

THE WELSH DOUGHNUT

A framework for environmental sustainability and social justice

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The world faces twin challenges: delivering a decent standard of living for everyone, while living within our environmental limits. These two interwoven concerns are captured in Oxfam's Doughnut model that offers a framework to create a safe and just place for humanity to exist.

At the national level, the Welsh Doughnut model suggests areas of life that might constitute a social floor below which no one in Wales should fall, and begins the process of identifying which environmental boundaries might be useful for incorporation into a Welsh national analysis. The report provides a snapshot of Wales' status by assessing its current position against this suggested set of domains and indicators.

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EXECUTIVE SUMMARY

Our planet is shared by over seven billion people. While a small number of people use the majority of resources and enjoy unfettered access to public services, too many face extraordinary challenges in building dignified lives, free of poverty, powerlessness and fear, where they have access to essential services including education, healthcare and clean water.

The world faces twin challenges: delivering a decent standard of living for everyone, while living within our environmental limits. The Oxfam Doughnut model brings these dynamics together visually to demonstrate that, just as beyond the environmental ceiling lies unacceptable environmental stress, beneath the social floor lies unacceptable human deprivation.

This research report outlines the concept of the Doughnut model and presents the results produced when applying the concept to Wales. The model visualizes a space between planetary boundaries and social floor where it is environmentally safe and socially just for humanity to exist; it highlights the main social and environmental issues that we face today, and where possible shows how Wales performs in relation to these.¹

It is hoped that this report can feed into ongoing policy debates and help spark new ones. The wealthy nations of the world are the winners in our current socio-economic model; while the poorest people, both globally and within wealthy nations, pay the price. By bringing social and environmental considerations together, a broader dialogue can be initiated between those working for social justice and those working for environmental justice – two inter-linked areas of policy and practice.

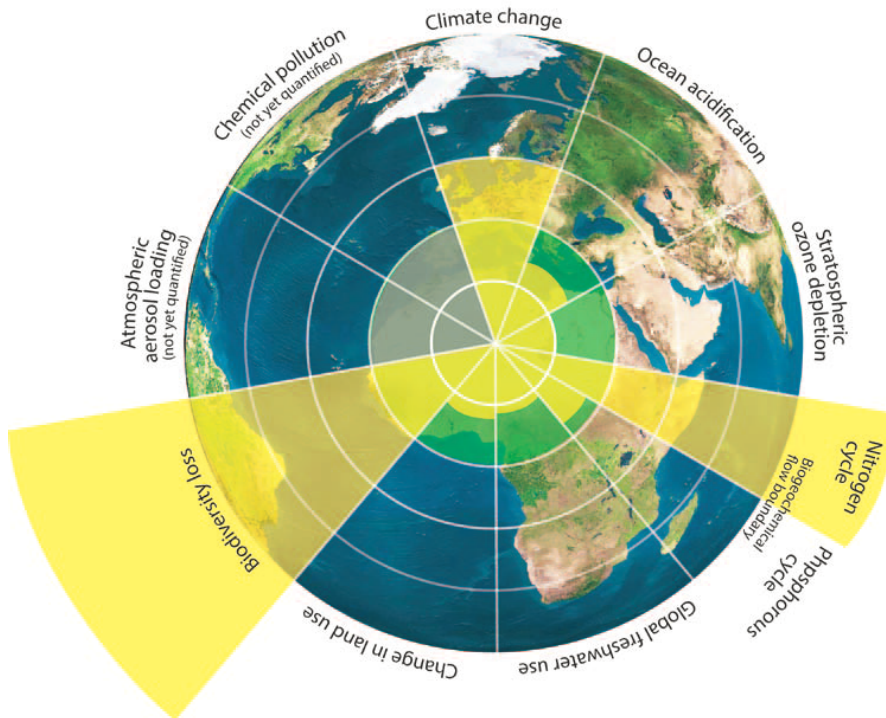
The environmental elements of the Doughnut flow largely from the work of a team of leading Earth system scientists, including Johan Rockström, Will Steffen, the Stockholm Resilience Centre (SRC) and the Stockholm Environmental Institute (SEI).

In 2009, Rockström and others published a paper entitled *Planetary Boundaries: Exploring the Safe Operating Space for Humanity*, which highlighted the risk of crossing critical thresholds in the Earth's biophysical processes (Figure 1).² They sought to identify planetary boundaries – environmental tipping points – within these processes, beyond which vital Earth systems would become unpredictable and/or unsafe. Though not without its critics, the planetary boundary approach has been used by the UN and European Commission, as well as many civil society organizations. In 2013, the SRC and SEI sought to develop a methodology to apply this approach at a national level, using Sweden as an example.³ 2015 saw the planetary boundaries updated by Will Steffen *et al.*⁴

Changes within these processes, driven by human activity, are already causing severe adverse impacts on weather systems, as well as on our ability to produce food and the availability of fresh water. Planetary biodiversity loss and the nitrogen cycle boundaries have already been breached, while the climate change boundary is dangerously close to being breached. The updated report from Steffen *et al* shows that the safe limit has also now been breached in regards to the phosphorus cycle.⁵

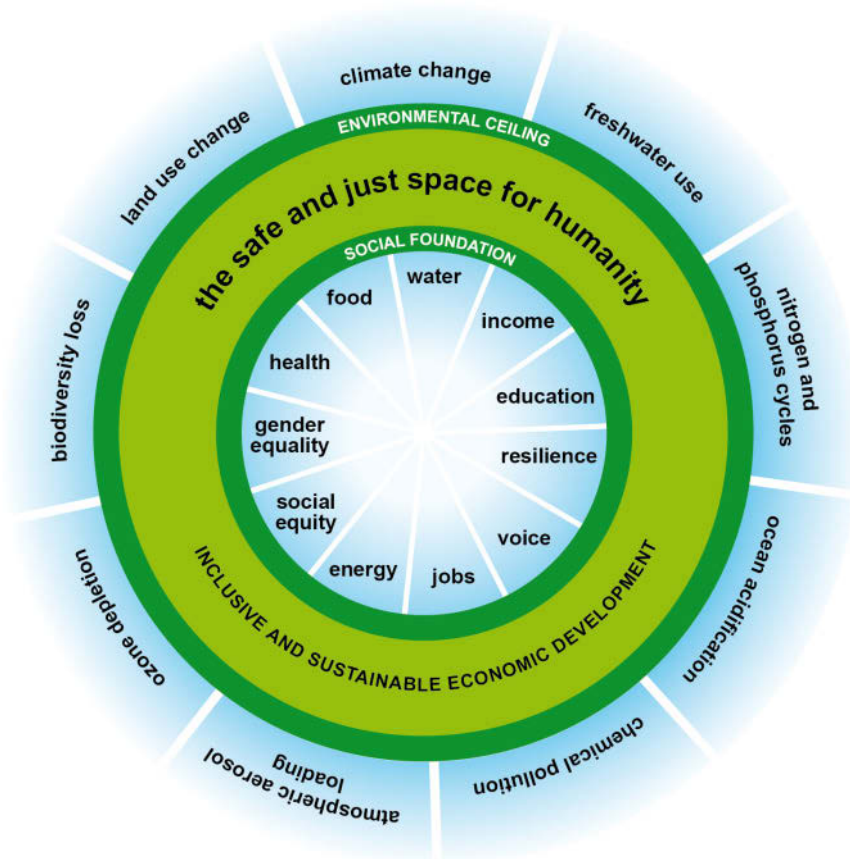
In 2012 Oxfam published a discussion paper, which sought to combine this environmental ceiling beyond which Earth systems may become irreversibly unstable, based on the planetary boundary approach, with a social foundation below which it is unjust for people to fall.⁶ The social foundation (which we call a 'social floor' in this report) includes domains relating to access to food, income, energy and security. This combination of environmental ceiling (outer ring) and social floor (inner ring) is presented in what has become known as the Oxfam Doughnut model (Figure 2). The area between the outer and inner rings therefore represents a safe and just space within which to exist.

Figure 1: SRC Planetary Boundaries



Source: Reproduced from SRC (2013)

Figure 2: Oxfam's Doughnut Model



Source: K. Raworth (2012)

The Doughnut model demonstrates performance against a wide range of social and environmental indicators. This allows for a more comprehensive understanding of the impacts of our approaches to socio-economic development and highlights the areas in which we are failing both current and future generations.

The concept has gained traction internationally as a growing number of academics, governments and NGOs develop their own national analyses, while the UN has shown an interest in using the framework to feed into the Sustainable Development Goals. Oxfam is conducting similar studies in South Africa and Brazil, and has completed separate studies for Scotland and the UK.⁷

THE WELSH DOUGHNUT REPORT

The Welsh Doughnut provides a snapshot of the current situation by assessing performance across a wide range of indicators. While the original Doughnut model, developed by economist Kate Raworth while she was a researcher with Oxfam, suggested possible social floor domains and indicators, it was recognized that these would need to be adapted for different national contexts. We have therefore selected domains that fit the Welsh context; however, these selections remain open to debate and revision.

The domains that we suggest as constituting a social floor are based on existing research regarding what people in the UK deem to be important outcomes in today's society. A variety of sources, including many reporting consensus-based notions of minimum standards, along with discussions with subject experts, have been used to identify the following domains: connectivity, crime, education, energy, food, governance, health, housing, income, local environment, sense of support, and work.

For the environmental ceiling, the paper identifies those planetary boundaries put forward by Johan Rockström and the SRC/SEI that are useful for incorporation into a national UK analysis. Following an assessment to determine whether they could be meaningfully measured at a national level, air quality, biodiversity loss, chemical pollution, climate change, land use change, nitrogen cycle, ocean health, ozone depletion, and the phosphorous cycle have been selected. The methodology used also leans heavily on the SRC's work on downscaling the global planetary boundaries to apply at a national level for Sweden.⁸

It should be noted that the results provide a description of where Wales is now and do not capture either historical developments or the direction of travel within each domain.

The picture painted by the Welsh Doughnut is stark. Wales significantly outstrips proposed boundaries in nearly all of the environmental domains identified:

- by 55 percent in terms of biodiversity loss (measured via decline in farmland birds);
- by 64 percent in terms of ocean health (measured via the percentage of UK fish harvested sustainably);
- by 250 percent in terms of land use change;
- by 410 percent in terms of climate change (measured by emission of MtCO₂/year).

While there is some good news in terms of phasing out of ozone depleting substances, Wales' impact upon planetary boundaries is far beyond what its population size can justify. We recognise the various steps taken to make Wales more sustainable and in particular look forward to the development and implementation of the Welsh Government's *Well-Being of Future Generations Bill*.⁹ However, the fact remains that Wales significantly outstrips proposed boundaries in nearly all of the environmental domains identified (Figure 4, Table 2). At the same time, inequalities in the distribution of Wales' wealth are causing deprivation across many

indicators as people find themselves out of work, unable to afford to heat their homes and forced to visit food banks or simply go without enough food (Figure 3, Table 1).

The Welsh Doughnut demonstrates that our current economic model is, in many ways, both environmentally unsafe and socially unjust. The report shows that 26 percent of the adult population lack any formal qualification; 40 percent of households are in fuel poverty; over half (51 percent) of people feel they have no say in what the government does; and 16 percent of people access the natural environment less than once per week. The report provides a visual representation of Wales' performance, while substantiating the need for significant change in the way we produce, consume and distribute resources if we are to develop an environmentally and socially safe and just space within which to exist.

The environmental and social realities outlined in the Doughnut are not set in stone. Choices can be made to develop a more environmentally sustainable future. Debates surrounding potential solutions are ongoing and are focussed on changes to industrial and agricultural production, consumption patterns and broader mechanisms to tackle resource demand. We now require the political will to implement policies designed to shape such decisions and tackle the detrimental impacts created by our production and consumption patterns.

Nor are the social failures described inevitable. They are the result of the way we currently organize our society. They are the result of successive governments' policy choices on how we use the tax system and public spending, as well as how we regulate and deliver services and provide support for our citizens. A more equal distribution of the wealth could create a social floor where all citizens enjoy what we define as the minimum acceptable standards for all.

The report makes no claim to have uncovered the definitive safe and just operating space for society. However, the Doughnut model does provide a set of goals or objectives, which – if delivered – would make for a much more sustainable society, organized in a way that delivers a good quality of life for all, without compromising the ability of others either here or abroad, now or in the future, to attain an acceptable quality of life.

Table 1: Social floor results (Wales 2014)

Domain	Sub-domain	Indicator	Result
Connectivity	Internet access	People who have no internet connection due to barriers such as affordability and complexity	8% of households lack an internet connection due to barriers (Wales 2013-2014)
	Transport	No indicator identified	
Crime		Risk of victimization	16% of adults were victims of crime within the past 12 months (Wales 2013-14)
Education		Adults lacking any formal qualifications	26% of adult population lack any formal qualifications (Women 28%, Men 24%) (Wales 2011)
Energy		Fuel poverty – 10% or more of income required to be spent on all energy	40% of households are in fuel poverty (Wales 2013).
Food		Adequate diet (as defined by PSE:UK)	7% of people cannot afford an adequate diet (UK 2012)*
Governance		Sense of personal political efficacy	51% of people feel they have no say over what government does (Wales 2012)
Health	Physical	Years of healthy life expectancy (HLE)	Women in the most deprived areas in Wales have 13% less than the average number of years of healthy life expectancy (Men 14%) (Wales 2009)
	Mental	Anxiety or depression	21% of adults recently experienced a high level of anxiety (Wales 2014)
Housing		Overcrowding	3% of households are overcrowded (Wales 2011)
Income		Households below 60% average income – after housing costs (HBAI-AHC)	24% of households in relative poverty (Wales 2013)
Local environment		Access the natural environment once per week	16% of people access the natural environment less than once a week (Women 17%, Men 15%) (Wales 2011)**
Sense of support		Support from family, friends and others	10% of people have little or no support in times of need (UK 2012)*
Work		People lacking satisfying work	19% of people lack satisfying work (Wales 2014)

* For these domains there were insufficient Welsh data sets available and we have been forced to rely upon UK results. See specific sections for details.

** This result is not directly comparable with results for the UK or Scotland. See specific section for details.

Figure 3: Social floor – Wales 2014

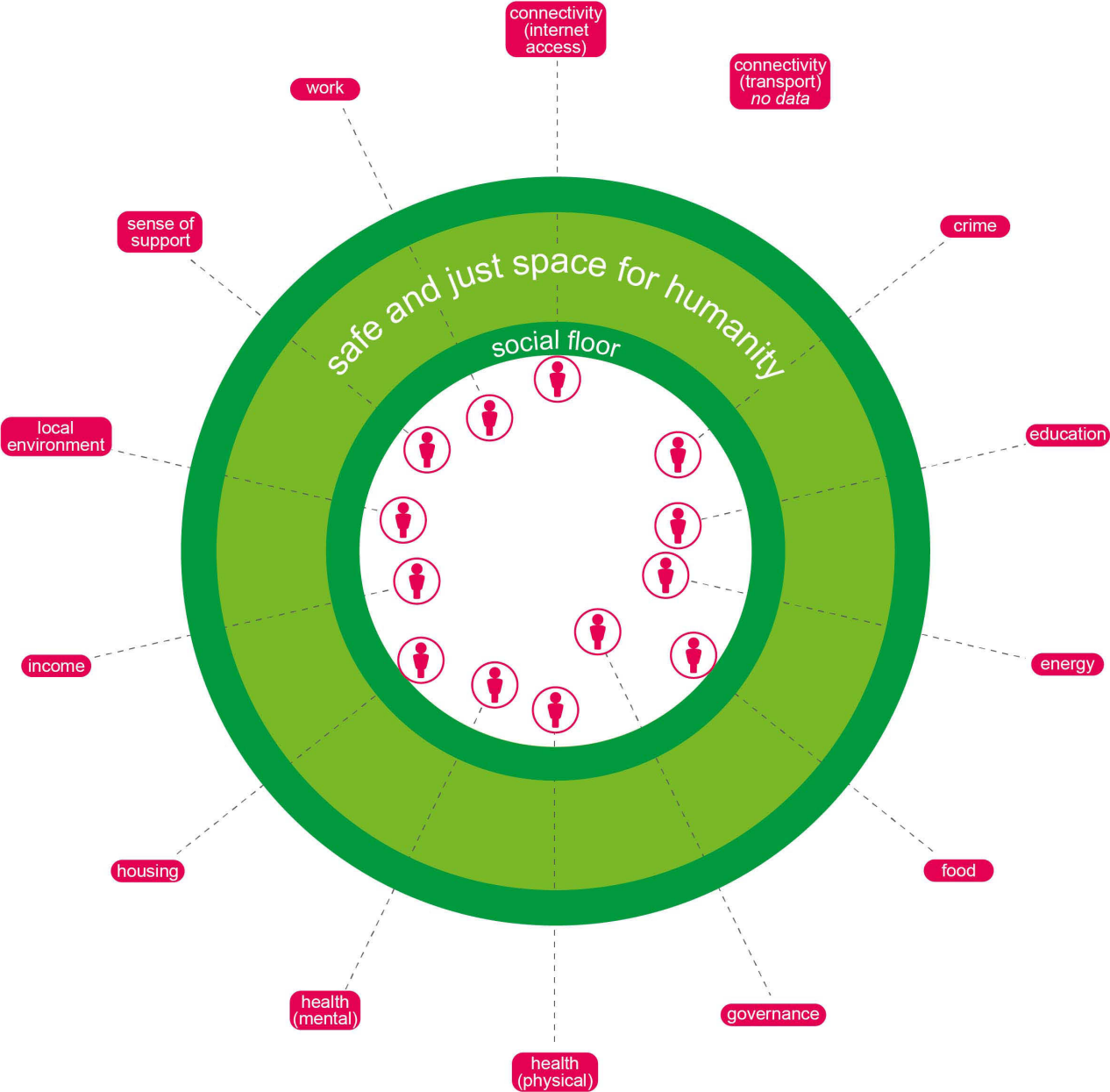
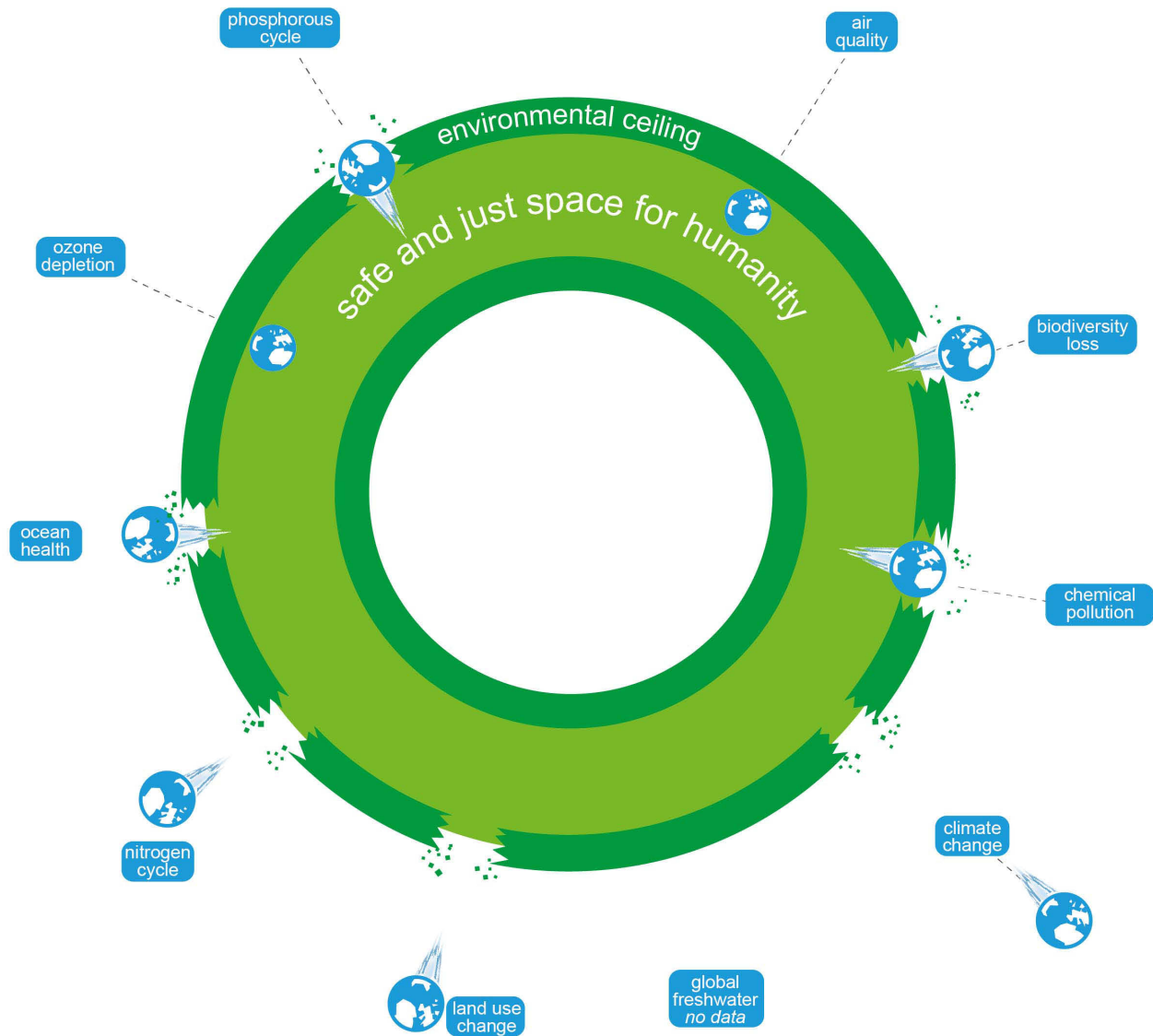


Table 2: Environmental ceiling results (Wales 2014)

Domain	Indicator	Boundary	Result
<i>Air quality</i>	Particulate concentration (PM10)	World Health Organization (WHO) recommend upper limit of 20 μgm^3 annual mean	Annual mean is 18 μgm^3 Average annual PM10 levels at roadside testing sites are 10% lower than WHO upper limit (Wales 2014) Boundary not exceeded
<i>Biodiversity loss</i>	UK Farmland Birds Index	The 1970 baseline index	55% of farmland bird species have declined since 1970 (UK 2013)*
<i>Chemical pollution</i>	Chemical quality of Welsh rivers	Failure to achieve classification of <i>good</i> chemical quality	1% of rivers fail to achieve good chemical quality (Wales 2009)
<i>Climate change</i>	Consumption of CO ₂ (MtCO ₂)	Stockholm Resilience Centre (SRC)-based UK boundary: 127.4 MtCO ₂ /year	650 MtCO ₂ /year Exceeded boundary by 410% (UK 2011)*
<i>Global fresh water</i>	No data		
<i>Land-use change</i>	Land use change (ha)	United Nations Environment Programme (UNEP)-based per capita UK boundary: 0.2 ha/capita	0.7 ha/capita Exceeded boundary by 250% (UK 2007)*
<i>Nitrogen cycle</i>	Imports of manufactured nitrogen (MtN)	SRC-based UK boundary: 0.3185 MtN/year	1 MtN/year Exceeded boundary by 214 % (UK 2012)*
<i>Ocean health</i>	% of fish stocks harvested sustainably by UK vessels	100% of fishing classified as sustainably harvested	64% of UK fish harvested unsustainably (UK 2012)*
<i>Ozone depletion</i>	Ozone-depleting Substances (ODS)	Consumptive use of ODS	Zero emissions of ODS Boundary not exceeded
<i>Phosphorous cycle</i>	Phosphorous loads in Welsh rivers	Poor/bad loads of phosphorous in rivers.	3% of Welsh river testing sites have poor or bad loads of phosphorus (Wales 2013)

* For these domains there were insufficient Welsh data sets available and we have been forced to rely upon UK results. See specific sections for details.

Figure 4: Environmental ceiling – Wales 2014



CONCLUSIONS

The evidence brought together in this report paints a stark picture. Almost one-quarter of households in Wales are living in relative poverty, with 40 percent of households unable to heat their homes adequately. Too many people are going hungry, living in overcrowded housing, experiencing poor health and anxiety, with little access to social support networks. All of these societal failures are intricately linked to the long-term and systemic issue of inequality – they create it, sustain it and flow from it.

Not only does the Doughnut highlight the degradation of people's life experiences, it also shines a light upon the degradation of our local and global ecosystems. We live on a fragile planet which is under increasing stress to the extent that we are transgressing a number of planetary boundaries.

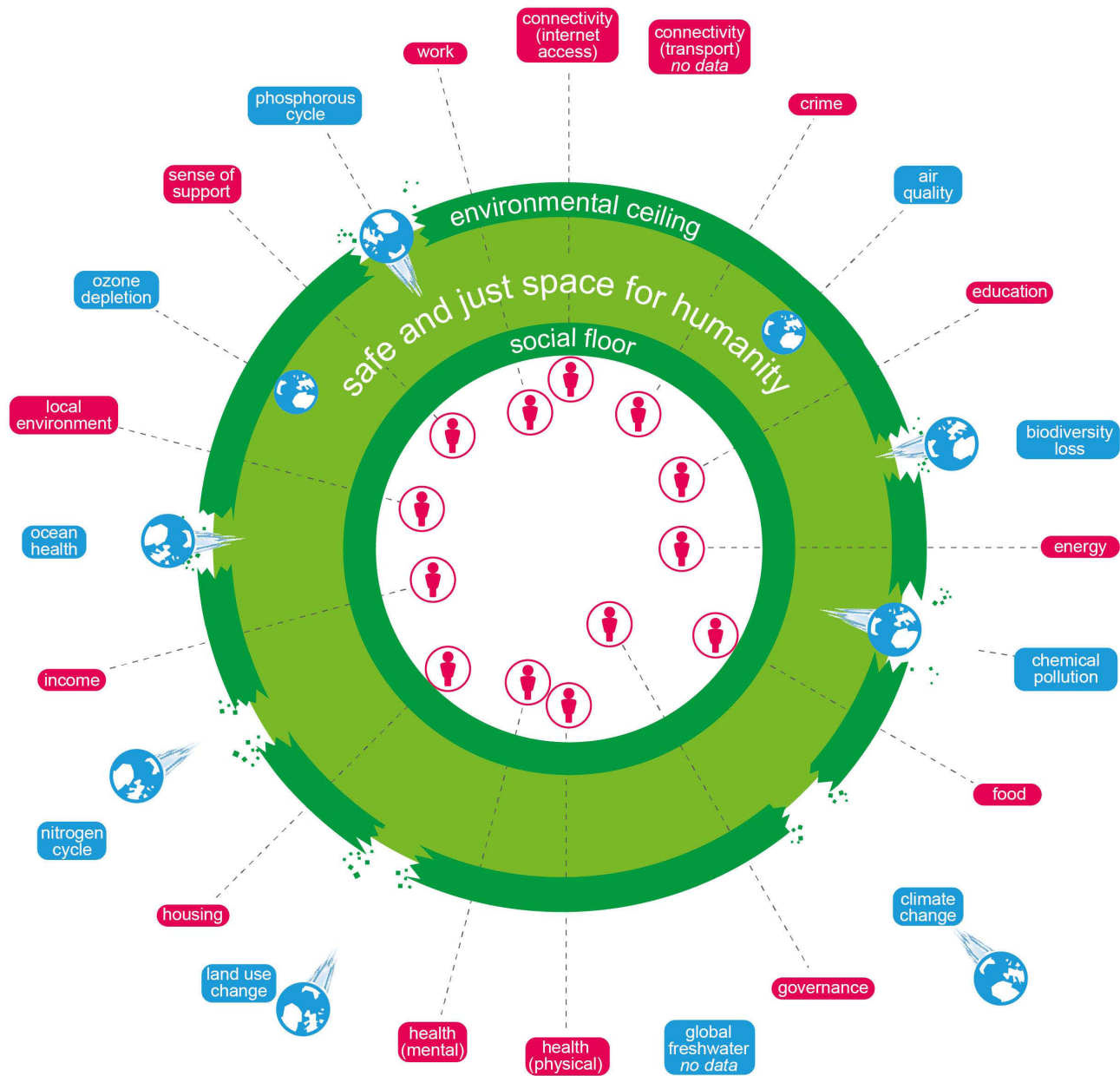
However, the environmental data available for Wales is limited. In the case of some e.g. *land use change* and *fresh water use* this is perhaps understandable as data sets are limited in general and methodologies uncertain. It would seem though that a central function of the Welsh Government should be to source and publish data sets on carbon footprint, nitrogen use and sustainable fisheries. These are available at a UK and Scottish levels and would be useful in order to measure relative impacts and progress.

In all but two of the environmental indicators used, Wales and/or the UK fails to stay within safe limits. In the three planetary boundaries that can be downscaled to a UK or Welsh level – climate change, nitrogen use and land-use change – we not only fail, but fail spectacularly. While carbon emissions have been moving in the right direction, we still see recommended safe limits breached by over 400 percent, and UK land-use change and nitrogen cycles breached by over 200 percent, while well over half of UK fish stocks are unsustainably harvested. Only in regards to the use of *Ozone Depleting Substances* and in *Air Quality* does Wales stay within the limits proposed in this paper.

This report does not go into the reasons behind these failures. However, it does highlight the immense inequalities experienced by our citizens across all social domains. Moreover, the environmental section tells a story not of scarcity, but of a society over-consuming its share of the world's resources. Thus Wales' environment is degraded by our methods and patterns of production and consumption. Our activities degrade the environment globally, as changing Earth systems undermine the bio-productivity of ecosystems, creating global food and water stresses.

The statements of fact presented within the Welsh Doughnut are a starting point from which to engage experts and activists from intrinsically related, but often segregated fields, to raise awareness of the issues among a wider audience and to focus minds on creating new perspectives and more radical policy debates aimed at delivering a truly sustainable economic model.

Figure 5: The Oxfam Welsh Doughnut (Wales 2014)



NOTES

- ¹ This paper has been developed alongside a Scottish Doughnut report, published in 2014, and a UK report published in February 2015. Where possible, indicators have been selected that are comparable across the UK.
- ² J. Rockström *et al.* (2009) 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity', *Ecology and Society* 14(2): 32, <http://www.ecologyandsociety.org/vol14/iss2/art32/> (accessed July 2014).
- ³ SRC and Stockholm Environmental Institute (SEI) (2013) 'National Environmental Performance on Planetary Boundaries: A study for the Swedish Environmental Protection Agency', Stockholm: SRC and SEI, <http://www.stockholmresilience.org/21/research/research-news/6-28-2013-a-safe-operating-space-for-sweden.html> (accessed July 2014).
- ⁴ W. Steffen *et al.* (2015) 'Planetary boundaries: Guiding Human Development on a Changing Planet', *Science*, 15 January 2015, <http://www.sciencemag.org/content/early/2015/01/14/science.1259855.abstract> (accessed January 2015).
- ⁵ A variety of changes were introduced to the planetary boundaries framework in the updated work by W. Steffen *et al.* (2015) *op. cit.*, which are touched on within the main report. However, Oxfam's Doughnut Report continues its focus on the SRC's 2013 downscaling of the framework to a national level as the most relevant for our objective of analyzing and influencing national impacts.
- ⁶ K. Raworth (2012) 'A Safe and Just Space for Humanity: Can We Live Within the Doughnut?', Oxford: Oxfam GB, <http://policy-practice.oxfam.org.uk/publications/a-safe-and-just-space-for-humanity-can-we-live-within-the-doughnut-210490> (accessed July 2014).
- ⁷ See M. Sayers and K. Trebeck (2014) 'The Scottish Doughnut: A safe and just operating space for Scotland', Oxford: Oxfam GB, <http://policy-practice.oxfam.org.uk/publications/the-scottish-doughnut-a-safe-and-just-operating-space-for-scotland-323371>; and M. Sayers and K. Trebeck (2015) 'The UK Doughnut: A framework for environmental sustainability and social justice', Oxford: Oxfam GB, <http://policy-practice.oxfam.org.uk/publications/the-uk-doughnut-a-framework-for-environmental-sustainability-and-social-justice-344550>
- ⁸ SRC and SEI (2013) *op. cit.*
- ⁹ Welsh Government (2014) 'The Well-being of Future Generations (Wales) Bill', <http://wales.gov.uk/legislation/programme/assemblybills/future-generations/?lang=en>

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