

# Living in the doughnut

Kate Raworth, a senior researcher at the aid charity Oxfam, has created a doughnut-shaped concept for achieving 11 societal goals within the framework of 9 planetary boundaries. She talks to *Nature Climate Change* about a safe and just operating space for humanity.

## ■ As a trained economist, how did you get involved in Earth sciences?

When I first came across the planetary boundaries concept, it struck me that it shows Earth sciences reining in economists. Economics has dominated policymaking for so long and demanded that politics be conducted through the metrics of money, and this was a response saying there are other metrics that come first. The diagram spoke to me about the limits to human economic activity — not in monetary terms but in physical metrics, parts per million of carbon dioxide, biodiversity nitrogen inputs, freshwater use and so on.

## ■ If economics shouldn't drive our economies, what should?

First should come a fundamental understanding of the biophysicality of the planet and the conditions needed to sustain it in this stable state, and an understanding of what's required to meet everybody's human rights. Only then comes economics, and I think its most critical role is as a tool for securing both of these.

## ■ What does the doughnut<sup>1</sup> mean?

Social justice depends on climate justice (Fig. 1). It depends on staying within planetary boundaries, because we know that when humanity exceeds planetary boundaries the people who experience that worst and hardest are those living in poverty. So it's not social justice versus the environment, it's social justice through protecting the integrity of the environment.

## ■ How did you come up with the concept?

We know that humanity's use of natural resources is putting them under so much pressure that we're at risk of pushing planetary systems over physical thresholds that will lead to abrupt and perhaps irreversible change<sup>2</sup>. So, we want to avoid that. However, we also know that humanity depends on natural resources to meet our needs of food and water, housing, energy and other essentials that allow us to lead



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dignified and fulfilling lives and meet our human rights.

I wanted to look at what degree of resources it would take to get everybody alive above the threshold of an agreed social foundation. So I was trying to put together the factors that make up the bare minimum that humanity requires to meet human rights, and look at how those relate to the planetary limits that keep us in the Holocene.

## ■ How did you identify the social boundaries?

What I wanted to establish was the basic minimum that every person has a claim to, and at the centre of that is human rights. What are the most essential human deprivations at this point in time? I looked at the submissions by governments to the Rio+20 conference to see what governments around the world are saying are the critical issues that they want to see addressed. I reviewed every submission

and came up with 11 priorities. Some are very familiar from the Millennium Development Goals — such as food, water, health, education — but others have more of a twenty-first-century lean, including issues such as energy, resilience and jobs.

## ■ What does the right to 'resilience' mean?

It means people should be able to withstand the shocks that they are increasingly likely to face. For example, they should be resilient to climate change impacts or to food price increases. The ways to build resilience may be through climate change adaptation or through social protection schemes, providing access to cash if a harvest fails, for example.

## ■ Are these social boundaries measurable?

The boundaries are primarily conceptual, but I think the powerful thing that the planetary-boundaries team did was to try to quantify the concept, which allows it to move into policy space. Likewise, I tried to push what can be said about social boundaries. I think we're actually further ahead in agreeing on social boundaries than we are planetary boundaries, because for decades the United Nations bodies have been collecting data. There are uncertainties but, for example, we have estimates that there are around 850 million people — or 13% of the global population — that are undernourished at the moment.

## ■ Can we feed everybody within the planet's limits?

It turns out that to meet the food deficit of the 13% of population living with hunger would take around 1% of the current global food supply. Putting this in context, the United Nations Food and Agriculture Organization estimates that one-third of the world's food is lost post-harvest or thrown away by consumers — industrialized countries throw away as much food as is produced in subSaharan Africa every year.

■ **So feeding the hungry wouldn't put us over the planetary boundaries. What about giving everyone energy, would that push us over the climate change boundary?**

An International Energy Agency report that looked at producing electricity for everyone by 2030, including the 19% of the world's population that don't have it at present, says it can be done by only increasing global carbon emissions by 0.7%. So ending energy poverty is therefore an essentially separate issue from reducing global emissions and tackling climate change. Research by Stephen Pacala and others at Princeton University shows that 50% of global carbon emissions are produced by just 11% of people, while 50% of people generate just 11%.

■ **Once the 19% get electricity, won't they start using it like the 11% by powering washing machines and other goods?**

To say that we couldn't possibly allow people living in energy poverty to have even the most basic energy supply because then they'll want to be like us would be appalling and completely against human rights. We need to look instead at our own societies and how massively we over-consume and waste electricity and other resources. Tackling excessive consumption by the 11% is the main challenge we face, and doing so must not stand in the way of ensuring that all people meet their most essential needs. We have to create both far greater equity in the distribution of resources and far greater efficiency in our use of them.

I believe that we can meet the social foundation for everybody without pushing us over the planetary boundaries. The deepest challenge is humanity's aspirational consumption. We need to rethink our notions of prosperity, away from high material use towards far more sustainable forms of well-being.

■ **Does that mean zero-growth economies?**

We know that in very poor countries and communities, income growth is essential. But as they seek to meet their needs, the planet's total resources aren't increasing — that's why rich countries must be first and fastest to cut their carbon emissions, and reduce their resource use to bring us back within the means of this one planet. Gross domestic product growth lies at the heart of mainstream economics, but what we've seen over the past five years is wide agreement that gross domestic product alone is not a good



**Figure 1 |** The doughnut-shaped area represents an environmentally safe and socially just space for humanity. Reproduced with permission from ref. 1, © 2012 Oxfam GB.

enough proxy for well-being or even economic progress.

I think a phase of far greener growth is technically possible because we're so inefficient in how we use resources to generate incomes at present. But I'm personally unconvinced that economies can grow indefinitely within environmental limits. For me, the onus is on those who claim that unlimited green growth is possible to provide the evidence.

■ **What does the doughnut offer policymakers?**

It's useful because it brings specialists in many sectors — from agriculture, water and climate change to health, energy and equity — to the same diagram and we can start understanding each other's concerns. Many of the social and planetary boundaries interact with each other. Biofuels are a strong example: the rush to produce them impacts on the land, water, climate, nitrogen and phosphorus, and

biodiversity boundaries, as well as on the social boundaries of food, water, income, jobs, resilience and gender equality. The doughnut doesn't tell us all the answers, but it may help us to ask better questions, and to look at all the relevant parameters when trying to understand the implications of policies and events.

Through designing this doughnut I've had discussions with soil scientists, ocean experts and climatologists, and we've all seen perspectives that we hadn't seen before, so there's a real richness of interaction that can come with just sharing a common framework as a starting point.

**References**

1. Raworth, K. *A Safe and Just Space for Humanity: Can We Live Within the Doughnut?* Oxfam Discussion Paper (Oxfam, 2012); available via <http://go.nature.com/HrU9hi>.
2. Rockström, J. et al. *Nature* **461**, 472–475 (2009).

**INTERVIEW BY GAIA VINCE**

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