

# We must rethink health care to include social and environmental costs of treatment

September 12 2019, by Francis Vergunst and Helen Louise Berry

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Credit: AI-generated image ([disclaimer](#))

Modern health care has led to enormous gains in life expectancy and quality of life. However, rising health-care costs, increasing rates of chronic diseases, aging populations and the [effects of advancing climate change](#) are placing increasing pressures on our health-care systems.

It is therefore imperative that we make [health](#)-care services more efficient and sustainable —so that savings can be made without compromising quality or further damaging the ecosystems on which human health depends. To do so, we must [go beyond the traditional and exclusive focus on cost](#) and consider a wider range of factors that bear on human health and well-being.

The World Health Organization has [highlighted the mutually reinforcing nature of economic, environmental and social sustainability within health-care systems](#). Yet surprisingly little work has been dedicated to measuring these overlapping factors.

One way to do this is by measuring the [sustainability-inclusive triple bottom line](#) —a framework that considers not just the financial but also the environmental and social costs of an activity.

We were interested in whether such a triple-bottom-line approach could be applied to the evaluation of health-care interventions. Together with colleagues, we tested the approach on existing data from a clinical trial of a compulsory [intervention for patients with chronic psychotic illnesses](#) in the United Kingdom. We succeeded in [approximating the economic, environmental and social costs of an intervention](#) and in relating these to clinical outcomes.

## **Integrating environmental and social costs**

The [triple-bottom-line approach](#) was introduced by John Elkington in 1994 as a novel business accounting framework. Elkington argued that for organizations to become more sustainable, they must go beyond the traditional first "bottom line" of profit and loss and integrate the environmental and social costs of doing business into their corporate accounting structures.

In other words, to be sustainable, an organization must balance its books, measure and manage its environmental impacts —such as waste management and greenhouse gas emissions —and consider its social obligations. These explicitly include the health and well-being of employees and clients.

Since its introduction, triple-bottom-line assessments have been employed by many businesses and public organizations to evaluate performance and enhance environmental and social outcomes. Systematic research shows that this can [increase organizational value](#).

The triple bottom line is relevant to the health-care sector because there are large economic, environmental and social costs —as well as opportunities —generated by health-care activity. Yet there have been few attempts to apply the approach to the evaluation of health-care interventions.

## **A triple bottom line for health care**

As with business, the traditional bottom line of the health-care sector is cost. Cost matters because [health care is expensive](#)—in Australia, Canada and the U.K., it accounts for around 10 percent of GDP spending; in the United States, it's close to 17 percent.

It is, of course, unwise and unethical to waste taxpayers' money on interventions that are not effective. That's why consideration of cost-effectiveness, rather than cost alone, is vital when evaluating any health-care intervention. But there is more to an intervention than its value for money.

The health-care sector has a [large environmental footprint](#). It contributes to the contamination of land and waterways, produces large amounts of waste and is a major source of global greenhouse gas emissions.

For example, the global pharmaceutical industry has a [larger carbon footprint than the automobile industry](#). And if the U.S. health-care sector was ranked as a nation, it would be the [world's 13th-largest emitter](#) of greenhouse gases —more than the U.K.'s combined emissions from all sectors of its economy.

Since environmental impacts bear on health and well-being, [improving environmental performance](#) could lead to savings, directly through waste reduction and indirectly by [mitigating the burden of pollution](#) on [public health](#) and the future [impacts of climate change](#) on [human health](#).

At the same time, social and living circumstances are closely linked with health and well-being. Sustainable health services must also consider the [social determinants of health](#) —contextual factors such as whether an individual has paid work, social networks and suitable accommodation, rather than individual risk factors (such as genes or lifestyle) that [contribute to health and well-being](#).

Despite the recognized importance of environmental and social factors for human health and well-being, there have been few attempts to integrate them into evaluations of health-care performance.

## **Calculating social and environmental costs**

To test whether this is feasible, my colleagues and I used existing data from a clinical trial of a [compulsory intervention for patients with chronic psychotic illnesses \(mostly schizophrenia\)](#) to calculate the economic, environmental and social costs of the intervention.

We began by calculating the approximate financial cost of the intervention over a one-year period based on the number of nights that patients spent in hospital and the number of appointments with health-care professionals. We found that the financial costs of care were

high—around £40,000 per patient per year—but unsurprising given the high level of disability and need of this patient group.

Next, based on the services that patients used, we calculated the environmental impact in terms of greenhouse gas emissions using [standardized U.K. government data](#). Again, we found large greenhouse gas emissions associated with the [intervention](#) —around 10,800 kilograms per patient per year.

For [comparison](#), an economy-class flight from London to New York produces around 900 kilograms of greenhouse gas emissions, while the average annual carbon footprint of a person living in the U.K. is around 7,100 kilograms. For a person in the U.S., it's double that at around 16,400 kilograms.

Finally, we examined patients' social outcomes at one-year follow-up, finding that most remained unemployed, had low levels of social functioning and scored poorly on indicators of quality of life and well-being. This is likely due to the chronic and enduring nature of psychotic illnesses rather than the quality of the interventions and care received.

Overall, we found that [it's possible to approximate the economic, environmental and social costs of an intervention and to relate these to clinical outcomes](#). However, many questions remain.

For instance, because we examined relatively few environmental and social domains, we weren't able to draw solid conclusions about whether the financial, environmental and social costs were "worth it" in terms of clinical outcomes. Further, it remains unclear how different environmental and social domains should be prioritized or traded off against each another.

That said, we did not aim to address every question that might be raised

when applying the triple-bottom-line approach, or to produce a universal methodology for measuring sustainability across the health-care sector.

Rather, we wanted to stimulate thinking and debate on what more sustainable health-care interventions might look like, and how their multiple [costs](#) and benefits might be measured and evaluated.

## **Reduce waste, invest in preventative care**

Action to increase sustainability has been [advocated and supported by climate-change legislation in many countries](#), by international mechanisms such as the [Sustainable Development Goals](#) and by policy and practice-targeted research projects such as the [Lancet Countdown on climate change](#). But much more needs to be done.

Each of these initiatives emphasizes the need for multi-sector partnerships that engage [all branches of government](#) —from health and education to transport and the environment —in collaborating with researchers and clinicians to design better health care and health-promotion approaches.

The health sector can do much more to promote sustainability in service design and delivery. Investing in better [preventive care](#) is essential —[only three percent of health-care budgets](#) are spent on prevention and public information. And tackling the ballooning [cost of chronic lifestyle diseases](#) could have vast public health as well as economic and environmental benefits.

Many initiatives, such as improving hospital food quality or redesigning health care and other urban infrastructure, have the potential to improve social and environmental outcomes while also improving health.

Further research is also needed to develop new ways of prioritizing and



measuring the impact of environmental and social circumstances on human health.

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