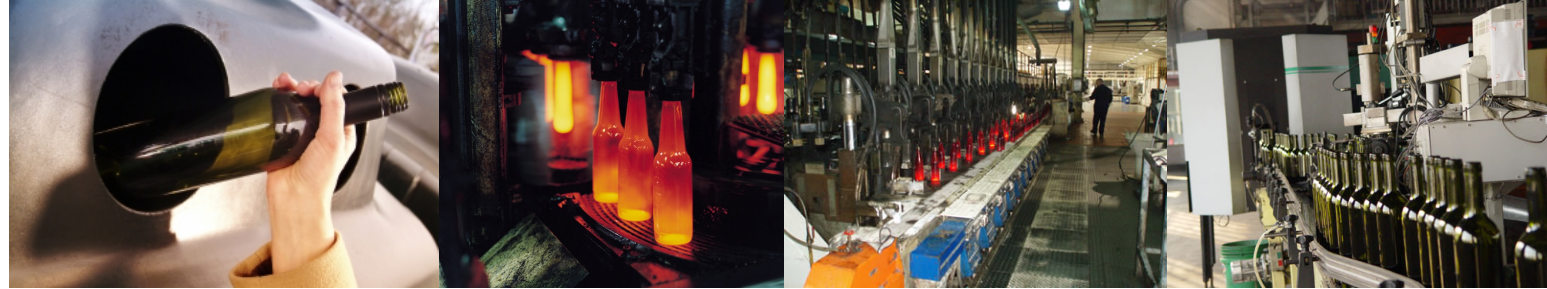
Adapted by Rhys Charles (Swansea Uni) from: Towards a Circular Economy Vol. 1, Ellen McArthur Foundation, 2013.

Slide from:
Dr Andy Rees, OBE
Head of Waste Strategy Waste &
Resource Efficiency Division, Welsh
Government

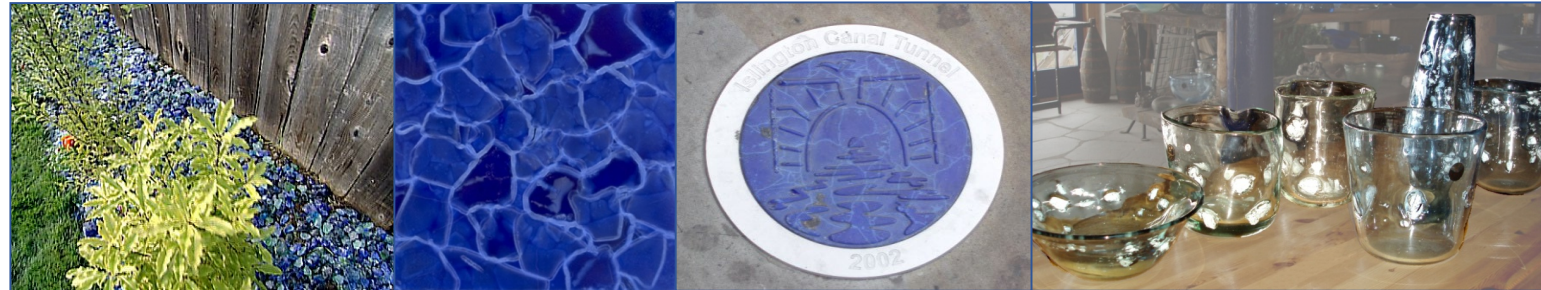
The Ellen MacArthur Foundation

- *Completing the Picture - How the circular economy tackles climate change*, published Sept 2019 by The Ellen MacArthur Foundation
- The current response to the global climate crisis represents an incomplete picture.
- Putting in place a circular economy is a fundamental step towards achieving climate targets. Such a shift moves us beyond efforts to minimise emissions in our extractive linear system
- To date: transition to renewable energy, complemented by energy efficiency. But this can only address 55% of global greenhouse gas emissions

Circular Economy



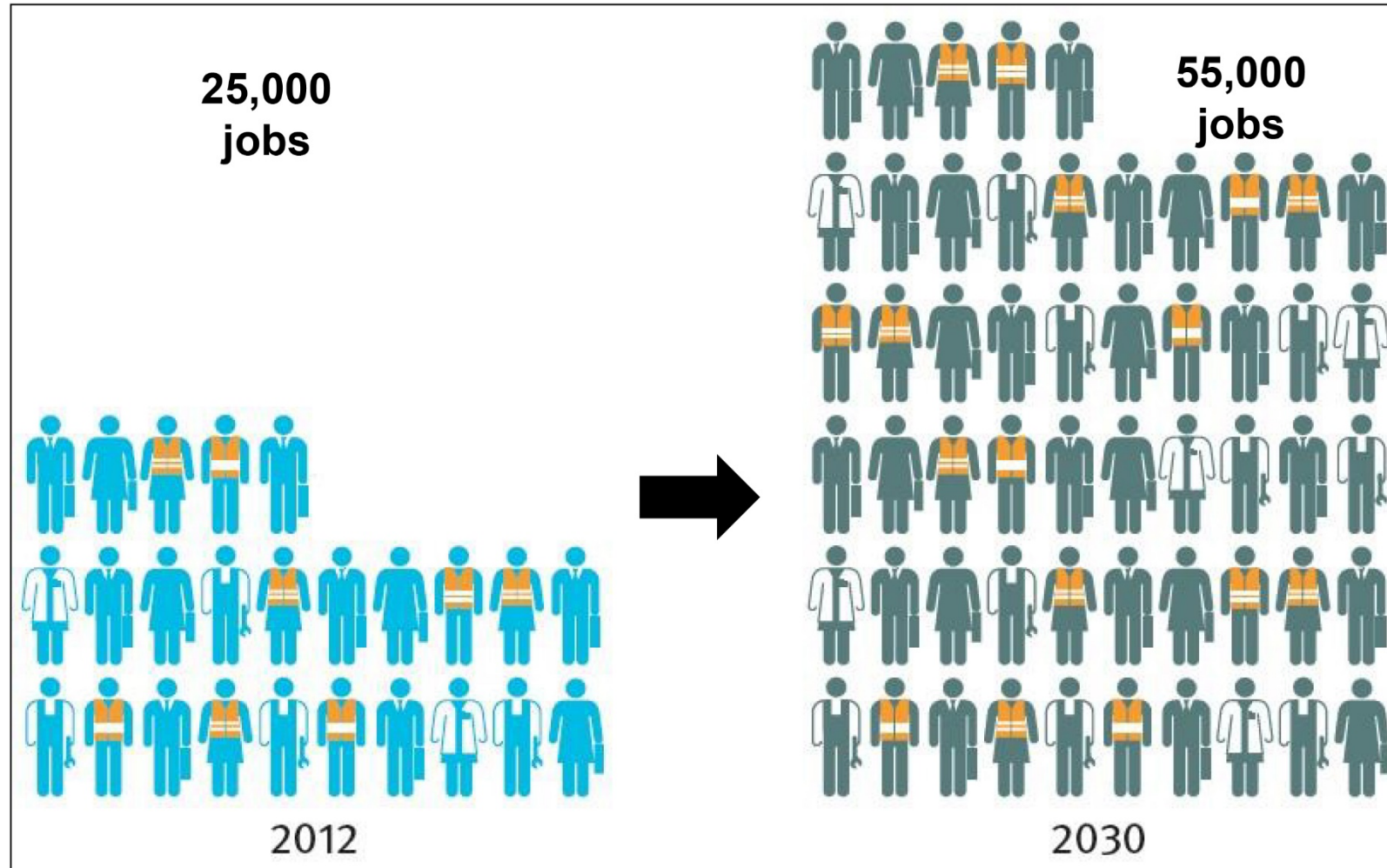
Up-cycling



Down-cycling



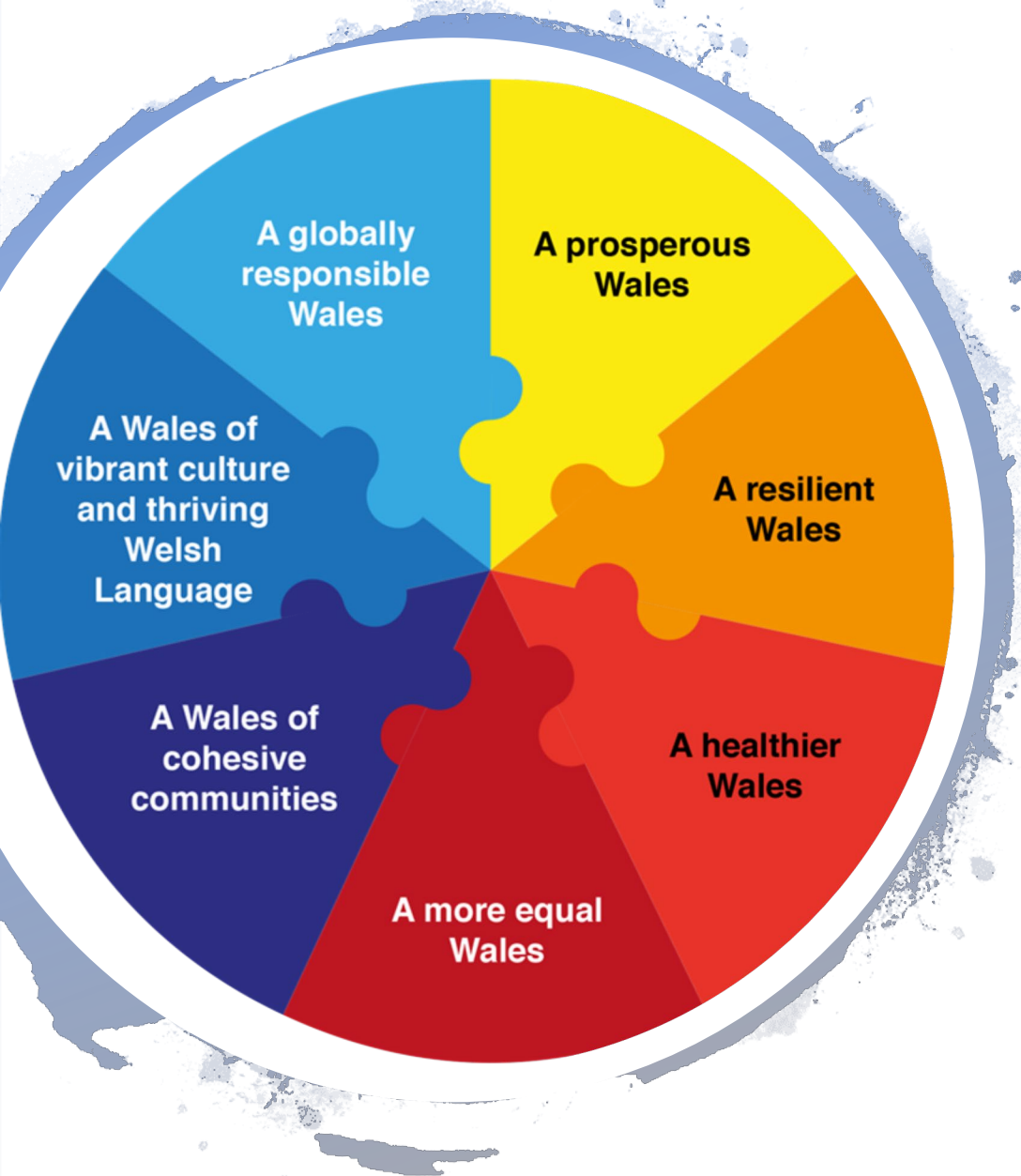
Potential employment benefits to Wales of operating a 'transformational' circular economy



Source: 'Employment and the circular economy - Job creation in a more resource efficient Britain', January 2015; by WRAP and the Green Alliance)

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Wellbeing of Future Generation Act (2015) Wales



- The Act sets out a bold ambition for public services in Wales and many public bodies see it as an opportunity to change their culture and improve how they work
- The Act has been described by many as a ground-breaking piece of legislation, which is far-reaching and pioneering in both its nature and intent. The Act is new for Wales, but it is also unique internationally.
- The Well-being of Future Generations Act gives us the encouragement, the permission and the obligation to make the changes needed to deliver the Wales we want'
- Sophie Howe is the Future Generations Commissioner for Wales

Circular economy contribution to the well-being goals



Goal	Circular economy contribution
A prosperous Wales	• Potential savings to the Welsh economy of over £2 billion by it adopting a circular economy • Potential for up to 30,000 jobs to be created in Wales through moving towards a circular economy. • Significant carbon savings.
A resilient Wales	• Less wastage of food leading to reduced need for food production, leading to reduced impacts on habitats and biodiversity both in Wales and around the world. • Lower demand for other raw materials sourced from around the globe, leading to reduced mining, destruction of ancient forests and exploitation of other undeveloped habitats, thus protecting species and biodiversity. • Reduced greenhouse gas emissions associated with the production of goods consumed in Wales, and a reduced impact of climate change on biodiversity. • Greater resource resilience / security of supply for manufacturing.
A healthier Wales	• Protecting and improving health through reducing emissions associated with waste and its management • Improving health by reducing poverty through creating jobs in the circular economy, saving money (eg. Love Food, Hate Waste) and through the provision of free / low cost household items (via reuse)

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Circular economy contribution to the well-being goals

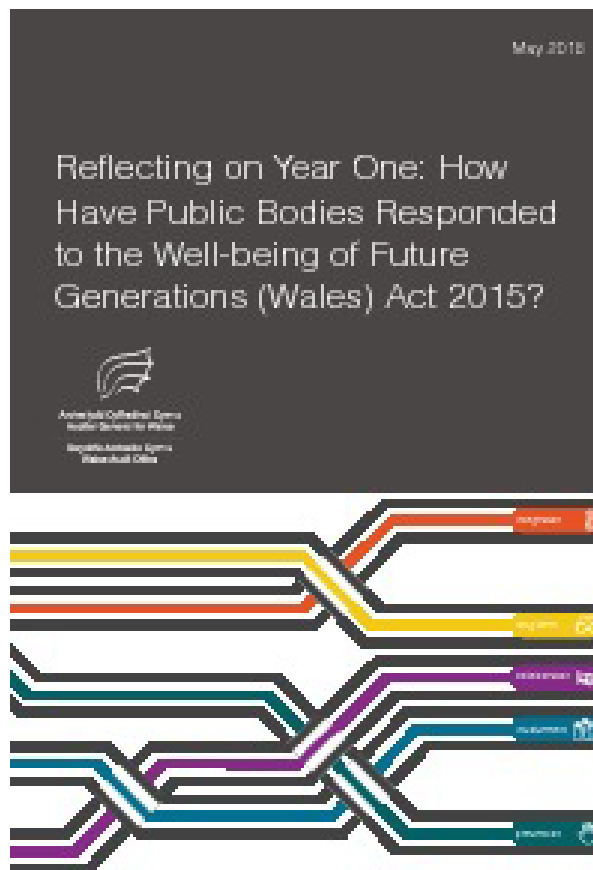
Goal	Circular economy contribution
A more equal Wales	• Providing jobs, training, skills across a diverse range of the population • Providing surplus food and high quality, affordable second hand domestic goods to those in poverty
A Wales of cohesive communities	• Involving and engaging communities in sustainable waste management, including repair, remanufacturing, recycling, reuse and surplus food redistribution
A Wales of vibrant culture and thriving Welsh language	• Further embedding sustainable development behaviours and cultures within people • Using the arts as appropriate to help with raising awareness and behaviour change • Using the Welsh language creatively in communications • Making high value art / craft out of recycle – ‘upcycling’
A globally responsible Wales	• Making an important contribution to the Welsh Government’s one planet resource use goal; • Helping reduce or reverse global biodiversity loss.

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Five ways of working

- Long term thinking
- Prevention
- Involvement
- Collaboration
- Integrations



Reflecting on Year One: Audit Report May 2018

How Have Public Bodies Responded to the Well-being of Future Generations (Wales) Act 2015?

-
- The Auditor General has been clear that the essence of the Act is about changing behaviours and mind-sets
 - The Commissioner has emphasised that change needs to go beyond the duties and to focus on behaviours...
 - *“Don’t expect from the auditor, or from Sophie, a clear ‘this is how to do it’ - so you can go away and tick the boxes. It’s not like that. It is, however, a journey in which I’m engaged, you’re engaged, and Sophie is engaged.”*
 - “...the act will challenge ‘business as usual’ and does not accept the notion that ‘we are “doing this already.”

Questions to be asked:

- In the process of setting, well-being objectives. How different is the process compared to the process for setting corporate objectives?
- Please refer to how you applied the five ways of working.
- How will you know that you embed sustainable development principle in how you work?
- What other key actions have you taken to embed the sustainable development principle in how you work and what impact are they having?
- How will you know that you have embedded the sustainable development principle in how you work?
- Are there any internal barriers to implementing the Act?
- Are there any external barriers to implementing the Act?
- What external support would help you further embed the sustainable development principle?



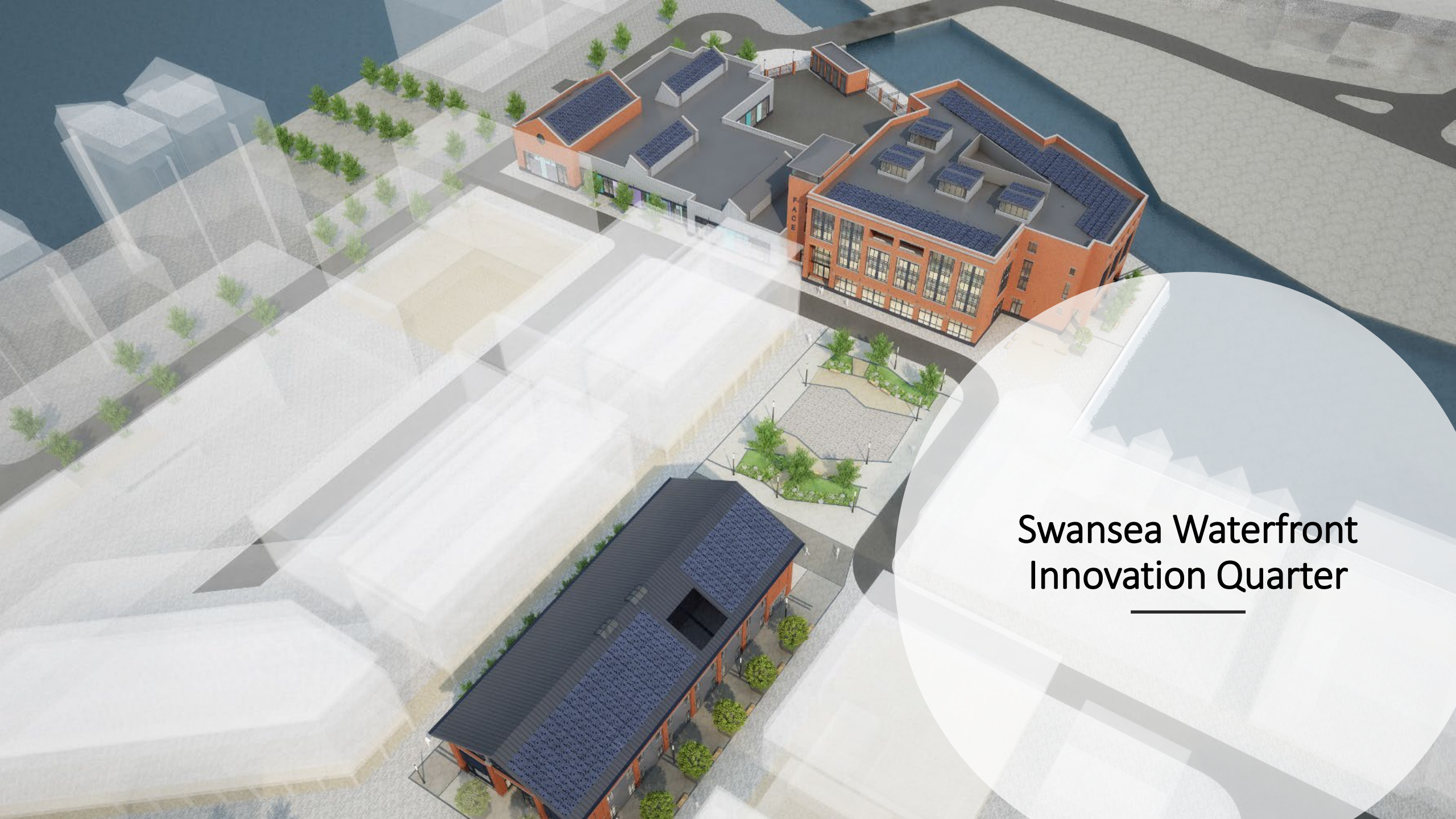
Case study- Recycled bottle glass in the construction industry





Glass recovery 2012 (British Glass)

- About 93% of waste glass produced by businesses, such as pubs and clubs, is recycled, 2010
- Four fifths of councils provide kerbside glass collections to households.
- According to British Glass, 81% of glass recycled in 2005 was re-melted, but in 2010 that had fallen to 64%.
- Re-melt saves about 0.3 tonnes of carbon per tonne of glass recycled; aggregate saves none.



Swansea Waterfront Innovation Quarter

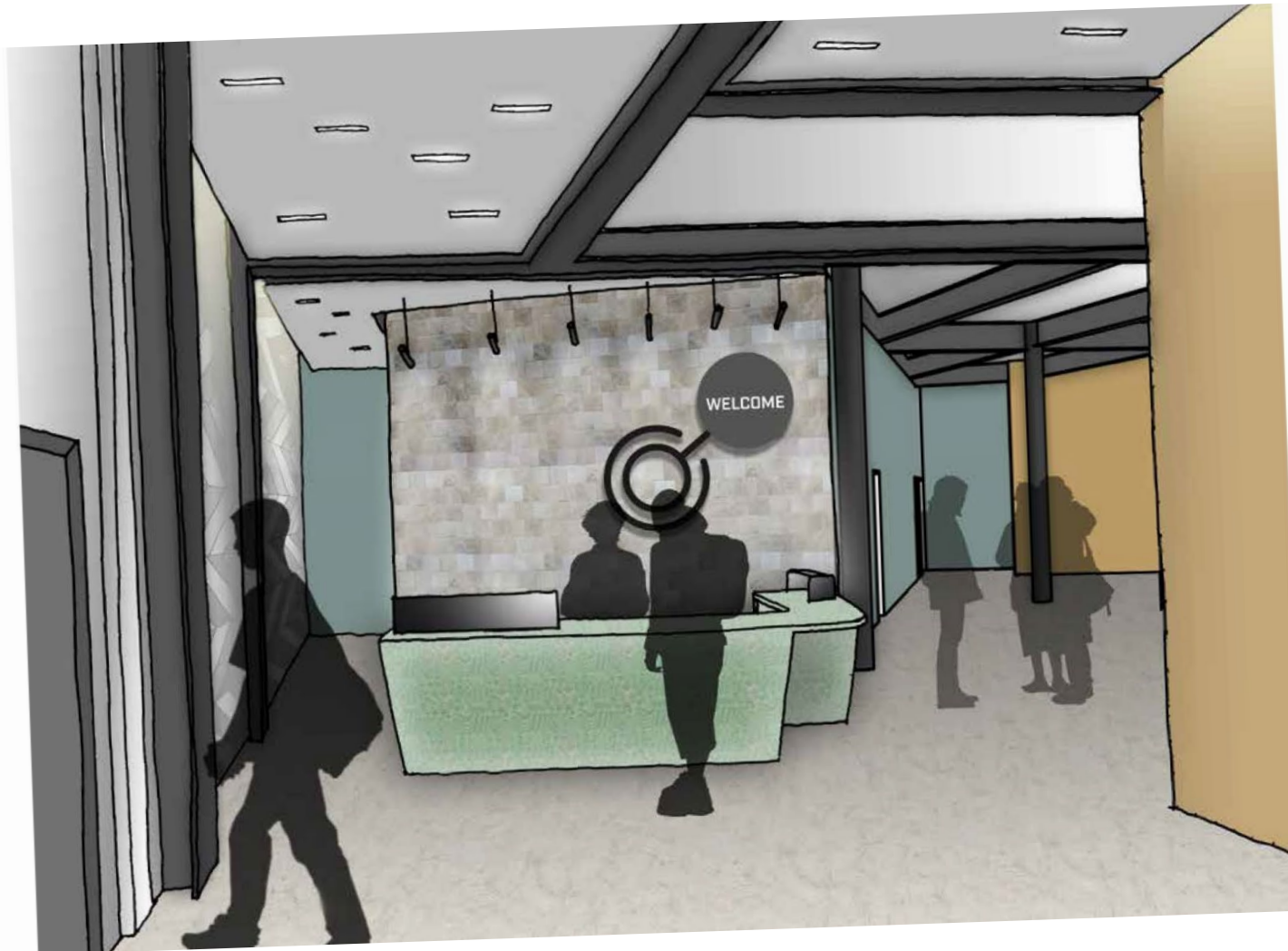
2.72 Materiality

The emphasis here is on a base set of materials that are honest, simple and natural. Recycled, rugged and of the earth. At the same time these will be softened by warm and sound absorbing materials such as felt and cork.

Texture, colour and surface are inspired by minerals and timbers in the environment, worn and weathered by time.

The concept design will build on these and bring together a harmonious set of finishes that are fit for purpose and the design concept.







Showcase: Low Temperature Fused Recycled Glass for use as a reception desk in the IQ Building

- **Aim** Enhance learners' experience through an interdisciplinary life project.
- **Disciplines** Arts, design, architecture, project management, environmental conservation and mechanical engineering
- **Art glass student:** Recycled glass aesthetics, texture and design development
- **Engineering student:** Design and manufacture of a bespoke glass crusher
- **Environmental student :** Carbon footprint of recycle glass manufacturing
- **PCM student:** Impact resistance with/without Recyclamine recyclable epoxy coating
- **Architecture student:** development and making of desk carcass and fittings
- Two students started on this project but did not continue

Videos of the Reception desk

- <https://www.youtube.com/watch?v=JPY1b2X6VnE>
- <https://www.youtube.com/watch?v=sNn5bKZ9qYU>



Thank you for listening

Any questions...

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Founder and Director

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The Sustainable Academy Awards



www.sustainableacademy.wales/about/

Celebrates sustainability excellence, innovation and leadership from across Wales.

Please vote for me...



Votes open until Wednesday 6th November 2019

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