

GLOBAL INFORMATION SOCIETY WATCH 2020

*Technology, the environment and
a sustainable world: Responses from
the global South*



ASSOCIATION FOR PROGRESSIVE COMMUNICATIONS (APC)
AND SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY (SIDA)

Global Information Society Watch 2020

Technology, the environment and a sustainable world: Responses from the global South

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The Sustainable Development Goals and the environment

David Souter

Introduction

The Sustainable Development Goals – the SDGs – matter. They have flaws, like any international agreement, and they need to be interpreted in light of changing circumstances, but global agreement on development goals is immensely difficult to achieve, and reaching agreement on them was a big success for the UN.

Reaching agreement, though, is only half the task. It is equally difficult, if not more so, to implement agreement as to reach it. Many of the Goals are ambitious and much needs to work well for them to be achieved. They require political commitment, consensus around their key objectives, finance, a positive environment for economic growth. In practice, since they were agreed in 2015, they have run into headwinds: polarising geopolitics, underperforming economies in many countries, disrupted global trade relations, and now the COVID-19 crisis and recession. 2020 saw slippage on many of the Goals and targets: slippage that will be tough to make up and that requires rethinking.

This report considers the SDGs from the dual perspectives of the environment and of technology. Its first part reviews the origins of sustainable development and the 2030 Agenda for Sustainable Development¹ – the UN agreement that contains the Goals. The second looks at how the environment and technology are reflected in the Goals and targets. The third is concerned with where we stand today and how we might move forward.

The meaning of sustainable development

It's a mistake to think that sustainable development is just another way of talking about the environment. The 2030 Agenda is fundamentally a strategy aimed at development, not the environment.

The word “sustainable” adds an important nuance to development. It was intended to be shorthand for

something like “environmentally sustainable economic development” – and so inject long-term protection of the planet's viability into the ways that economic growth and social welfare are pursued.

The idea of sustainable development, as understood within the UN system, emerged from the Brundtland Commission (the World Commission on Environment and Development) in 1987² and the Earth Summit that followed it in 1992.³ They proposed a tripartite approach to development built around economic prosperity, social welfare and environmental protection – all three of which, they claimed, could, should and must be pursued conjointly. They also proposed goals of intergenerational equity and sustainable consumption – principles intended to ensure that environmental outcomes affecting future generations should not be damaged irrevocably (or “unsustainably”) by short-term policies and practices.

Achieving this tripartite core to sustainable development is challenging. It requires development strategies that don't juxtapose economic, social and environmental goals against each other, or address them separately, in silos, but consider them instead as interdependent, even inextricable. To illustrate: strategies are needed that recognise that economic and social welfare are unsustainable if climate change turns land to ocean, or critical natural resources become too scarce to be affordable.

There are obvious issues here of intergenerational *and* geographical equality. The overarching aim, as defined by the Brundtland Commission, has been “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁴ But conjoining economic, social and environmental goals at the Earth Summit, and more recently in the Sustainable Development Agenda, are also political. The outcomes of both processes

1 <https://sustainabledevelopment.un.org/post2015/transformingourworld>

2 Its report, *Our Common Future*, is at <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>

3 Its *Rio Declaration* is at https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf

4 *Our Common Future*, p. 41.

– and of the Earth Summit’s 20-year review in 2012, which strongly influenced the SDGs⁵ – were negotiated through highly charged political processes in which different governments had different objectives, different expectations and sometimes sought relief in constructive ambiguity. The compromise they reached might also be described as “development that meets the needs of the developing world without compromising the ability of developed countries to continue their own growth.”

There’s a tension arising from this in the SDGs. The opening text of the Agenda is holistic. It emphasises the importance of integrating economic, social and environmental goals. The SDGs themselves, however, focus on specific aspects of development – food, health, education, water, gender and so on. Some are more detailed than others, with more specific targets, reflecting where politics enabled more or less consensus. The problem is that the distinctness of individual SDGs has encouraged siloed rather than holistic thinking about ways of implementing them, and undervalued the opening text’s assertion of cross-cutting themes (like the environment) or means for addressing them (like technology).

The environment and technology within the SDGs

From an environmental perspective, the world today faces three great challenges, which are concerned with climate change, pollution and resource depletion (this last including land and water). All three of these pose fundamental challenges for sustaining economic growth (and therefore social welfare). Sustainable development, as understood in the Agenda, includes (some would say mainstreams) these environmental concerns within a range of SDGs rather than establishing a distinct platform for environmental protection within sustainability.

Only one of these three themes – the most existentially critical, the climate – is given its own SDG (Goal 13), and that cedes leadership to the United Nations Framework Convention on the subject. Other SDGs – concerned with water, energy, cities, the marine environment and land – have environmental aspects, but there’s no cross-cutting strategy for pollution or resource depletion. That on sustainable production and consumption (Goal 12), refers to an earlier strategy on this⁶ but is otherwise a checklist of

desirable objectives. There’s no plan, aside from the Framework Convention’s view of climate change, to remain within what are called the “planetary boundaries” that represent tipping points beyond which environmental change could become irreversible. These can be thought of as the “safe operating space for humanity”⁷ and are central to environmentalist perspectives on sustainability. Four of the nine planetary boundaries are now thought to be exceeded.⁸

Technology is, likewise, not treated holistically within the SDGs. It is mentioned here and there in the Agenda as holding potential for advancing development objectives – in medicine, in energy, in agriculture, in empowering women – but there’s no overarching philosophy for technology beyond the assertion that progress should be “in harmony with nature: climate sensitive, respecting biodiversity, resilient.”

Nor is it more than marginally mentioned in most SDGs themselves. Only two of the Goals have significant sections on technology. That on energy sees it as offering solutions, urging international cooperation on clean energy, renewables, “energy efficiency and cleaner fossil-fuel technology” (note the careful wording that reflects negotiating compromise), while reminding policy makers of the need to ensure energy infrastructure and availability in developing countries in order to achieve their economic goals (a central issue in geographic equality).

The final SDG, on global partnership, has a short section on governing technology, focused in particular on transfer – the contested goal of (mostly) developed countries sharing technology with developing countries in ways that enable the latter to have more autonomy regarding their development. The underlying issue of power over technological development which is represented by this is, in practice, unresolved, while rapid advances in new technologies (digitalisation, genetics, nanotechnology, etc.) are increasing rather than diminishing its geographic concentration.

From today’s perspective, two things are missing from this treatment of technology within the SDGs. One is that, in spite of lobbying by the UN’s International Telecommunication Union (ITU) and the multistakeholder Broadband Commission, there is no Goal specific to information and communications technologies (ICTs), just a reference to their likely value and a single target in

5 Its declaration, *The Future We Want*, is at <https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf>

6 10YFP Secretariat. (n/d). *The 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns*. https://sustainabledevelopment.un.org/content/documents/1444HLPF_10YFP2.pdf

7 Rockström, J., Steffen, W., Noone, K. et al. (2009). A safe operating space for humanity. *Nature*, 461, 472-475. <https://doi.org/10.1038/461472a>

8 See <https://www.stockholmresilience.org/research/planetary-boundaries/planetary-boundaries/about-the-research/the-nine-planetary-boundaries.html> and https://ec.europa.eu/environment/integration/research/newsalert/pdf/four_out_of_nine_planetary_boundaries_exceeded_410na1_en.pdf

Goal 9 (on infrastructure, “inclusive and sustainable industrialisation” and innovation) aimed at increasing access, particularly in least developed countries (LDCs). This seemed inadequate at the time of the third Earth Summit in 2012 (whose outcome document also said next to nothing about ICTs), let alone 2015. It seems entirely inadequate today when the opportunities and risks of present and future digital technologies are so widely regarded as transformative (and seeing accelerated impact as a result of the coronavirus).

The second omission is concerned with ethics. Where technology is referred to in the SDGs, the assumption is that it is beneficial: that it brings progress but not problems. This is obviously inadequate. The industrial revolutions of the last two centuries and more have done wonders for economic prosperity, but have also left us with the existential threat of climate change and apparently uncheckable plastic pollution. TNT and nuclear fission were always going to have peaceful and warlike applications. The internet has proved as effective at spreading mis- and disinformation as it is has knowledge, while digitalisation enables surveillance at least as readily as it empowers. The ethical challenges of gene editing and artificial intelligence have come sharply to the fore in recent years.

To summarise: the 2030 Agenda and its SDGs provide the crucial framework for international action on sustainable development. Achieving agreement on consensus goals was an important step forward in entrenching both development objectives and international cooperation. (This would be much harder to achieve in today’s more polarised geopolitical environment.) But the concept of a comprehensive and holistic approach to development in the Agenda’s opening text is insufficiently translated in the list of Goals and targets. Its framework needs to be developed, in particular to take advantage of the opportunities and protect against the risks presented by the very rapid rise of new technologies.

Technology, the environment and SDGs today

Much of the development literature around technology and innovation discusses it in abstract terms, assuming consequent improvements in efficiency and welfare, yet their cumulative impacts are often underestimated. Five aspects of this are important in understanding how technology/technologies can contribute more effectively towards sustainable development (including the SDGs).

First, the impacts of technological developments are highly complex. Innovations in technology will affect many, most or all of the SDGs during the course

of the Agenda (up to 2030) – gene editing in health and agriculture, for instance, robotics in industry, nanotechnology, digitalisation and artificial intelligence across a wider range – and these will interact with one another. They need to be understood collectively as well as individually.

Second, the pace of change since adoption of the SDGs has been intense and is accelerating. Fast broadband, new applications and big data have dramatically changed many of our societies, economies and cultures. Artificial intelligence, the “internet of things” and, soon, autonomous devices will do so again. Irreversible impacts arise from these before our institutions enable us to shape them. “Code is law,” wrote Lawrence Lessig 20 years ago;⁹ code (and other new technologies) could also be displacing policy (and good intentions like the SDGs).

Third, there’s nothing that’s inherently good or bad about technology. There’s a balance, in every generation of technological development, between opportunity and risk. The pace and capabilities of today’s techno-innovations make those opportunities and risks much larger and more critical than those in previous generations: they can bring greater benefits, but the threats they pose are greater too, and both are happening more quickly. Innovation has been somewhat fetishised by some in technical and development communities: the new valued over the tried and tested, “moving fast and breaking things” preferred to building on experience. That’s insufficiently sophisticated.

Fourth, this balance between opportunity and risk requires both proactive and protective measures. New technologies, for instance, offer opportunities to monitor the impact of climate change (such as environmental sensors), reduce carbon emissions (by improving efficiency in the use of energy or by decarbonising fossil fuels) and mitigate their impacts (for instance by increasing productivity in food production). These should be maximised, though also monitored to identify potential (or real) risks arising, particularly unintended consequences (for instance from gene editing). But the broader impacts of technologies on the economy, society and the environment – caused by the way they are used, rather than the purposes for which they are intended – also need constant monitoring and, where harmful, to be minimised. That requires strategic intervention concerned with directing technology in ways that shape society rather than allowing the converse.

Fifth, technology can’t be divorced from the political and economic power structures that surround it. Powerful governments and businesses are best

⁹ <https://harvardmagazine.com/2000/01/code-is-law.html>

placed to dominate emerging technologies, which require high levels of capital investment, and to leverage their benefits. Sustainable development requires that opportunities are made available and risks are shared more equitably. That requires much more than part-implemented agreements on technology transfer; it requires a change of mindsets about interdependence (of which the COVID-19 vaccines are proving an important test).

One standard way of understanding the impacts of technology is to look at them in four categories. I described these thus, eight years ago in a comprehensive review of digitalisation and the environment that I co-authored for the International Institute for Sustainable Development:¹⁰

- First order (or direct) effects are those that result from the physical existence of ICTs and the processes involved in making them available – for example, the jobs created in ICT manufacturing and services, or the carbon emissions generated by manufacturing, data centres and the use of terminal devices.
- Second order (or indirect) effects are those that result from the ways in which those ICTs are used, in particular those resulting from applications and access to content – for example, the loss of jobs in sectors undermined by internet-enabled businesses (such as music retail) or the reductions in carbon emissions achieved through automated (“smart”) management of electricity generation and distribution.
- Rebound effects are the counterbalancing impacts that occur as a result of behavioural changes that themselves result from these first and second order effects – for example, the likelihood that the reduction in vehicle usage resulting from telecommuting will be accompanied by increased use of vehicles for leisure activities.
- Third order (or societal) effects are the aggregated outcomes of large numbers of people using ICTs over the medium-to-long term in ways that alter how economies and societies work – for example, changes in the nature of work and working relationships, in the relationships between diasporas and home communities, in patterns of consumption and human settlement.

That complex and reflexive framework is a good one for building better understanding of the impacts of all technologies, as they apply to SDGs in general as much as they apply to ICTs or the environment. It suggests three things.

First, that technology and its impacts are central to development, sustainable development and humanity’s approach to its environment. They need to be better understood and better located within efforts to implement the SDGs and sustainable development more generally.

Second, that those impacts change rapidly in time. They need to be monitored and goals and targets need to be adjusted to take advantage of them and adapt to the different circumstances that technology is engineering as these changes occur. The SDGs cannot effectively be implemented in a state of stasis.

Third, that governance is critical. Most new technologies are developed within a framework that respects the precautionary principle – in terms of health or the environment, for instance – and accommodates regulatory oversight such as environmental audit. The digital sector has resisted this, preferring to enable innovation first and sort out problems later should they arise. A sustainable development framework, aimed at public goods, requires responsibility and accountability in technology and innovation. Mechanisms for this are an essential part of implementing the SDGs.

Technology’s role in sustainable development can be expressed quite simply: to maximise potential gains for sustainability (that tripartite win) as well as individual SDGs, and to mitigate and minimise potential harms (those that arise from its own development as well as other sources such as fossil fuels). Implementation, though, is far more complicated.

One final point. The SDGs, like other international frameworks such as that for human rights, rely on immutability for their authority. If they could easily be changed, they would be, and governments would then focus on change rather than implementation. However, such frameworks need to be interpreted in light of changing circumstances – such as greater certainty about the trajectory of climate change, geopolitical conflict, the emergence of artificial intelligence, or a pandemic like COVID-19. The role of technology in facilitating (and threatening) sustainable development is in constant, complex flux. As this report has sought to suggest, this requires more and more sophisticated attention to the relationships between technology, sustainability and the environment.

¹⁰ Souter, D., & MacLean, D. (Eds.) (2012). *Changing our Understanding of Sustainability: The impact of ICTs and the Internet*. International Institute for Sustainable Development. https://www.iisd.org/system/files/publications/changing_our_understanding_of_sustainability.pdf

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The world is facing an unprecedented climate and environmental emergency. Scientists have identified human activity as primarily responsible for the climate crisis, which together with rampant environmental pollution, and the unbridled activities of the extractive and agricultural industries, pose a direct threat to the sustainability of life on this planet.

This edition of Global Information Society Watch (GISWatch) seeks to understand the constructive role that technology can play in confronting the crises. It disrupts the normative understanding of technology being an easy panacea to the planet's environmental challenges and suggests that a nuanced and contextual use of technology is necessary for real sustainability to be achieved. A series of thematic reports frame different aspects of the relationship between digital technology and environmental sustainability from a human rights and social justice perspective, while 46 country and regional reports explore the diverse frontiers where technology meets the needs of both the environment and communities, and where technology itself becomes a challenge to a sustainable future.

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