



Circular Economy – Circular Oceans

Keep Wales Tidy 2017



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gymru'n wales
daclus tidy

Circular Economy / Circular Oceans

This briefing paper introduces the concept of the circular economy, some of the background and current policy interest and progress, particularly in Wales. It outlines how the challenge of marine litter fits with circular solutions and provides a number of links and references for further reading and specific policy and practice examples.

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Introduction

The Circular Economy is a phrase which is increasingly familiar in the environment and economic sectors alike and has seen a rapid growth in the last few years which has culminated in the recent, ambitious European Commission Circular Economy Action Plan, adopted in December 2015.

Circular Oceans is the name of a European project in the Northern Periphery & Arctic (NPA) region although the term has had more recent use to refer to those elements of the Circular Economy with a marine element.

There is no definitive birth of the Circular Economy concept but it is largely rooted in sustainable development principles and schools of thought which look to nature as a solution to tackle current environmental problems such as biomimicry (1997) and Cradle to Cradle (2002) which are themselves recent concepts to make it into mainstream policy making. Although different in approach, they both advocate systems approaches and feedback loops of production. The Circular Economy builds on these principles, such as using renewable energy, 'closed loop' recycling and viewing waste as a resource to be used within the production system.

Ultimately, the Circular Economy is a recognition that our current wasteful behaviours are not sustainable and we cannot build our future on a 'take-make-dispose' model. In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value.

There is compelling evidence that this model can spur economic growth and boost employment as well as having a significant positive impact on the environment.

Circular Economy or Green Economy?

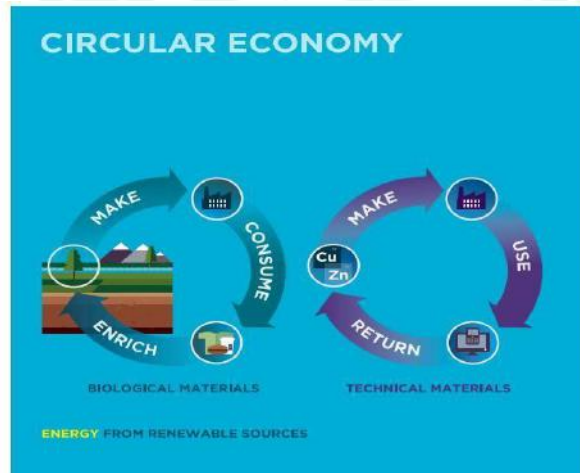
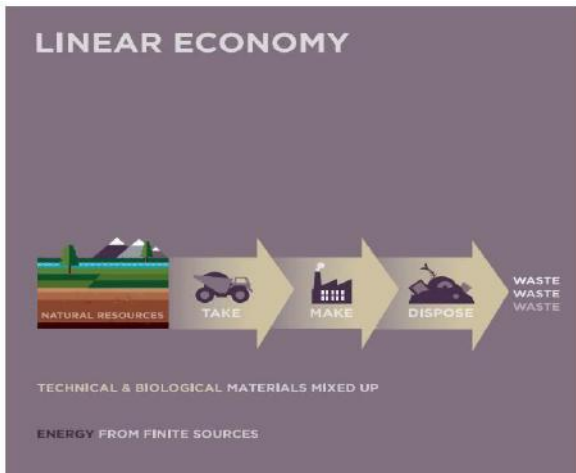
There is some confusion over the term 'circular economy' and the 'green economy' as they are often used interchangeably.

The UNEP definition of a green economy is 'one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive'.

In this sense, a circular economy *is* a green economy. The important difference in the use of terms is that a circular economy is **specifically used to differentiate between the (current) linear economy.**

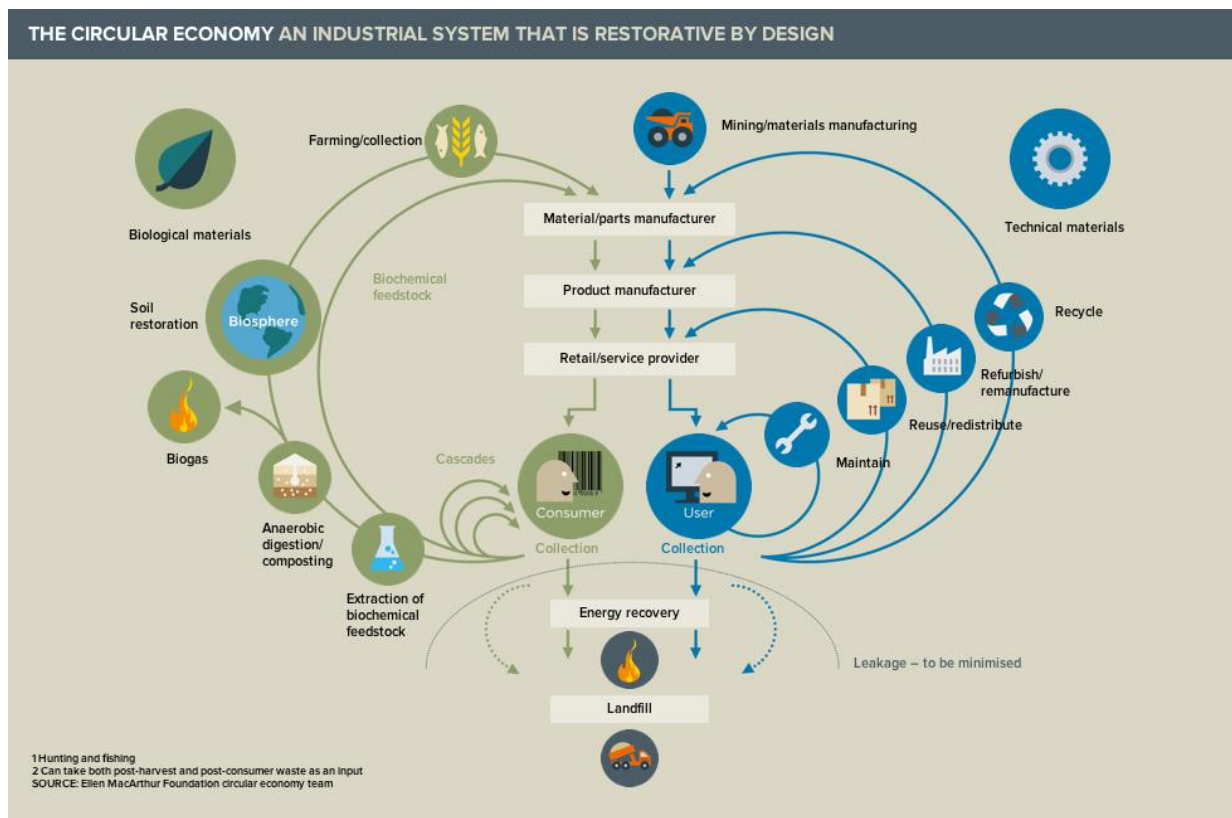
The circular economy also presents a specific model and 'building blocks' whereas broader green economy methods are not as widely agreed. Circular economy discourse is centred around the principles of:

- 'Designing out waste'
- Building resilience through diversity
- Using energy from renewable sources
- Thinking in 'systems'



Implementing these principles involves newly defined roles for producers, manufacturers and consumers. It also tends towards national or regional policies and legislation making engagement with policy makers and other stakeholders much simpler. Conversely, discourse around ‘green economies’ is largely amorphous in nature and is generally considered to include circular economy interventions as well as initiatives on a global scale such as issues around carbon credits and offsetting between nations and ‘natural capital’ discourse. It is also not necessarily confined to the Industry – Consumer relationships which tends to characterise the circular model. In contrast, a circular economy, by its very nature, would be less global (although it does not ignore global supply chains) and therefore does not normally extend to more complex international interventions.

A common misconception is that the circular economy is just about recycling when in fact, it is only a fraction of the system. Recycling is an ‘outer circle’ requiring more energy input than the ‘inner circles’ of repair, reuse and remanufacture. The goal is not just to design for better end-of-life recovery, but to minimise overall energy use. (See diagram above).



The Ellen MacArthur Foundation

The Ellen MacArthur Foundation was established in 2010 by the global yachtswoman after her travels took her to discover how economic resources were used around the world. The mission of the foundation is: *'to accelerate the transition to a circular economy and has played a significant role in getting the concept in to the mainstream'*. The Foundation is overseen by an independent advisory panel of international experts widely respected in the sustainable development field and industry.

The website has a wealth of resources in accessible format and includes the largely cited report ['Towards the Circular Economy: an economic and business rationale for an accelerated transition'](#) which has been a significant driver for policy development in the area since its publication in 2012. Using product case studies and economy-wide analysis, the report details the potential for significant benefits across the EU. The report claims that: *'a subset of the EU manufacturing sector could realise net materials cost savings worth up to \$630 billion p.a. towards 2025—stimulating economic activity in the areas of product development, remanufacturing and refurbishment'*.

More recent reports include ['A New Plastics Economy'](#), ['A Circular Economy vision for a competitive Europe'](#) and ['A toolkit for policy makers'](#).

The Foundation also runs [The Circular Economy 100](#) which is a pre-competitive innovation programme established to enable organisations to develop new opportunities and realise their circular economy ambitions faster. It brings together corporates, governments and cities, academic institutions, emerging innovators and affiliates in a unique multi-stakeholder platform. Specially developed programme elements help members learn, build capacity, network, and collaborate with key organisations around the circular economy.

The argument for the Circular Economy

There is an obvious environmental imperative to make the transition to a circular model. Current levels of resource use and consumption are unsustainable in their current form and localising supply chains, amending disposable designs for products and changing consumer behaviour and awareness is inarguably a more positive future for our environment. The current 'take-make-dispose' linear economy approach results in massive waste – according to Richard Girling's book [Rubbish!](#) (2005), *'90% of the raw materials used in manufacturing become waste before the product leaves the factory while 80% of products made get thrown away within the first six months of their life'*

According to a recent study on Sweden by a global think tank, moving to a Circular Economy could lead to a [70% cut on carbon emissions by 2030](#)

Although not without its critics, the business case for a circular economy is compelling. Analysis by [McKinsey](#) estimates shifting towards circularity could add \$1 trillion (around £700bn) to the global economy by 2025 and create 100,000 new jobs within the next five years. Under the Waste & Resources Action Programme's [Circular Economy 2020 Vision](#), the European Union (EU) could benefit from an improved trade balance of £90 billion and the creation of 160,000 jobs.

Manufacturers are most likely to reap the benefits quickest given their reliance on raw materials – McKinsey argues that a subset of the EU manufacturing sector could realise net materials cost savings worth up to \$630 billion per annum by 2025.

The model also contributes to a significantly greater resilience to global risks such as climate change, scarcity issues, economic crises and political disruption. Indeed, the circular model is being promoted by the [World Economic Forum](#) (who undertake the annual [Global Risks report](#)) who state that *'Linear consumption is reaching its limits. A circular economy has benefits that are operational as well as strategic, on both a micro- and macroeconomic level. This is a trillion-dollar opportunity, with huge potential for innovation, job creation and economic growth.'*

An example on the WEF website of the Circular Economy in action states that ‘The cost of remanufacturing mobile phones could be reduced by 50% per device, if the industry made phones that were easier to take apart, improved the reverse cycle and offered incentives to return phones’

WRAP produced a [report](#) last year which claimed that expansion of the circular economy could create 3 million extra jobs and reduce unemployment by 520,000 across EU member states by 2030.

The Circular Economy is widely accepted as new, viable economic model although the language is largely the same.

Although there has been some reluctance to engage from the more conservative business associations, the benefits of the circular model appear infinite and is becoming an increasingly agreeable prospect across political spectrums of the UK and Europe. A 2020 Conservatives UK report entitled ‘[Sweating our Assets](#)’ argues that: ‘If we are going to be both entrepreneurial and build greater resource resilience in our economy we can and should be ‘sweating’ much more value out of ‘waste’. Other nations are leading the way and we run the risk of falling behind – in Japan the circular economy and low carbon sector was worth £128.1 billion in 2011/12 alone.’

Elsewhere, Scotland has demonstrated a keen interest in developing their own circular economy ambition. At the Scottish Resources conference last year, Scottish Government Environment Secretary Richard Lochhead said: “We are making progress in Scotland with regard to realising the exciting opportunities presented by the circular economy, and looking at how we make the best use of our precious resources and make things last – a principle that we can apply from everything from our clothing to industrial processes in key industries. The business opportunities for Scotland are tremendously exciting...”

Currently, increased productivity and innovation in the circular economy is primarily being led by big business.

‘Ground-level innovation in this field is being driven by large corporations who are piloting business models based on leasing, product performance, remanufacture, and extended lifecycle thinking. These companies have the power to effect change quickest, given their geographical reach through global supply chains’ ([Perella, M. The Guardian](#)). While the circular economy also relies on the involvement of SMEs, take-up in this sector remains limited. According to a Guardian article, a recent survey of nearly 300 small businesses across England, France and Belgium found almost 50% had not heard of the concept.

The Circular Economy in Wales

The transition to a circular economy will look different in every country. It will be shaped by each country’s industrial strengths, history, economic priorities and local politics. Work has already been done on the potential for the Circular Economy in Wales by the Ellen MacArthur Foundation and commissioned by WRAP in 2014.

The [report](#) identified that a transition to a circular economy model could have a particularly positive impact on a small country such as Wales and identified potential material cost savings of up to £2.0bn per year. The report includes a set of near-long term recommendations for the transition to a circular model and includes an honest breakdown of the challenges.

Whilst applauding Wales’ progress in the field of sustainable development which can lay the groundwork for transition, the report warned that;

- There is a tendency in both public and private sectors to interpret circular economy as just another recycling, ‘green’ or sustainability initiative, and to revert to the traditional view of waste as a burden.
- Fragmentation of objectives and targets at a government level means that departments often struggle to collaborate on broader, cross-cutting agendas. The circular economy spans

economic, environment, industry and employment sectors, requiring a joined-up approach and means of coordination between stakeholders.

- This issue of fragmentation proves a barrier for business when it comes to local authority recycling collections: not only do the differing requirements cause confusion, they also disincentivise pure materials streams and hence effective valorisation of waste.

However, *'as a result of its continued pursuit of recycling and resource-efficient strategies, Wales is ideally placed to take the next step and "upgrade" to the circular economy, securing a leadership position in the process... The benefits of this new circular economy for a region like Wales would be manifold: cost savings throughout industry, increased resilience to economic and political shocks, innovation, the potential for job creation, land productivity and soil health, and, more generally, a positive economic climate.'*

Circular Oceans in Practice & Policy

The Institute for European Environmental Policy (IEEP) has produced a report specifically on the issue of policy and practice to tackle [plastic marine litter and circular economy solutions](#).

The report facts on marine litter and where it comes from (with a particular focus on the North Atlantic region), its impacts, and what circular economy measures can help keep plastic and its value in the economy and out of the seas. Examples are given of innovative solutions, their costs and benefits and presents a roadmap for a way forward.

There is a significant breadth of options for adopting ways and measures to tackle marine litter - in particular those that can support or enhance local economies (marine or terrestrial). Workable solutions rely on the ability of policy mechanisms and/or business/consumer practice to 'close the loop', ie; that waste practices (at every level) should address plastics *before* they enter the ocean.

Solutions could include: research and development (e.g. for product innovation), regulation (e.g. bans, application of extended producer responsibility), direct investments (e.g. government spending on waste management infrastructures), market based instruments (e.g. deposit-refund schemes or product charges), awareness-raising tools (e.g. campaigns and smartphone apps) and clean-up measures. Which instrument or instrument mix is best depends on the particular marine litter problem being addressed and the country institutional and regulatory context.¹

Specific recommendations for action both from the IEEP report and the EU Circular Economy Action Plan include:

1. **Extended Producer Responsibility:** Use EPR to avoid certain types of marine litter, most notably single-use packaging items.
2. **Research into product design** to facilitate reuse, repair, remanufacture and recycling, and complement this by providing more information on the plastic composition of products.
3. **Bans for unnecessary and damaging products** or activities where viable substitutes exist - e.g. plastic microbeads in cosmetics can be replaced by ground nut shells, marble particles or naturally-grown polymers, and plastic blasting in shipyards can be replaced by ultra high pressure water jets.
4. **Improved legislation:** Provide clear definitions of polymers, waste and secondary raw materials. Manufacturers need to design their products and packaging to fit into existing recycling systems.
5. **Economic incentives targeting consumption:** Make greater use of economic incentives to make market signals part of the solution - i.e. ensure that plastic has a price and is therefore more widely recognised as a valuable resource – e.g. apply deposit-refunds to bottles, and charges/taxes to plastic bags, disposable cutlery, and other one-use items.
6. **Transparency and labelling:** Improve transparency on the chemicals contained in plastics –

¹http://minisites.ieep.eu/assets/2126/IEEP_ACES_Plastics_Marine_Litter_Circular_Economy_briefing_final_April_2017.pdf

to help with decisions on remanufacture and recycling. In addition, transparency on where personal care and cosmetic products (PCCPs) do and/or do not contain plastics. Explore the implications for additives such as flame retardants, plasticisers, pigments, fillers, and stabilisers.

7. **Waste management measures:** Invest in waste collection infrastructure (at ports), waste management infrastructure and wastewater treatment facilities to avoid dispersion of litter into the marine environment - particularly in coastal areas or near rivers.
8. **Awareness-raising:** Raise awareness among consumers to improve waste disposal (littering and waste separation), and also better inform purchasing habits to increase demand for sustainable substitutes - e.g. cosmetic products not containing microbeads (e.g. via Beat the Bead), multiuse bottles and bags, purchase of washing machines with filters.
9. **Fishing for litter:** combined incentives to encourage action, and develop new products from waste. While this is not the most cost-effective of solution (efforts higher up the hierarchy are preferable), it can create interesting branding opportunities for manufacturers, raise awareness and contribute to reducing pressure on the marine environment in selective places.
10. **Improved implementation:** In addition, there is a need for better implementation of existing legislation on the release of litter, from terrestrial sources and at sea – e.g. The MARPOL Convention, Waste Framework Directive, Directive on Port Reception Facilities, Water Framework Directive and, Marine Strategy Framework Directive.

There is a powerful economic argument for linking the challenge of marine litter to circular-based solutions, with potential to create local employment and new business and markets, particularly in Wales. New opportunities would be primarily local in their delivery, supporting more sustainable models of economic growth such as the [Foundational Economy](#) approach.

Keep Wales Tidy are developing a project with the innovative recycling organisation 'Terracycle' to capture all of the marine litter collected by community groups across Wales so that they can be [used to make shampoo bottles](#). We believe that this development is a good start to tackling marine litter with a circular solution and welcome further developments in this regard so that the 'closed loop' system is developed and remains in Wales as much as possible so that we can capture the economic potential in time. Meanwhile, there is a great deal that we can learn from elsewhere, particularly initiatives in Northern Europe.

Circular Oceans EU Project

The Circular Oceans project is focusing on innovation in this circular model particularly for fishing gear. The Circular Oceans project aims to act as a catalyst to motivate and empower remote communities to develop sustainable and green business opportunities that will enhance income generation and retention within local regions.²

Their research to date has included research on barriers and mechanisms, innovation in 3d printing for fishing gear, research into the properties of fishing gear materials and its potential use in the building sector. Their outputs also include:

- Examples of pilot work undertaken using fishing nets and ropes within remote regions
- Open source eco-innovation hub for recycling and repurposing marine litter allowing the exchange of ideas and techniques
- Eco-innovation toolkit - publications to support partners and end-users on circular economy innovation (related to discarded fishing nets)
- Research feasibility and cost/ benefit analysis of fishnet collection for export and recycling

² <http://www.circularocean.eu/about>

- Guide to supportive policy and regional frameworks regarding innovation within local regional and national levels
- Policy and institutional barrier reports

Further information can be found at: <http://www.circularocean.eu/>

Further Information

Circular Innovation Conference, Reykjavik, Iceland 17th July 2017 – Presentations & Speakers:
<http://www.circularocean.eu/circularevents/circular-ocean-innovation-conference/>

Ellen MacArthur Foundation: (Newsletter link at the bottom of the home page):
<http://www.ellenmacarthurfoundation.org/>

Guardian Sustainable Business > Circular Economy Series. News, analysis and web talks.
<http://www.theguardian.com/sustainable-business/series/circular-economy>

WRAP (Waste Resource Action programme). UK charity that works on waste action and CE initiatives
<http://www.wrap.org.uk>

European Circular Economy Action Plan:

EC website portal: http://ec.europa.eu/environment/circular-economy/index_en.htm

Legal Documents: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614>





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