Friends of the Earth Briefing: Measuring sustainability under the Well-being of Future Generations (Wales) Act.

Summary

Wales' agenda-setting Well-being of Future Generations Act requires robust measures of resource use and carbon emissions. These should incorporate the environmental and economic impacts of imported as well as domestically produced and consumed. Academic advances and growing political impetus mean the tools for measuring and managing the Welsh economy within environmental limits and taking account of our global responsibilities are now at Wales' disposal.

Introduction

The Well-being of Future Generations Act is an impressive piece of legislation, firmly establishing Wales as a global leader in the sustainability field. It also demonstrates Wales' determination to secure its economic resilience, planning now for a future of increased global competition for ever-scarcer natural resources.

With ambitious but achievable goals set out in the Act, Wales now needs to establish how to measure and manage progress towards them. This briefing outlines an approach to measuring Wales' consumption of natural resources, including its fair share of global carbon emissions. Doing so will allow Wales to realistically and robustly claim to be evolving towards the One Planet Wales ambition.

How far to measure: does what happens abroad stay abroad?

Summary: if Wales is to be both a globally responsible and an economically resilient country it must consider the effect of what it consumes beyond as well as within its borders.

For many years a country's environmental impact, such as its carbon emissions, was considered only in terms of what happened on home turf. This was because it was much easier to measure and manage impacts at home than to make enquiries and requests of numerous international suppliers.
The drawback of this approach is that it ignores the impacts of goods that were produced and processed abroad. Not only is the impact ignored, but also the dependency risk – if Wales is heavily dependent on an imported resource an awareness of this would allow policy-makers to plan for interruptions in supply. And focussing on domestic (i.e. territorial) impacts can incentivise 'carbon off-shoring' as industries shift production overseas to avoid well-intentioned regulations at home.

So, a proper account of Wales' climate impact will include not just territorial emissions such as those from powering homes and moving vehicles, but also 'consumption' emissions such as those released in the process of making imported smartphones and cars. The same principle works in both directions – emissions associated with products made in Wales but exported for consumption abroad are subtracted from Wales' total and added to that of the consumer country. This is known as the 'footprint' approach to calculating impacts and dependencies.

Consumption footprints vs territorial estimates

Summary: there is a significant difference between Wales' global impacts as measured domestically, and as measured including imported goods. A consumption-based approach is therefore essential for Wales under the Well-being of Future Generations Act. With regard to the consultation on National Indicators[1], this means that there needs to be two measures of greenhouse gas emissions – carbon footprint and territorial emissions produced in Wales.

For import-dependent countries such as Wales, the UK and indeed much of Europe, there will be a significant difference between estimates of territorial and consumption carbon emissions.

[1] http://gov.wales/docs/desh/consultation/151022-fg-act-consultation-document-en.pdf

The UK Committee on Climate Change (CCC) in 2013 published a comprehensive report[2] on the UK's carbon footprint, i.e. carbon emissions from a consumption perspective. The report showed that whilst the UK's territorial emissions had fallen by 19% since 1993, those savings were more than outweighed by the increase in consumption of imported goods such that the UK's carbon footprint had actually *increased* by 10%. Whilst a small amount of this was due to carbon intensive industry relocating overseas, the majority was due to an increase in consumption due to rising incomes and the broader effects of globalisation. The UK has become one of the world's largest net importers of 'embedded' carbon emissions, both on per capita and absolute bases

With regard to the consultation on indicators for the Act, the above reasons mean that it is essential for approach C to be taken as measures of indicator 31 - "*A carbon footprint indicator where emissions that are produced in Wales (A) are considered along with the embedded emissions associated with the consumption (by residents in Wales) of goods and services imported internationally*".

The direct production or territorial emissions of approach A are still crucial measurements to be included of course, but alongside the wider measurement of carbon footprinting.

Consumption-based carbon footprints elsewhere

Summary: Several comparable countries are already calculating carbon footprints.

France has recently[3] adopted the carbon footprint as one of its ten national indicators of growth. The carbon footprint, which includes imported emissions and so takes a consumption approach, will be calculated along with the other nine indicators and set before Parliament for debate annually in an exercise not dissimilar to Wales' Well-being of Future Generations Act.

As above, the CCC has calculated the UK's carbon footprint. And Scotland's consumption-based carbon footprint for 1998-2012 has been produced by the Scottish Government[4].

Other European countries are also calculating their carbon footprints. Europe's statistical agency Eurostat can provide the latest on who is doing what and, importantly, on how they are doing it [5].

Consumption footprinting for Wales – potential methodologies

Summary: Wales can borrow methodologies and even much of the data from, for example, France, Scotland, the UK and the European Commission. The only significant gap is trade data – Wales lacks data describing imports and exports with the rest of the UK and beyond. Plugging this gap or indirectly estimating the missing data would allow Wales to accurately estimate not just its carbon footprint but a host of other footprints as well.

If we measure financial trade flows between countries and know the resource impacts of products, we can assume resources flow with the money and link the two to obtain consumption footprints. Trade data therefore provides the underpinning information to comprehensively calculating Wales' carbon footprint, and allow footprints to be calculated for Wales' use of other natural resources too.

Given that per capita Welsh consumption patterns are similar[6] to other UK and EU countries, data can be borrowed from those countries where it is not yet available on a 'disaggregated' level specific to Wales. The footprint calculation will still be reasonably accurate, and definitely better than no footprint at all. As Wales improves its national data sets Welsh data can be substituted to provide even better footprints.

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[2] https://www.theccc.org.uk/wp-content/uploads/2013/04/CF-C-Summary-Rep-web1.pdf

[3] For the report and press release visit http://www.gouvernement.fr/sites/default/files/liseuse/5711/master/index.htm and http://www.lesechos.fr/economie-france/conjoncture/021435298283-de-nouveaux-indicateurs-pour-aller-au-dela-du-pib-1169745.php#. The report was released in October 2015 to be discussed in the French parliament in November and then again annually. Its publication is a duty required by the Sas law adopted in April 2015 (http://www.assemblee-nationale.fr/14/dossiers/prise_en_compte_nouveaux_indicateurs_richesse.asp).

[4] http://www.gov.scot/Resource/0047/00472991.pdf

[5] Eurostat can be contact at http://ec.europa.eu/eurostat/help/support

[6] Consumption patterns differ between Wales and the UK and these differences could be incorporated into any estimate of per-capita imports by commodity that was based on UK or other data.

Flanders[7], one of the devolved nations in the Belgian federation, has undertaken precisely this exercise, regionalising its trade data to be distinct from Belgium's. Longstanding work by Scottish Government provides further guidance. Civil servants at Flanders and the European Commission's Eurostat can advise on data and methodologies, and experts such as those working on Europe's DESIRE[8] footprints database or at the SEI on Scotland's carbon footprint also have the skills to help.

What to measure: should Wales concentrate exclusively on carbon emissions?

Summary: to be sure of economic resilience within environmental limits, Wales must consider its land, water and materials use in addition to its carbon footprint. This Four Footprints approach provides a useable overview of resource use, neither too detailed nor overly simplified. With regard to the consultation this means that a four footprint approach is preferably to the Ecological Footprint as an indicator of global resource use and impact.

Pressing as the need to tackle climate change is, carbon emissions are not the only environmental impact a sustainable, economically resilient and globally responsible country needs to consider. Nor is the 'consumption versus territorial' conundrum limited to carbon.

For example, the EU has decided[9] to cut emissions by setting a target for 5% and later 10% of transport fuels to come from renewable biofuels. This appeared to set the bloc on an environmentally friendly course as it weaned its vehicles off fossil fuels. However the effect was to drive deforestation in Malaysia and Indonesia in particular as land was cleared for oil palm plantations, the impacts of which are all too visible today. What was missing in those original discussions was a requirement that the renewable fuels proposal be considered in terms of impacts additional to carbon, such as how much land would be required.

Similarly, many countries' domestic material consumptions (DMCs, i.e. the tonnage of raw materials extracted and used at home) have declined. However, research[10] shows that if their materials use footprint is calculated on a consumption basis including imports it turns out to have held steady or increased, even outstripping GDP growth. This is because of the outsourcing of production – 41% of all global raw material extraction provides for consumption in other countries.

The consultation recommends[11] measuring Wales' global impact with a single 'aggregated' indicator – the Ecological Footprint[12] (EF). The EF translates all impacts into an assumed area of 'global hectares' of forest required to remedy them. The weakness of single aggregated indicators is that they are forced to make significant assumptions in converting quite different impacts, such as water use, carbon emissions or biodiversity loss, into a single unit, in this case an area of notional global acreage. Aggregated indicators can make good communications tools, as the EF has been used in explaining the One Planet Wales concept. However, it is insufficiently precise for policy-makers and are not considered robust by the scientific community. A possible alternative role for the EF is as part of the five yearly Future Generations reports.

[7] http://www.ovam.be/sites/default/files/Mogelijkheden%20koppelen%20Vlaams%20model%20aan%20wereldmodellen.pdf

[8] Funded by the EU's 7th Framework Programme, the on-going Development of a System of Indicators for a Resource Efficient Europe (DESIRE http://fp7desire.eu/, final report due in February 2016) and the recently completed Compiling and Refining Environmental and Economic Accounts (CREEA http://creea.eu/) projects have advanced and refined environmental accounting including and especially with regard to the Four Footprints. CREEA is published as 'The Global Resource Footprint of Nations' covering 43 countries and 4 rest-of-world regions. A useful summary of the project is also published http://cordis.europa.eu/result/rcn/163480_en.html

[9] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028

[10] Wiedmann et al. (2013) *The material footprint of nations* http://www.pnas.org/content/112/20/6271.full.pdf

[11] Proposed indicator 38

[12] http://www.footprintnetwork.org/en/index.php/GFN/page/basics_introduction/

The European Union's 'Roadmap to a Resource Efficient Europe'[13] decided on four separate but complementary footprint indicators: land, water, materials and carbon[14]. These reflect the extent of land, water and materials consumed and carbon emitted, calculated on a consumption basis.

This 'dashboard' of four resource use indicators provides a headline account of environmental impact and economic dependency related to natural resource use. Policies targeting one area, such as carbon, can be weighed against their impact on others, such as the amount of land needed.

Beyond carbon – who else is publishing land, water and materials footprints?

Summary: National and international bodies are increasingly using a Four Footprints approach to measure and set targets for resource use. Wales should follow this lead, building on work it has already done to calculate its carbon and other footprints.

The European Commission continues to commit considerable political and financial effort on the Four Footprints including via the recently completed CREEA project and on-going DESIRE project. CREEA uses a consistent methodology to calculate the land, water, materials and carbon footprints of 43 countries including the UK and representing 95% of global GDP. The Commission is also committed to drawing up guidance for reporting on the Four Footprints as part of the 2014 recast of the Accounting Directives corporate reporting legislation[15] and should be consulting on proposals this year.

Meanwhile the United Nations Environment Programme has proposed goals for reducing resource use across each of the Four Footprints[16] as part of its recommendations for the post-2015 Sustainable Development Goals. With the European and United Nations both focussing on land, water, materials and carbon footprints this is a clear and settled direction of travel suitable for Wales to follow.

Can it be done in Wales? : Conclusion

An indicator for total material used, incorporating imported goods and services, should and could be included. This contributes towards a full picture of Wales' economic dependence on natural resources, including those incorporated into imported goods and services, as well as towards its global environmental impact through the extraction and processing of raw materials. This 'Materials Footprint' would be complemented by an adjusted Indicator 31 – greenhouse gas emissions – that incorporated the climate impact of imported goods and services on a 'consumption' basis as proposed in approach C to question 12.

A full, consumption-based approach to Wales' natural resource use requires that total land and water use are assessed too, such that policies designed to boost resource efficiency can be assessed across the board to avoid unintended consequences.

Plugging the gap in trade data for Wales would allow more comprehensive and accurate footprinting data, and is something that Wales' should develop, but calculating this from similar countries would allow these footprints to be calculated and introduced as indicators now.

Wales should adopt the carbon footprint as a lead indicator. Other indicators should be adapted to allow for land, water and materials footprints to be included, providing a dashboard account of Wales' global environmental impacts and economic dependencies.

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[13] The details of the plan are laid out in Annex 2 of the Roadmap document http://ec.europa.eu/environment/resource_efficiency/pdf/working_paper_part2.pdf. The European Commission currently reports on territorial versions of these four footprints http://ec.europa.eu/environment/resource_efficiency/targets_indicators/scoreboard/index_en.htm whilst political and methodological differences between the EU member states are ironed out.

[14] For more information on the Four Footprints, including links to key documents such as SERI's analyses, visit www.foe.co.uk/four-footprints

[15] For example, clause 17 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0095&from=EN

[16] Sustainable Consumption and Production (SCP) Targets and Indicators And the SDGs, UNEP Post - 2015 Discussion Paper 2 http://www.iisd.org/sites/default/files/publications/scp_targets_indicators_unep.pdf