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Climate, biodiversity, inequalities... how to steer the SDGs back on track

Policy Paper

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Keywords: sustainable development goals, 2030 Agenda, climate, biodiversity

Executive summary: The Sustainable Development Goals (SDGs) have given the United Nations a political and statistical framework that reconciles the human development agenda with the agenda to protect the planet. More than five years since they were adopted, the progress made on these goals is still uneven and, when it comes to the environment, even lagging behind. The overarching objective of the 2030 Agenda was to re-establish a coherence between social, economic and environmental policies, but this is encountering systemic weaknesses that may well be exacerbated by the Covid-19 pandemic. In this paper, we put forward several exploratory avenues to steer the SDGs back on track: restore greater legitimacy and readability to the environmental goals by defining indicators that integrate the commitments made at COP21 and, eventually, those that should be made to protect biodiversity; identify the synergies and tensions between the different goals so that better trade-offs can be made among priorities; build and model a sustainable development pathway for each country to track the effective progress and estimate the cost of financing these improved pathways; integrate environmental imperatives into decision-making and trade-offs and, finally, extend the time horizon for the SDGs to 2050 along with 5-year milestones, updating indicators as research and diplomatic negotiations make headway, as provided for in the Paris Agreement for example.

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Highlights

- The Sustainable Development Goals (SDGs) are the result of intense diplomatic negotiations, and universally applicable: their scope of action extends beyond the now increasingly blurred borders between the developed and the developing worlds. They form a policy framework that aims to ensure greater coherence between the social, environmental and economic goals, whereas these matters had previously been dealt with in separate diplomatic, political and institutional circles. The 2030 Agenda encourages us to seek synergies and tackle the tensions between some of these objectives.
- Five years on from the adoption of the 2030 Agenda, it is now time for a first assessment of progress achieved.
 - **The headway made on the goals are uneven.** Even though it is too early to carry out a quantitative assessment, the effects of the Covid-19 pandemic are expected to undermine some of the progress achieved on the SDGs, particularly on the themes of poverty, health and education. Some trends, on climate, biodiversity or combating inequality, were already clearly heading in the wrong direction even before the Covid-19 pandemic. This subverts the spirit of the SDGs, which is precisely not to sacrifice any of the aspects of sustainable development. There is a grave risk that we end up with a “cherry-picking” logic, in which each country, each territory or even each institution chooses to move forward on those SDGs that it deems priorities, which may mean losing sight of the systemic approach advocated by the 2030 Agenda.

–Monitoring the Agenda comes up against the difficulty of measuring sustainable development in all its complexity.

Collecting data to track the 232 indicators required to assess the achievement of the 169 SDG targets remains a statistical conundrum. The large number of indicators may tip the implementation of the Agenda into a technocratic exercise that is a far cry from the transformative ambition initially intended.

We are thus proposing five exploratory avenues to steer the SDGs back on track and strengthen cross-cutting integration of the social and environmental aspects within the framework of the SDGs:

–Focus more on the environmental goals (climate, biodiversity) that have a marked lag. Environmental challenges can only be foregrounded if a more rigorous estimate of the state of the environment is undertaken, and if the prerequisites for maintaining ecosystem dynamics and a healthy and liveable environment are identified. We propose that systematic efforts be made in each country to produce strong-sustainability analyses so that the sustainability dynamics of their territories can be measured more effectively. Working on these indicators will help to measure the means required to return to sustainable development pathways.

–Look for synergies between goals and face head-on the trade-offs that help to surmount tensions between social and environmental goals. The great strength of the SDGs is that social, environmental and economic challenges are viewed as a network of goals which reinforce each other or, in some cases, collide. The roll-out of the 2030 Agenda makes it easier not only to identify the synergies between goals but also to detect points of tension (e.g., in resource use). Clearly, this will need to be grounded on local contexts

as these synergies and tensions differ depending on the technologies available, governance arrangements and geographical conditions on a given territory. Studying issues as nexuses (e.g., the linkages at the intersections between water, energy, food and health) is a useful starting point to find ways of resolving usage conflicts and antagonisms between goals.

– Work on the interactions between sustainable development goals by building trajectories based on a few key targets. Building trajectories allows a visualisation of what must be done to achieve one or more specific goals. It also makes it possible to model the changes that achieving these goals will produce in other domains, and make the relevant adjustments. In practice, it is impossible to build sustainable development trajectories with 169 components. Yet, comparing several variables based on a choice of data from selected sectors (e.g., energy, taxation and employment) can help determine long-term scenarios with several factors and provides a closer, more systemic view of the issues, in line with sustainable development.

– Better integrate environmental issues into decision-making and trade-offs. Despite efforts, the integration of environmental imperatives into budgetary decision-making and policy choices is still a timid affair. When it comes to investment decisions, economic considerations of income and employment often take priority over environmental issues, which have a longer time horizon. In recent years, tools have been developed to ensure that trade-offs, mostly in budgetary matters, better integrate environmental issues. Green budget initiatives, carbon budgets and environmental markers are designed with this in mind.

– Extend the SDG time horizon to 2050: The Agenda for the sustainable development goals was crafted with the 2030 horizon as a target, but this date should be viewed as no more than a milestone. If we begin right now to set the goals for 2050, this will enable us to build sustainable development pathways in the longer term and to take stock of the magnitude of change needed to attain these goals. Diplomatic negotiations on different issues (climate, biodiversity, gender, inequality) have made crucial progress since the adoption of the SDGs. And the 2030 Agenda must systematically integrate this progress if it is to avoid rapid obsolescence. A review process should be put in place so that each upgrade of the sustainable development ambitions approved by the international community are drafted into the Agenda. The climate targets endorsed by the Paris Agreement and those on biodiversity, to be decided on in 2021 at Kunming, in China at the Fifteenth Conference of the Parties to the Convention on Biological Diversity, must be part and parcel of the 2030 Agenda, which means in effect that it will be updated. Moreover, many crucial economic decisions (energy investments, land use, industrial transformations) are only viable on time horizons much further ahead than 2030. This is why we are proposing the adoption of a longer time frame for the SDGs, with milestones every five years so that they remain binding in the short and medium term.

Introduction

"If we were to look at a community coming into existence, we might be able to see how justice and injustice originate in it... Society originates...because the individual is not self-sufficient, but has many needs which he can't supply himself...And when we have got hold of enough people to satisfy our many varied needs, we have assembled quite a large number of partners and helpers together to live in one place; and we give the resultant settlement the name of a community or state...So let us first consider how our citizens, so equipped, will live. They will produce corn, wine, clothes, and shoes, and will build themselves houses...And fear of poverty and war will make them keep the numbers of their families within their means...So they will lead a peaceful and healthy life, and probably die at a ripe old age, bequeathing a similar way of life to their children...For though the society we have described seems to me to be the true one, like a man in health, there's nothing to prevent us, if you wish, studying one in a fever. Such a society will not be satisfied with the standard of living we have described...And we must no longer confine ourselves to the bare necessities of our earlier description, houses, clothing, and shoes, but must add the fine arts of painting and embroidery, and introduce materials like gold and ivory...We shall have to enlarge our state again. Our healthy state is no longer big enough; its size must be enlarged to make room for a multitude of occupations none of which is concerned with necessities...And the territory which was formerly enough to support us will now be too small...If we are to have enough for pasture and plough, we shall have to cut a slice off our neighbours' territory. And if they too are no longer confining themselves to necessities and have embarked on the pursuit of unlimited material possessions, they will want a slice of ours too...And that will lead to war, Glaucon, will it not? It will."

Plato, *The Republic*, Book II. (Trad. Desmond Lee)

What needs must be met for human beings, gathered into nations, to benefit from a just society and a fulfilling life? How can we choose between goals that sometimes seem incompatible? How can the relations between States and individuals be managed, given that the planet and its natural resources are finite? These are age-old and deep-rooted questions, as the above quotation goes to show. From the League of Nations to the United Nations, the attempts to find an all-encompassing answer have been many, albeit incomplete.

On 25 September 2015, the 193 Member States of the United Nations adopted the 2030 Agenda for Sustainable Development. This policy action framework with a “transformational vision” aims to ensure that humankind enjoys a “prosperous and fulfilling” life within fifteen years (United Nations General Assembly, 2015). It comprises 17 Sustainable Development Goals (SDGs) to be achieved collectively by 2030. The commitments made by the States are intended to be holistic: eradicate poverty in all its forms; ensure access to food, health, energy, water and sanitation; ensure quality education at all levels; combat climate change and its impacts; promote full and productive employment; reduce inequality; ensure sustainable production and consumption; protect terrestrial and marine ecosystems; and establish multi-stakeholder partnerships to achieve sustainable development.

When it was adopted, the 2030 Agenda sparked great enthusiasm. It was the outcome of three years of negotiations on an unprecedented scale. Global, regional and individual consultations made it possible to collect opinions from many individuals and representatives from all backgrounds (civil society groups, academics, private sector) on the priorities that should be put forward in the Agenda. The universal nature of the document, which is intended to apply to all States regardless of their income, is also unprecedented. Above all, it lends concrete form to a vision of sustainable development that is shared by all UN Member States and which closely intertwines economic, social and environmental issues. The goals and targets of the Agenda are said to be “indivisible” and “interlinked” (UNGA, 2015).

Five years on from the adoption of the 2030 Agenda, the observation of the UN Secretary General is nonetheless irrefutable: even before the COVID-19 pandemic, “we were not on track to meet the goals by 2030” (UNSG, 2020). Progress was already uneven in 2019, when the advances made in the fight against poverty and maternal and child health had been offset by a mounting food insecurity, deepening inequalities and accelerating climate change. In 2020, the Covid-19 pandemic cast a further shadow on the situation. The crisis is projected to lead to a global downturn of -5% in 2020 (IMF, 2020). Extreme poverty (which affects 8% of world population) is set to increase for the first time in 20 years. Unemployment, inequality, malnutrition, violence against women and children will likely be exacerbated. At the same time, global consumption and production patterns still rely heavily on natural resources, particularly fossil energies, and continue to degrade the environment. The threat of species extinction has worsened over the last three decades. According to the projections compiled by the United Nations Environment Programme (UNEP, 2019b), global temperatures are projected to rise by at least 3.2°C by the close of the century, far above the 2°C target of the Paris Agreement. The restrictive measures for transport in the countries hit by the Covid-19 pandemic have led to a drop in greenhouse gas (GHG) emissions worldwide, but this is no more than an unintentional and temporary effect.

In this circumstances, the Secretary-General of the United Nations is calling on everyone to stay the course set by the 2030 Agenda. Over the last five years, initiatives have proliferated at national and regional level, as in the UN agencies, to implement the 2030 Agenda as a common framework for action. Each country, each territory, each sustainable development actor is called on to contribute to the 2030 Agenda, on the basis of its own situation and its own starting point. Yet, whoever tries to implement the Agenda comes up against the same questions. What do you start with? How do you implement 17 goals, 169 targets and 232 indicators? And then, how do you set your priorities without jeopardising the “indivisible” aspect of the 2030 Agenda? How do you reconcile national objectives with the global objectives when the proposed monitoring system relies on the voluntary efforts of States?

Research studies have multiplied in an effort to tame this complexity. They fall under diverse disciplines (political sciences, economics, philosophy, sociology, ecology and even psychology) and belong to different schools of thought (well-being theory, sustainability sciences, ecological economics, etc.). The research explores interactions between the SDGs, impact metrics and the definition of indicators, as well as those between the governance of the 2030 Agenda and the different territorial levels (local, national, regional and international). Drawing on the literature, this paper seeks to decipher some of the challenges for the implementation of the 2030 Agenda by revisiting its origins and the sustainable development approach underpinning it. The present paper proposes exploratory avenues to contribute to achieving the ambition of the 2030 Agenda in terms of integrating the social and environmental fronts.

1. “Alignment with the SDGs” – impossible in a 17-dimensional world?

The 2030 Agenda is often described as an assembly of sector-based sustainable development challenges. Taken separately, each goal would make sense, but when bundled into 17 goals, it could be difficult to know where to start, which priority actions to select. So how can this complexity be explained?

1.1 – The convergence of legacy Agendas

1.1.1 – Going further than the Millennium Development Goals

The SDGs are to a large extent the result of a “pendulum swing” with respect to the previous framework (2000–2015) of the Millennium Development Goals (MDGs) (Langford, 2016). The MDGs were inspired by a 1996 core list of objectives of the OECD’s Development Assistance Committee (DAC), then crafted by United Nations experts in a drive to spur a collective remobilisation around a few priorities formulated in the Millennium Declaration of 2000. The MDGs laid out an Agenda for development assistance and the Ministers of Development in developed countries had taken on responsibility for this. The MDGs focussed on eight goals¹ targeting the responses to basic needs. They make a clear distinction between developed and developing countries, thus perpetuating a binary view of the world.

For the SDGs, on the other hand, the first talks were propelled by middle-income countries (Colombia, Guatemala, Brazil). The preparation process was formally launched at the Rio+20 Summit in 2012, an arena that traditionally falls within the purview of Ministries of Environment (Fukuda-Parr, 2016). Contrary to the MDGs, it became clear as early as 2012 that the ambition was to propose goals that could apply to all countries.² At the outset, the two processes – one to reflect on the post-2015 Agenda as a sequel to the MDGs, the

other to prepare sustainable development goals – were separate. They finally converged and gave rise to the formulation of the SDGs.

The consultation process on the contents of the future 2030 Agenda was designed to be as open as possible, in what “what seemed like the first exercise in global participatory democracy” (Langford, 2016). Numerous consultations were organised at national, regional and global levels. An online survey was even launched worldwide, encouraging each citizen to respond. In 2013, a working group bringing together representatives from Member States was created. Its work finally produced a proposal with 17 goals in 2014.

The vision advocated by the SDGs is broader than that of the MDGs. The SDGs target inclusion and the fight against inequality, mainly through redistributive efforts, and have the ambition of “leaving no one behind”. The Agenda clearly states the importance of tackling accumulated poverty, considering this from a multi-dimensional standpoint, not simply on the sole criterion of income. The importance of women’s empowerment and gender equality is also affirmed in a specific SDG. Environmental questions have been extended to the fight against climate change, the preservation of terrestrial and aquatic ecosystems, and the sustainability of lifestyles (consumption and production, agriculture and housing).

1.1.2 – A negotiation process that did not set an order of priorities

The consultations and negotiations for the 2030 Agenda brought together “sector-based communities” whose discussions were traditionally held in separate arenas, particularly for environmental and human rights matters. The 2030 Agenda took up many commitments previously made by States in different fora and at conferences on economic, human and environmental development (see Box 1).

¹ Poverty reduction, food security, maternal health and child health, the fight against HIV/AIDS and malaria, education, environmental conservation and the global partnership for development.

² Even though the distinction between developing and developed countries is not totally absent in the 2030 Agenda (adopted in 2015) given many targets are only relevant to either developing countries or developed countries (such as the official development assistance target).

Box 1 – Global conferences: an accumulation of commitments

1972 Stockholm Conference on the Human Environment

1990 First UNDP report on human development

1990 Jomtien Conference on Education

1990 World Summit for Children – 7 goals (1990–2000) for the development and protection of children linked to complementary goals for maternal health, nutrition, etc.

1992 Rio Earth Summit, with the Rio Declaration and the launch of Agenda 21, for territorial level action. The link between development and environment is affirmed. Agenda 21 states “the beginning of a new global partnership for sustainable development”. Three United Nations conventions are adopted: on climate change, biological diversity and the combat against desertification.

1993 Vienna Conference on Human Rights

1994 Cairo Conference on Population and Development. An action agenda that includes goals for gender equality, women’s empowerment and reproductive health.

1995 Beijing Conference on Women and Copenhagen Summit on Social Development

2000 Millennium Summit. Adoption of the Millennium Declaration and the 8 Millennium Development Goals

2002 Monterrey Conference on Financing for Sustainable Development

2009 Copenhagen Climate Change Conference

2012 Rio+20 Summit (United Nations Conference on Sustainable Development)

2015 Addis Ababa Conference on Financing for Development, Special Summit on Sustainable Development and COP21.

The negotiations leading to the adoption of the Agenda were the theatre of confrontations between different conceptions of development. In fact, Fukuda-Parr (2016) refers to “battles” rather than negotiations. The 2015 negotiations resulted in a document that drew a fine political balance and seemed to be the fruit of inevitable compromises between states. It contains a large number of goals because, according to Langford (2016), “When the deal was done in mid-2014 almost all states decried the number of goals and targets, yet none expressed willingness to trade off its own favoured goals and targets”. Subsequent negotiations in 2015 did not lead to a reduction of the number of goals. It was more a question of clarifying the sense by elaborating targets, means of implementation and a monitoring mechanism. A preamble was also added in an attempt to frame the goals more broadly. It states the Agenda’s five pillars (people, planet, prosperity, peace and partnerships), reaffirms the indivisibility of the goals and underlines the commitment to leave no one behind.

Moreover, due to circumstance, the year 2015 produced a jumbled “trifecta”. The issues of financing development were dealt with in a separate document, adopted at the Addis Ababa Conference held in July 2015. And, while some proposals from the Addis Ababa Conference were integrated into the final 2030 Agenda document (e.g., the global technology facilitation mechanism), the two processes remained separate. Likewise, the results of the Paris Climate Agreement, adopted several months later, were not integrated as such into the Agenda. Admittedly, the Agenda refers to the United Nations Framework Convention on Climate Change, but only mentions it as the “the primary international, intergovernmental forum for negotiating the global response to climate change”.

1.2 – The ambiguous notion of “sustainable development”

1.2.1 – A polysemous notion

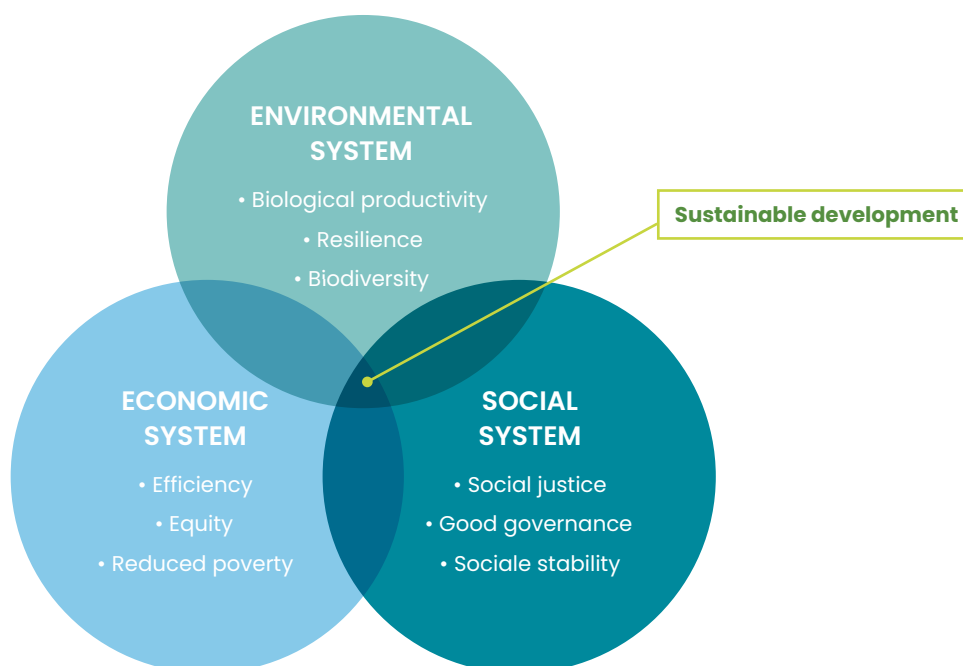
The term “sustainable development”, popularised as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Report, 1987), is polysemous. Sustainable development, “like other political terms such as ‘democracy’... has a widely accepted but vague core meaning within which there are differing ‘conceptions of the concept’—legitimate, yet incompatible and contested, interpretations of how the concept should be put into practice” (Jacobs, 1995, in Connelly, 2007). These multiple interpretations may give rise to window-dressing or “over-communication”, whereby some actors (governments or companies) flag their interventions as supporting sustainable development, but make no radical changes in their actions. So what sustainable development approach does the 2030 Agenda refer to?

The 2030 Agenda approach: sustainable development in three dimensions, at least...

The 2030 Agenda explicitly refers to a conception widely found in the literature on sustainable development – that of a three-dimensional approach. In the preamble of the 2030 Agenda, the States reaffirm their commitment to the 17 SDGs, which “are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental” (AGNU, 2015).

One of the first authors to conceptualise this three-dimensional approach is Edward Barbier. For Barbier (Barbier 1987, *in* Barbier and Burgess, 2017), the overarching objective of sustainable development is to maximise the goals across each of the three systems (economic, social and environmental/ecological) through a process of trade-offs between them. This approach is depicted as overlapping circles with sustainable development located at their intersection (cf. Figure 1).

Figure 1 – Maximisation of the 3 dimensions

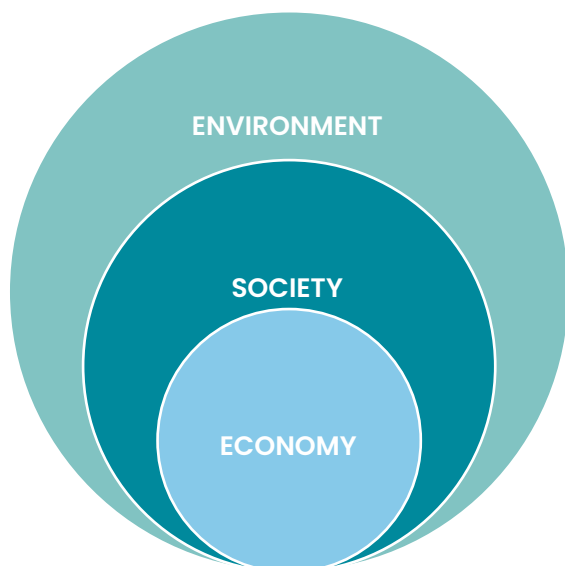


Source: adapted from Barbier (1987), in Barbier and Burgess (2017).

This three-system approach was then taken up by many other authors and schools of thought, but the perimeter of the three dimensions, their overlapping and ultimately the implications for public policy recommendations can differ widely among authors (Purvis *et al.*, 2019). Some authors refute the idea of maximising the three spheres and, instead, view the economy as a means to serve the social sphere, which is itself embedded in a broader environmental dimension, as shown in Figure 2.

Figure 2 – The nested model with the economy embedded in the social sphere and its environment

Source: authors

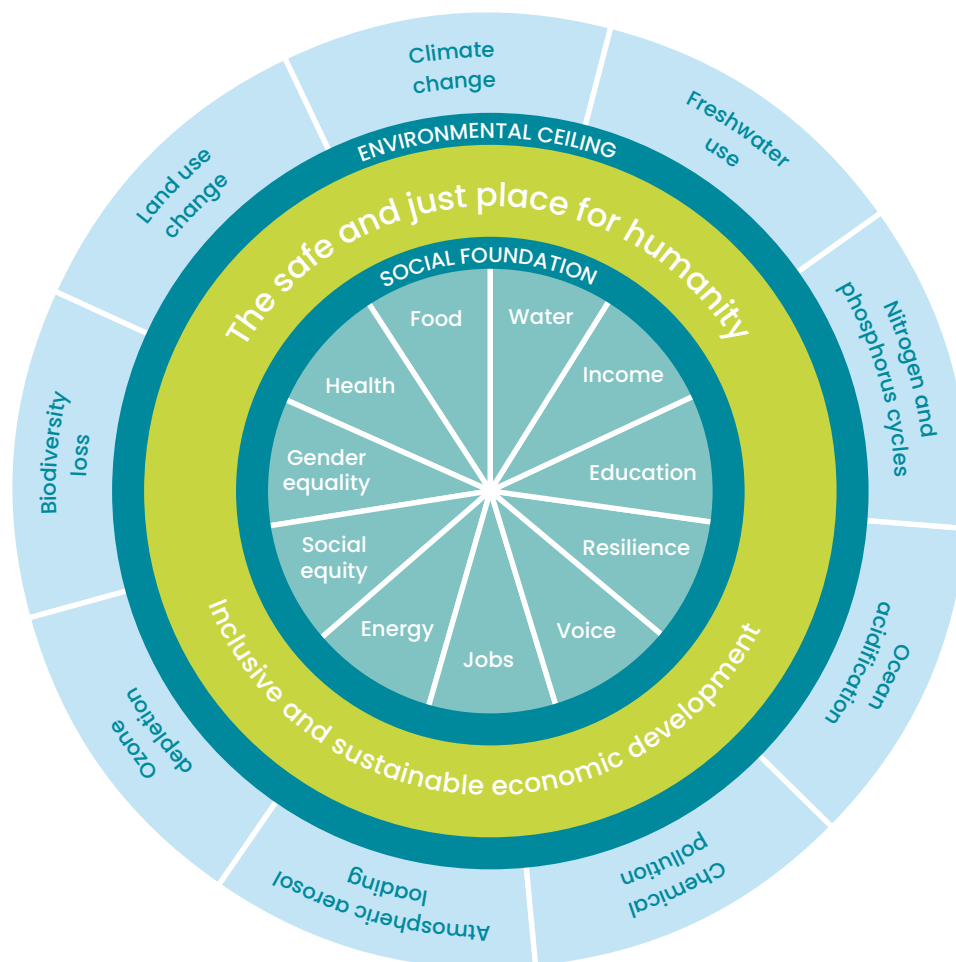


Other authors associate additional dimensions to these three to extend the sustainability spectrum. One dimension often highlighted is governance, so to underline the importance of institutional arrangements and civic participation for sustainable development. Culture may also be introduced as a determinant of the systems' sustainability. In this case, the focus is on the individual's value system, their lifestyle and traditional knowledge, or the way in which they perceive nature.

Since the 2000s, with the ongoing updates to the planet's biophysical boundaries, the materiality of the environmental constraint has prompted a revision of the sustainable development concept. According to this approach, sustainable development boils down to ensuring the well-being of society within directly measurable planetary limits, which, if overstepped could mean that the critical environmental thresholds will have been crossed (Rockström *et al.*, 2009; Steffen *et al.*, 2015).³ Similarly, Kate Raworth has introduced the Doughnut diagram to show that a "safe and just space for humanity" must be found in between the need to meet humankind's essential needs (food, water, education, employment, etc.) and the need to keep within the planetary boundaries (Figure 3)

³ Rockström *et al.* (2009) identify nine planetary boundaries: climate change, ocean acidification, stratospheric ozone depletion, disruptions to biochemical cycles of nitrogen and phosphorus, biodiversity loss, global freshwater use, change in land-use, chemical pollution and atmospheric aerosol loading. Steffen *et al.*, 2015, establish that four of the nine planetary boundaries have already been crossed due to human activities: climate change, biosphere integrity, land-system change and biochemical flows of nitrogen and phosphorous.

Figure 3 – The doughnut: a safe and just space for humanity



Source: K. Raworth, 2018, *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*, Cornerstone. <https://www.kateraworth.com/>

1.2.2 – Tensions between SDGs, linked to the sustainable development approach set out in the Agenda

The 2030 Agenda does not rely on the concept of planetary boundaries, but it does draw on the three-dimension approach. The Agenda's economic dimension is grounded on the pursuit of economic growth, particularly in the least developed countries. One of the targets proposes to "sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries". The Agenda thus assumes a possible large-scale decoupling between economic growth and environmental degradation. Target 8.4 aims to "endeavour to decouple economic growth from environmental degradation". SDG 12 focuses on sustainable production and consumption patterns with a view to reducing the ecological footprint of productive activities through better energy efficiency, mainly driven by the deployment of technological solutions (Elder and Olsen, 2019; Gasper et al, 2019).

Under the SDGs, economic growth holds a pivotal role for the achievement of the SDGs on poverty alleviation and the reduction of inequality. On the other hand, robust constraints to ensure that this growth is compatible with the environmental goals set out in the Agenda have been given lesser importance. On the basis of a retrospective statistical study (1983–2016) of 227 countries and territories, Pradhan *et al.* (2017) show that although developed countries have indeed improved their citizens' well-being, they are now locked into production and consumption patterns that generate unsustainable material and environmental footprints. The 2030 Agenda, which posits that sustaining economic growth must go hand in hand with improved efficiency in the use of global resources, is most likely doomed to fail for want of a compelling operating procedure. Lusseau and Mancini (2019) confirm that the climate and production targets, as well as those for sustainable consumption, will likely impede the achievement of other goals in high-income countries.

This major difficulty in reconciling economic growth and protection of the environment has led authors such as Redclift (2005) to conclude that sustainable development should be seen as an oxymoron which obscures the tensions between natural systems and human activities. Concurring with the findings of Pradhan *et al.* (2017), Hickel (2019) draws on empirical data to underline that SDG 8 on growth and employment will, under current conditions, hinder the achievement of the SDGs sustainability objectives. The author challenges the assumption that an adequate decoupling between economic growth and the reduction of environmental degradation as outlined in the Agenda will be feasible. The painful experience of 2020, marked by a strong GDP contraction in the developed countries due to lockdowns resulting from the Coronavirus pandemic, shows – which gives no cause for optimism – that even a significant drop in GDP is not in itself enough to ensure an equivalent and lasting decrease in CO₂ emissions.

1.2.3 – Environmental objectives lagging behind

The tensions between social, economic and environmental objectives are reflected in the stocktaking review of the SDGs, five years after their adoption. When we look at the progress made, the environmental goals are clearly on a long-term downwards trend. According to the Global Sustainable Development Report (GSDR, 2019), the goals to tackle climate change, halt marine and terrestrial biodiversity loss (which supposes an end to overfishing, to deterioration of coastal waters, wildlife trafficking...), promote a healthy lifestyle (contradicted by the increase in obesity) and less resource-dependent global production show a marked lag, as does the fight against inequality (see Table 1). For the GSDR (2019), no country has achieved the overarching objective of balancing human well-being with a healthy environment. In other words, for the time being, no country has successfully combined a high human development index with a low ecological footprint.

Table 1 – Projected distance from reaching selected SDG targets by 2030 (at current trends)

















GOAL	WITHIN 5%	5–10%	> 10%	NEGATIVE LONG-TERM TREND
1 NO POVERTY 		1.1 Eradicating extreme poverty	1.3 Social protection for all	
2 ZERO HUNGER 		2.2 Ending hunger (undernourishment)	2.2 Ending malnutrition (stunting) 2.5 Maintaining genetic diversity 2.a Investment in agriculture	2.2 Ending malnutrition (overweight)
3 GOOD HEALTH AND WELL-BEING 	3.2 Under-5 mortality 3.2 Neonatal mortality		3.1 Maternal mortality 3.4 Premature deaths from non-communicable diseases	
4 QUALITY EDUCATION 	4.1 Enrolment in primary education	4.6 Literacy among youth and adults	4.2 Early childhood development 4.1 Enrolment in secondary education 4.3 Enrolment in tertiary education	
5 GENDER EQUALITY 			5.5 Women political participation	
6 CLEAN WATER AND SANITATION 		6.2 Access to safe sanitation (open defecation practices)	6.1 Access to safely managed drinking water 6.2 Access to safely managed sanitation services	
7 AFFORDABLE AND CLEAN ENERGY 		7.1 Access to electricity	7.2 Share of renewable energy 7.3 Energy intensity	
8 DECENT WORK AND ECONOMIC GROWTH 			8.7 Use of child labour	

Table 1 (continued) – Projected distance from reaching selected SDG targets by 2030 (at current trends)

GOAL	WITHIN 5%	5–10%	> 10%	NEGATIVE LONG-TERM TREND
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 		9.5 Enhancing scientific research (R&D expenditure)	9.5 Enhancing scientific research (number of researchers)	
10 REDUCED INEQUALITIES 			10.c Remittance costs	Inequality in income
11 SUSTAINABLE CITIES AND COMMUNITIES 			11.1 Urban population living in slums	
12 RESPONSIBLE CONSUMPTION AND PRODUCTION 				12.2 Absolute material footprint, and DMC
13 CLIMATE ACTION 				Global GHG emissions relative to Paris targets
14 LIFE BELOW WATER 				14.1 Continued deterioration of coastal waters 14.4 Oversharing
15 LIFE ON LAND 				15.5 Biodiversity loss 15.7 . Wildlife poaching and tracking
16 PEACE, JUSTICE AND STRONG INSTITUTIONS 			16.9 Universal birth registration	

Source: GSDR, 2019.

1.3 – The limitations of metrics

1.3.1 – An increasingly technical debate

The 2030 Agenda uses the language of numbers to formulate the “informal norms that guide behavior” (Fukuda-Parr and McNeill, 2019). Once established, the priorities of the Agenda then become the new performance standards to be met and are considered as universally applicable and a reference for policy assessments. For Fukuda-Parr and MacNeill (2019), this has brought about a double re-framing: first, a shift in norms, as the 2030 Agenda reformulates the concept of development as a universal aspiration towards inclusive and sustainable human progress; but also a methodological shift as the preparation of the Agenda was primarily based on setting goals whose progress was to be monitored by numeric indicators.

At the 2030 Agenda negotiations, the choice was made to leave it up to a technical body mainly made up of statisticians – the Expert Group on SDG indicators – to propose a selection of indicators to monitor the goals and targets adopted by the Open-ended Working Group on Sustainable Development Goals, comprising UN Member States.

This Expert Group first convened in June 2015 with the mandate to reach an agreement on a small set of indicators. Two years later, in July 2017, a list of 232 indicators was finally adopted. However, half of these were still under discussion due to the lack of available data.⁴

The large number of indicators has produced a statistical conundrum. The 2020 Report of the UN Secretary-General underlines the “huge data gaps” that exist in terms of geographical coverage, the timeliness of data collection and the level of disaggregation of the indicators. (UNSG, 2020). On gender, sustainable production and consumption, climate action and marine ecosystems (4 of the 17 goals), fewer than half of the countries have comparable data.

In an ideal world, each country would be able to build a pathway to achieve the SDGs by measuring the progress made and modelling the distance still to be covered. In practice, it is proving too complex to envisage constructing these national trajectories – “all goals included” – in the near future, even in the developed countries. Given the current structure of the SDGs, a country would in fact need to construct 169 trajectories, one for each target, to precisely comply with the SDG framework. The example of COP21, which had come after the elaboration of each country’s nationally determined contribution, shows that modelling a trajectory for one single target (CO₂ emissions) is a lengthy undertaking. This is why countries that are preoccupied by the sustainability of their development models analyse or should analyse in priority the most obviously conflicting goals, even if this means “side-lining” other goals.

1.3.2 – The erosion of ambition

For Fukuda-Parr and McNeill (2019), a slippage in the Agenda’s ambition came about at the time the indicators were being defined. Translating the goals into indicators led to a replay of the political debate, on more technical grounds, between competing visions of development. For example, the goal to promote sustainable agriculture was translated into an indicator designed to represent the proportion of agricultural areas exploited both productively and sustainably. The fact that these two terms were conjoined is no minor detail, as an agricultural productivity indicator was already included in the Agenda’s indicators. This coupling led to heated discussions between the proponents of industrial agriculture and the advocates of agroecology, which concluded with the Food and Agriculture Organization’s proposal to establish an as yet experimental methodology using a dashboard to assess the environmental impacts on farms.

4 The UN Inter-Agency and Expert Group on SDG indicators (IAEG-SDGs) established a 2-tier categorisation in March 2020: Tier I and Tier II. The Tier-I indicators are indicators for which data exist for at least 50% of the countries and populations in each region where the indicator is relevant. The Tier-II indicators are those for which data are not regularly collected at country level. As of April 2020, there were 115 Tier-I indicators, 95 Tier-II indicators with multiple components, including some belonging to Tier I and others to Tier II, and 19 indicators that have not yet been categorised in either tier pending a review of the existing data.

When it comes to measuring poverty, given that there is no globally agreed methodology and no comparable cross-country data, the definition of an indicator for measuring the eradication of poverty in all its forms has been left to each country's discretion.

As for the goal to reduce inequality, the chosen indicator corresponds to the growth rate of household expenditure or the per capita income of the bottom 40% of the population (Target 10.1). Many other stakeholders, however, advocate the use of the Gini coefficient or the Palma ratio⁵ to assess vertical economic inequality (Fukuda-Parr, 2019). In fact, the decision was taken in 2020 to re-introduce the Gini coefficient into the list of SDG tracking indicators as a component of the indicator for the redistributive impact of fiscal policies. Yet, the Gini Index, while certainly more comprehensive, is not the most appropriate to "capture" the phenomena of wealth concentration at the top of income distribution. This was pointed out by Thomas Piketty, who has shown the salience of monitoring the relative relationships between deciles: for example, tracking the changes in the income and assets of the wealthiest 10% compared to the rest of the population (Piketty, 2014). This example illustrates how discussions about indicators can evolve and modify the SDG monitoring framework to produce somewhat different results depending on which lens is used.

Overall, the definition of the indicators gives rise to debates where power games and the way the authority of organisations is perceived from a technical and political viewpoint have a significant impact. The two indicators selected for SDG 5 on gender to measure all forms of violence against women and girls rely more on an approach that considers that this violence stems from interpersonal relationships rather than from the deeply unequal structures of societies that tolerate or play down the gravity of these acts.⁶ This choice

can be explained by the appeal of more easily measured indicators that use data collected by the national statistics offices and criminal justice agencies. These are bodies with both the capacity and authority to collect and analyse big data, contrary to other organisations that combat violence against women (Merry, 2016).

1.3.3 – The hurdles to the quantification of environmental themes

The 2020 report on the SDGs highlights the difficulty of collecting reliable data to establish the Agenda 2030 indicators. In the environmental field more particularly, the indicators come up against the limitations of quantification. According to the United Nations Environment Programme, out of the 93 environment-related indicators, only one-third (i.e. 30 indicators) can be measured as the data exist (UNEP, 2019a). For the 63 others, the data are insufficient. For example, the targets linked to land degradation, ocean acidification or the quality of water resources cannot be measured for lack of data. The environmental SDGs stand out insofar as their targets are less precise than those of the so-called "social" SDGs, which are derived from the MDGs. However, to paraphrase Gramsci, if "the old world is dying, the new world is struggling to be born. Now is the time of monsters." But the old world of the MDGs still prevails over the world of the Paris Agreement and, perhaps, tomorrow, over the world of Kunming, the 2021 venue of the COP15 on biodiversity. The green SDGs, less clearly defined and undervalued, are still lagging and falling further behind with each passing year. The difficulty with the environmental targets stems from the fact that they are not always directly measurable, and need to be evaluated against an ideal that is modelled but not observed. This forecasting work is based on assumptions and modelling choices (e.g. the temporal or spatial scale) that have heavy implications for results in terms of sustainability.

⁵ The Gini coefficient, invented in 1921 by Corrado Gini, is an index ranging from 0 to 1 and designed to measure inequality of income or standard of living. According to this index, the countries close to 0 are in a situation of perfect equality, whereas those close to 1 are in a highly unequal situation. The Palma ratio, invented in 2011 by Jose Gabriel Palma, is also an inequality indicator. It compares the aggregate standards of living of the richest 10% and the poorest 40% of individuals.

⁶ The two indicators chosen to measure SDG 5 – target 5.2: "eliminate all forms of violence against all women and girls in public and private spheres, including trafficking and sexual and other types of exploitation" are 1) Proportion of ever-partnered women and girls aged 15 years and older, subjected to physical, sexual or psychological violence by their current or former partner in the previous 12 months, by form of violence and by age group and 2) Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age group and place of occurrence. These two indicators focus on interpersonal violence, leaving aside other indicators that could measure systemic violence (perpetrated by states or institutions), as well as violence suffered by women in their social interactions (harassment in public places or at work, climate of intimidation, isolation) or other socially tolerated crimes (honour crimes).

The 2030 Agenda negotiations can be rightly seen as a diplomatic success as they gathered together the entire international community around a single text with ambitious objectives. In this sense, they resulted in the formulation of a common language that provides a robust foundation for the stakeholder communities engaged in a sustainable development approach (states, NGOs, business, UN agencies and financial institutions). Be that as it may, the 2030 Agenda presents certain pitfalls: its prolific character detracts from its readability; the conception of sustainable development used in the Agenda, which places the economic, social and environmental spheres on the same footing, spawns contradictions; the Agenda compiles a multitude of indicators that make it hard to create concrete incentives for better investment in sustainable development. Yet, opportunities to avoid these pitfalls and return to the integrative ambition of the Agenda exist. These are developed in detail in the second part of this paper.

2. Steering the SDGs back on track: 5 exploratory avenues to strengthen the SDGs

Five years after the adoption of the 2030 Agenda, researchers are still engaged in heated debate on its content and the best way to implement it.

Certain researchers propose analytical grids to help policymakers put the Agenda's priorities back in order. The Independent Group of Scientists on sustainable development appointed by the UN Secretary-General recommends, for example, activating four levers (governance, economy and finance, individual and collective action, science and technology) and working on six "entry points" for the SDGs: human well-being and capabilities; sustainable and just economies; food systems and nutrition patterns; energy decarbonisation and universal access; participatory and inclusive urban and peri-urban development; and preservation of global environmental commons (GSDR, 2019). Researchers in the Sustainable Development Solutions Network propose for their part organising SDG implementation into six transformations (education, gender and inequality; health, well-being and demography; energy decarbonisation and sustainable industry; sustainable food, land, water and oceans; sustainable cities and communities; digital revolution for sustainable development). Added to these are two cross-cutting principles: "leave no one behind" and "circularity and decoupling in a stable planetary system" (Sachs *et al.*, 2019). They based their choice of transformations on several criteria, principally the degree of interaction between the goals and the need to mobilise around a limited number of transformations, the perimeters of which are aligned with government structures generally found in the countries. The researchers working within the theoretical current of ecological economics group the SDGs into three sub-goals: 1) a sustainable scale to stay within environmental planetary boundaries; 2) fair distribution to protect capabilities for flourishing; 3) efficient allocation to build a living and sustainable economy (Costanza *et al.* 2016).

The Covid-19 pandemic and the economic and social perturbations that it is creating also raise questions about the Agenda's framework. Naidoo and Fisher (2020) estimate that two-thirds of the Agenda's targets are either threatened by the pandemic or inadequate when it comes to mitigating its impacts – either they are based on the assumption of strong economic growth or they contribute to intensified trade which is a vector of disease. According to the authors, 10% of the targets could even exacerbate the impacts of future pandemics. They propose focusing on the targets

that aim for well-being, such as setting up universal health coverage or improving early-warning systems to tackle global health risks.

All of this research work underlines the need to ensure greater coherence within the prolific SDG framework. The five-year review of the SDG implementation shows that some goals, especially in the environmental field, are in bad shape (Part I.3). This fact leads one to wonder what course should be taken. If the environment-related SDGs are those that lag behind most, how can we refocus efforts on those goals? How can we cross-integrate all of the Sustainable Development Goals included in the Agenda?

Here, we propose five exploratory avenues to bolster the implementation of the Agenda, while also recognising that setting development priorities is not a technical question to be decided by experts, however competent they may be, but rather a question related to political and civic stakes that need to be addressed within the framework of country-specific democratic or institutional mechanisms.

2.1 – Focus on the environmental goals that have a marked lag: climate and biodiversity

Although the use of indicators runs the risk of simplification, the environmental issues cannot be foregrounded without a more rigorous assessment of the state of the environment and the conditions required to maintain ecosystem dynamics and a safe and liveable environment.

2.1.1 – At global level, step up research efforts to define and refine the environmental indicators

As mentioned in Part I, most countries are finding it hard to adhere to the statistical edifice enshrined in the 2030 Agenda, especially countries with limited statistical capabilities. Given the **mass of indicators set out in the Agenda, each country, each institution or researcher has to choose which ones they wish to prioritise, with the ensuing risk that the choice will come down on those that are easiest to collect.** Means-of-implementation indicators (e.g., implementation of policies for sustainable public procurement practices, or the progress made in implementing a regulatory framework enabling small-scale fisheries to access fishing zones)

could be preferred over performance indicators that reflect the state of societies and ecosystems (e.g., the proportion of people living on less than the median income, the areas of forest cover or plastic pollution of the oceans).

The proliferation of targets and indicators also creates biases when it comes to analysing the goals as a whole; the risk being that this could create sorts of “black boxes” liable to quash any policy debate on the choice of variables. Thus, in order to obtain results, many studies seeking to model SDG interactions are obliged to select certain targets within the goals or focus on certain variables as proxies to assess the achievement of a goal. Research work such as the SDG Index⁷ is based on aggregate data, which necessarily means that researchers take a position on the relative weight they give to each variable. This decision should, however, be a matter of public debate and democratic choice.

Without oversimplifying, if a minimum number of indicators able to translate an integrated vision of sustainable development at a global level were chosen, this would foster democratic debate on the key sustainable development goals. This is not to say that only easy-to-collect indicators would be selected. On the contrary, it would help **to focus research efforts on new indicators or to refine existing indicators with a view to integrating the different sustainable development dimensions.** Stafford-Smith *et al.* (2017) confirm the need to focus on “essential sustainable development variables”, citing for example the studies on planetary boundaries by Steffen *et al.* (2015). Measuring indicators to obtain better estimates of well-being beyond the GDP yardstick or to monitor changes in climate or biodiversity encompasses fast-moving research fields. This type of research can usefully inform ongoing international negotiations, for example, on biodiversity (under the Convention on Biological

Diversity) or climate (under the United Nations Climate Change Conference).

To take an example from the environmental realm, meeting the core objective of the Paris agreement – i.e. global warming limited to 1.5 or 2°C – presupposes a massive decarbonization of economic activities. As power generation is a major source of CO₂ emissions, it would be possible for instance **to establish an international standard for the “CO₂ content” of electricity production to limit the sector’s contribution to global warming.** A level of 100 grammes per kWh is estimated to be a target that would provide the sector with a degree of environmental sustainability. If this level is to be reached by 2050 (compared to some 500 g/kWh today), it would require a huge increase in the share of renewables or low-carbon energies in the energy mix (around 80%), which would open up a pathway consistent with the scenario to limit global warming to the 1.5°C set by the IPCC.

For biodiversity protection or sustainable resource management, the sustainable development goals do not adequately reflect the state of ecosystems or their degradation. The goals lack relevance for taking stock of the biosphere’s ability to sustain its regenerative capacity, in the optic of “strong sustainability”, which is to say, respect for the integrity of critical natural capital that cannot be replaced or offset. The sustainable development goals thus fix certain thresholds in social matters (e.g. the eradication of poverty, cut the global maternal mortality rate to under 70 per 100,000 live births or ensure a quality education for all), but overlook sustainability thresholds. Many indicators, and as many targets, refer to the “sustainable” management or use of ecosystems, but fail to specify what this sustainability means.

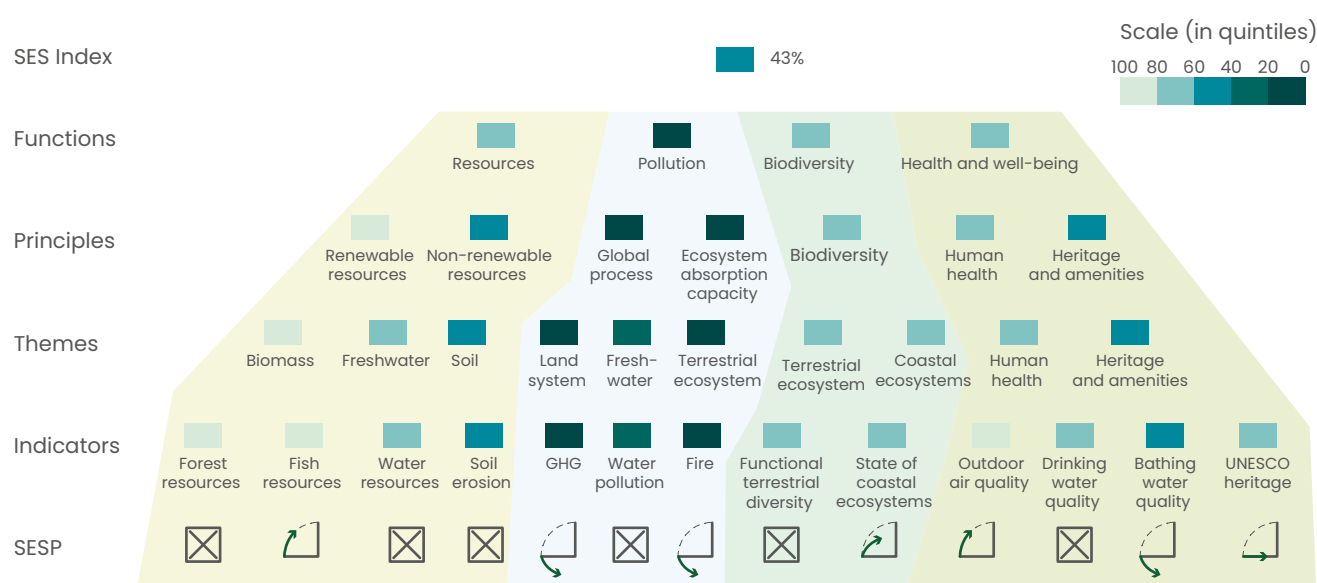
⁷ The SDG Index was developed by Jeffrey Sachs and an expert team at the Sustainable Development Solutions Network (SDSN) and the Bertelsmann Stiftung. It is published yearly by Cambridge University Press. <https://www.sdgindex.org/>

For example, SDG 12 on the sustainable management of natural resources includes the following target: “By 2030, achieve the sustainable management and efficient use of natural resources”. To measure the achievement of this target, two types of indicators are proposed – the material footprint and material consumption – but no required target level is set. To all appearances, the proposal is technical as it is linked to measurable indicators, but how can it be operationalised if it has no link to thresholds not to be exceeded? If no sustainability threshold is fixed, it is illusory to imagine that sustainable management can effectively be put into practice and that long-term planning for resource use can be improved.

Scientific thinking on sustainability indicators crucially needs to make headway so that the complexity of sustainable development can be understood, without simplifying it. In this spirit, a research team led by Paul Ekins of University College London has developed a new indicator dubbed the Environmental Sustainability GAP,

better known by its acronym ESGAP (Ekins *et al.*, 2019; Fairbrass *et al.*, 2020). **Based on a dashboard, this indicator allows for monitoring of the state of environmental functions⁸ and helps to ensure they are maintained at a sustainable level.** Like all environmental indicators, local application of the ESGAP indicator runs up against the problem of data availability, as well as of the existence of sustainability standards. That said, in the countries and territories where it has been rolled out in pilot projects (Kenya, Viet Nam, New Caledonia), its application has made it possible not only to undertake a sorely lacking, cross-cutting diagnosis, but also to identify avenues to build up the collection and use of data for environmental management. More broadly, the formulation of this type of environmental indicator and its approach to local issues help to facilitate the science-policy interface. It enables ties to be forged with policymakers and public policies and ultimately enriches the public debate on the interactions between environmental, social and economic issues at the local level.

Figure 4 – Environmental Sustainability Gap (ESGAP) dashboard for New Caledonia



Note to the reader: ESGAP comprises a dashboard of 22 indicators from which two composite indicators are calculated: the SES (Strong Environmental Sustainability) and the SESP (Strong Environmental Sustainability Progress). For the list of environmental functions currently identified (resources, pollution, biodiversity, health and well-being), these indicators represent the gap with respect to the environmental sustainability standards (from 0 to 100%) (SES), and the changes in this gap over time (SESP). For New Caledonia, the SES score is 43%, mainly due to the “weak sustainability of the ‘Critical pollution loads of ecosystems’ function (10% – shown in dark blue), linked to the high GHG emissions and the impact of fire on the ecosystems” (Comte *et al.*, 2021). Source: Comte *et al.*, 2021.

8 These four functions are sustainable use of natural resources, critical pollution load of ecosystems, biodiversity, and human health and well-being.

2.1.2 – At local level, engage in a debate on environmental thresholds in light of the major global challenges

At national and local level, engaging in a debate on the establishment of environmental goals and the means of achieving them will be crucial to reappropriating the sustainable development challenges and reconciling the indicators used for international comparison with territorial scales, in the spirit of a mutual reinforcement of these two processes.

Stimulating a democratic debate on setting thresholds at the local or national level, or even for a specific entity (e.g., a company or an institution) **would help reposition the environmental goals at the centre of discussions.** This approach echoes the process set up by the Paris Agreement, in which each state was asked to formulate its national contribution to the objective of limiting the increase in temperatures as set out in the Agreement. Certainly, at aggregate level, an analysis of contributions shows that the climate trajectory would push increases up to at least +3°C by the end of the century, far higher than the fixed target. Yet, this exercise has two key merits: first, it engages a national-level debate on the composition of the national contribution and, secondly, it raises awareness of the extent of additional efforts required to reach the ultimate objective. The challenge is now to bring the goal of keeping global warming to under 2°C back into line by substantially improving national contributions. On this count, the adoption of more precise national objectives to decarbonise main sectors and emissive activities stands as a priority.

2.2 – Identify the synergies and tensions between the goals

The great strength of the SDGs is that they approach the social, environmental and economic issues as a network of interacting goals. As a result, they are able to strengthen each other and, in some cases, may collide. The implementation of the 2030 Agenda can make it easier to identify not only the synergies between sustainable development challenges but also their points of tension (e.g., over resource use). The core stakes of research on these interactions⁹ is to transform the system shaped by the SDGs into a system of synergistic re-enforcement in which interactions between the targets become “non-obstructive” (Pradhan, 2019).

2.2.1 – Identify the subjects requiring trade-offs

On the basis of a statistical study involving a dataset of 122 indicators covering 227 countries and territories over the period 1983–2006, Pradhan *et al.* (2017) identify 10 pairs of SDGs that present the highest share of synergies and 10 pairs of SDGs with the highest share of trade-offs, meaning where progress on one or more SDG targets hinders progress on one or more targets of another SDG. Despite the limits of this study due to incomplete data, the findings show that the SDG on sustainable consumption and production conflicts most with the other goals such as inequality reduction, poverty eradication, health, education or access to water and sanitation. This SDG emerges as one of the SDGs that is most exposed to the need for trade-offs. Likewise, the SDG on terrestrial ecosystems also calls for trade-offs with other goals.

⁹ Research studies on this subject are many and varied. Between March 2015 and April 2019, no fewer than 70 papers based on diverse methodologies (quantitative modelling, impact analysis, networked analysis, statistical study, etc.) were published in scientific journals to disentangle SDG interactions (Bennich *et al.*, 2020).

Figure 5 – Global ranking of 10 pairs of SDGs with the highest shares of synergies (left) and trade-offs (right)

TOP 10 synergy pairs		Ranks	TOP 10 trade-off pairs	
11 SUSTAINABLE CITIES AND COMMUNITIES	13 CLIMATE ACTION	1	10 REDUCED INEQUALITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1 NO POVERTY	4 QUALITY EDUCATION	2	1 NO POVERTY	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1 NO POVERTY	5 GENDER EQUALITY	3	6 CLEAN WATER AND SANITATION	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1 NO POVERTY	10 REDUCED INEQUALITIES	4	3 GOOD HEALTH AND WELL-BEING	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1 NO POVERTY	6 CLEAN WATER AND SANITATION	5	4 QUALITY EDUCATION	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
4 QUALITY EDUCATION	10 REDUCED INEQUALITIES	6	10 REDUCED INEQUALITIES	15 LIFE ON LAND
3 GOOD HEALTH AND WELL-BEING	10 REDUCED INEQUALITIES	7	5 GENDER EQUALITY	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
1 NO POVERTY	3 GOOD HEALTH AND WELL-BEING	8	1 NO POVERTY	15 LIFE ON LAND
3 GOOD HEALTH AND WELL-BEING	5 GENDER EQUALITY	9	2 ZERO HUNGER	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
3 GOOD HEALTH AND WELL-BEING	6 CLEAN WATER AND SANITATION	10	4 QUALITY EDUCATION	15 LIFE ON LAND

Note to the reader: The left-hand column lists the top 10 SDG pairs with the highest share of synergy. According to this ranking, SDG 1 on poverty and SDG 3 on health are the SDGs most often associated with synergies. The right-hand column lists the top 10 SDGs that have significant negative correlations (the progress on one goal leads to a backslide for another SDG). In this top 10, SDG 12 on responsible production and consumption and SDG 15 on terrestrial ecosystems are those that most often have negative correlations.

Source : Pradhan *et al.*, 2017

Sachs *et al.* (2019) identify the goals whose interactions are particularly prone to trade-offs in order to deal with them all together. The authors consider that the goal to decarbonise energy and promote sustainable industry will require a trade-off between energy access on the one hand, and decarbonisation of energy and production systems on the other. A trade-off will also be necessary with respect to the choice of energy mixes in countries and territories in order to tackle the air pollution resulting from these choices, greenhouse gas emissions forecasts, and the potential rebound effect induced by an increase in energy demand. Undoubtedly, compromises will also have to be negotiated for food systems, as well as oceans. Possible contradictions in this area are widely documented, especially those between the increase in agricultural production on the one hand, and limiting damage to biodiversity and water resources on the other (due to pollution risks, the drying-up of aquifers, etc.).

In addition to studying interactions on a global scale, they also need to be studied in context given that the type of interaction (positive or negative) depends on local factors. Thus, without explaining the reasons for the differences, the statistical study of Pradhan *et al.* (2017) mentioned earlier concludes that the SDG on health and the SDG on sustainable production and consumption are subject to trade-offs in many countries, but it also shows that, in some countries (such as Algeria), these two SDGs have a synergistic relationship.

Nilsson *et al.* (2016) show that at least three elements must be considered when qualifying the nature of SDG interactions, depending on the context: available technologies, governance and geography. The study of the International Council for Science (ICSU, 2017) rounds off this list by adding time (to account for interactions that may emerge within different time frames) and directionality (which refers to the fact that SDG interactions may have different directions or, in other words, one SDG will have an impact on another without the reverse being necessarily true). Both studies find that, in most cases, antagonisms stem from governance issues. For example, energy infrastructure projects are likely to have harmful effects on land rights, but this negative interaction is not necessarily intrinsic – it depends above all on the governance measures implemented to take these rights into account.

To work on the interactions between goals and negotiate actionable compromises between them, **it is thus important to prioritise local and participatory approaches, as local perceptions of the trade-offs to be made may differ from the scientific analyses.** As the “yellow vests” movement in France has shown, the increase in the carbon tax on fuel, recommended by the experts, nonetheless met with refusal from a sizeable fraction of French society, just as the climate-energy contribution had been rejected by the movement of the so-called “*bonnets rouges*” (red caps). The political sensitivity of the topics points to the need to work at the local level and within a system of good governance so that ways of settling compensation can be found between the winners and the losers of a policy, should trade-offs be necessary.

The repercussions that one country’s achievement of an SDG may have on another country is also an under-researched topic. For example, building a dam may enable a country to reach its energy goal by increasing its population’s access to energy, but the dam could make it harder for the downstream countries to fulfil their own goal of food security if the dam has reduced the surface areas of irrigated agricultural land. The 2030 Agenda can help to point up such repercussions or highlight cases when a sustainable development problem is transferred from one country to another. In climate matters, for example, this approach is prompting interest in identifying the sources of greenhouse gas emissions more precisely. Factoring in cross-border effects means revising the calculation of country GHG emissions to correct for the effects

of international trade (adding imported emissions and deducting exported emissions). With this type of estimate (net emissions), the emission trends over the past thirty years differ from the calculations generally advanced and show, for example, that net emissions in Europe have been stable since the 1990s, despite a decline in so-called territorial emissions (UNDP, 2020). This calculation method provides a better measure of the (in)effectiveness of mitigation policies and makes it possible to adapt them accordingly.

The subject of governance raises the question of responsibility on the appropriate scale – either the international, regional, national or more local level. The integration of environmental issues often leads to a dilution of responsibilities among multiple actors (Karlsson-Vinkhuyzen *et al.*, 2018). **Defining responsibilities at the right scale is an obvious issue not addressed in the 2030 Agenda** which relies on a voluntary system for monitoring implementation at the level of actors and states.





















2.2.2 – Work on nexuses

The nexus approach is particularly relevant to working on the trade-offs to be made between the different aspects of sustainable development, as it explores the linkages between sectors, scales and actors and seeks to connect scientific analyses to territorial realities.

Liu *et al.* (2018) shows that nexuses are directly or indirectly linked to all the SDGs (cf. Figure 6).

Figure 6 – Nexus examples and direct relationships to SDGs

NEXUS EXAMPLE SDGS	SDGS
Food–energy–water nexus	  
Water–food–energy–climate nexus	   
Food–energy nexus	 
Food–water nexus	 
Energy–water nexus	 
Energy–economic growth–CO ₂ nexus	  
Water– energy–land nexus	  
Energy–water–food–education nexus	   
Water–energy–people nexus	 
Women–water nexus	 
Energy–poverty–climate nexus	  
Food, energy, water, and health nexus	   
Tourism growth–water security nexus	 

NEXUS EXAMPLE SDGS	SDGS
Food–biodiversity nexus	  
Mining–water nexus	 
Nexus between financial autonomy, service provision, stakeholder participation and the resultant allocation of water	 
Nexus of climate change, water and food security, energy and social justice	    
Nexus between water service provision and property development	 
Renewable energy consumption– economic growth	 
Urban–water–energy–climate nexus	   

Note to the reader: each type of the above nexuses (left-hand column) are directly associated with SDGs (right-hand column) and can also be indirectly linked to many other SDGs.

Source: Liu *et al.*, 2018.

This approach is interesting as it makes it possible to go beyond institutional and intellectual siloes. The aim is to clarify the complex relationships between and within sectors, while also integrating these relationships into an institutional or stakeholder system (e.g., by analysing food and energy systems at watershed level). The approach usefully fulfils the need to find operational tools: a product life-cycle assessment, impact studies, etc. It can help facilitate and rationalise decision-making, for example, on major choices in the areas of energy, food, water management, as well as biodiversity protection and health (human and animal). Used mainly to respond to the issues of preserving natural resources, it promotes the planning and integrated management of these resources.

Yet, the nexus approach requires time and resources, as it involves calling on different lines of expertise, putting data together and promoting coordination between experts and stakeholders who need to understand each other's issues. For example, it means encouraging ministries to take an interest in SDGs other than those for which they are responsible. Given these constraints, Liu *et al.* (2018) consider that the nexus approach is only applicable to problems for which the added value of this approach has been adequately proven, since integrating the sustainable development aspects requires substantial financial and human resources to ensure coordination between the different sectors.

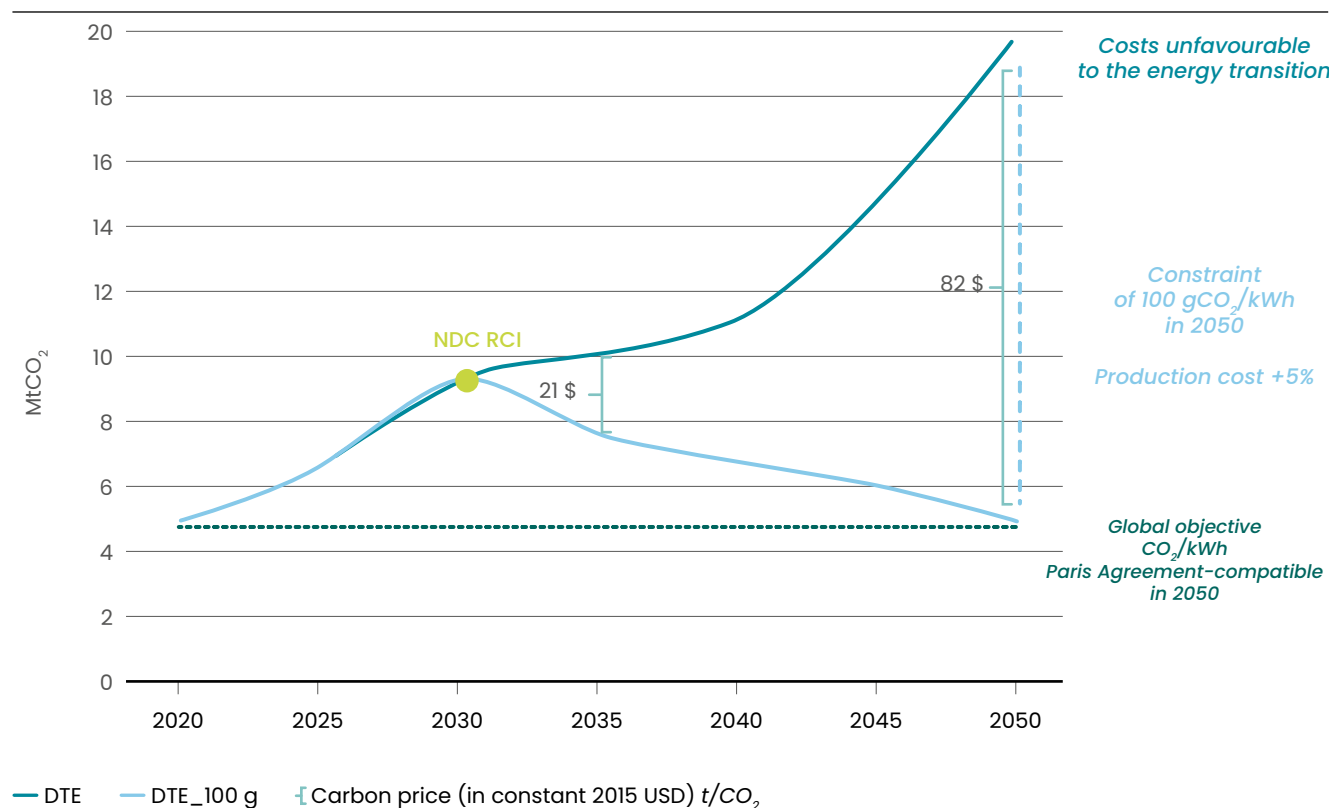
2.3 – Work on SDG interactions by building trajectories

The construction of trajectories makes it possible to visualise the path needing to be covered to reach one or more set objectives. It also models the changes that reaching these objectives will produce in other areas and thus allows the course to be adjusted accordingly.

Modelling can also provide an estimate of the co-benefits to be expected from implementing a public policy, by taking a long-term view. For example, the socio-economic impacts of energy choices can be assessed by coupling several models, either technical ones (as in the energy

sector) or macroeconomic. Using this type of coupled model, AFD has been working for several years with the Côte d'Ivoire on the country's national energy transition scenarios with respect to its contribution to the Paris Agreement. This modelling has made it possible to measure the cost of the transition towards a low-carbon energy system by 2050, based on a solar-battery sector. The results have shown that decarbonisation generally leads to a lower average cost for power generation or, at worst, increases it by 5% (cf. Graph 1). But they also show that this cost can be offset by the positive socio-economic impacts on GDP (up to +0.5% growth per year), employment (+27% of employment in the electricity production sector) and balance of payments (monetary reserves covering one extra month of imports).

Graph 1 – Modelling of energy transition costs in Côte d'Ivoire



Key: NDC RCI = nationally determined contribution of the Republic of Côte d'Ivoire; DTE = scenario unfavourable to the energy transition, with short term deployment of 700 MW of coal technology, with no climate constraint; DTE_100 g = scenario with a constraint of 100 kg of CO₂ emissions per MWh produced in 2050.

Source: Assoumou and McIsaac (forthcoming)

Note to the reader: this graph represents CO₂ (Mt) emissions for different electricity transition scenarios that minimise costs in a price context unfavourable to the development of renewable energies. The dark blue line represents a scenario with no climate constraint, while the light blue line shows a scenario with the constraint of 100 kg of CO₂ per MWh produced in 2050. In this price context, the addition of a constraint can translate into an implicit carbon price of USD 21 per tonne in 2035 to USD 82 in 2050. In other words, in this cost environment, the constraint only increases the average electricity generation cost by 5% in 2050.

Clearly, any attempt to plot trajectories that dynamically simulate the interactions between the 169 SDG targets would be practically impossible. Establishing a model that has a limited number of economic, social and environmental variables already requires several years of work. Moreover, as we have seen, combining the 169 targets that mix results and means would not make much sense. Yet, a comparison of several key variables starting with an analysis of tensions between a few selected sectors (e.g., energy, fiscality and employment) can help to determine long-term scenarios combining several factors, and provides a closer and more systemic vision of the issues, in line with sustainable development.

Ultimately, working on sustainable development trajectories leads each territory or state to rethink which final objectives it wishes to prioritise in the implementation of the Agenda.

The Covid-19 pandemic has focused the spotlight on the extent to which economies are deeply embedded in financial systems and the speed at which crises spread within these systems. In a world exposed to recurring financial imbalances, it will be all the more important in the coming decades to successfully conduct a granular analysis of financial dynamics in order to build sustainable trajectories at the environmental, economic and financial level. Models such as those supported by AFD under the GEMMES programme¹⁰ can help to reposition the environmental goals within coherent macroeconomic and financial contexts.

2.4 – Integrate environmental stakes into decision-making and trade-offs

The number of governments with ambitious environmental objectives is on the rise. Over 110 countries, including the United States, Japan, the United Kingdom and the Republic of Korea, have committed to reach net zero emissions by 2050. China announced that it was committed to achieving this objective by 2060. The European Union has pledged to reduce its GHG emissions by at least 55% compared to 1990 levels by 2030. Yet, these stated objectives are not yet producing enough results within the necessarily short time frames. The United Nations Environment Programme estimates that in the present state of affairs, current national policies will, at best, push us towards a 3°C temperature rise by the end of the century (UNEP, 2019b). Concretely implementing the announced global climate targets will be the challenge of the next ten years, as will expanding the efforts made on climate to protect and restore the environment as a whole.

Despite the stated objectives, the integration of environmental imperatives into budgetary decisions and the choice of public policies is still hesitant. In investment decisions, economic questions of income and employment often override environmental issues, which emerge in the longer term. An emblematic case is that of the United States' exit from the Paris Agreement

¹⁰ The GEMMES programme is a modelling tool implemented with local research partners in six countries: Brazil, Colombia, Côte d'Ivoire, Morocco, Tunisia and Viet Nam. Find more information on the programme at: <https://www.afd.fr/en/page-programme-de-recherche/gemmes-new-modelling-tool-incorporates-energy-transition>

which the Trump Administration had justified by the “unfair economic burden imposed on American workers, businesses and taxpayers by U.S. pledges made under the Agreement”.¹¹ The main argument advanced by President Trump was the need to protect jobs in the iron and steel, natural gas, coal and other industries.¹²

In recent years, tools have been designed to enable better integration of environmental issues into trade-offs, particularly budgetary trade-offs. The initiatives for green budgets, carbon budgets and environmental markers are heading in this direction and help to promote transparency in trade-offs between objectives. Each country, territory or institution details which preference ranking it is applying to manage SDG interactions. Each town, region or country that builds its budget and creates standards is effectively making trade-offs between the SDGs, consciously or not. When a state, or the Ministry of Health or Environment, decides on national education budgets, it is also ranking its preferences between different SDGs in a more or less openly assumed manner. For the sake of coherence and optimised public policymaking, it would be preferable to try to explain these trade-offs and social preferences.

An implicit carbon price, for example, allows for a comparison of investment projects in order to choose those that offer the best environmental outcomes for a given cost. However, it is also important not to confuse the determination of the implicit value of resources with their market value. A good can be totally “non-market”, but this should not prevent decision-makers from choosing between different priorities on the basis of explicit preferences determined within a democratic framework on a given territory. **Imagining SDG trade-off mechanisms,¹³ on a politically and fiscally autonomous territory, would allow sustainable development scores to be assigned to projects that mobilise public funds or develop standards.** To pursue the example of carbon emissions, this

would mean for instance systematically producing carbon footprints for each public investment on a given territory, as well as an emissions cap compatible with achieving the objectives of the Paris Agreement. A local authority could thus optimise its environmental policy costs (by setting an implicit price per tonne emitted and thus being able to select projects that offer the best social interest/environmental interest ratio), while at the same time refraining from exceeding an emissions threshold (with respect to the standard/fixed threshold).

By extending this reasoning, local authorities or states should set a value and consumption thresholds for their other natural resource in order to maintain a trajectory towards the sustainable use of all natural resources and biodiversity protection. One important point – which underpins the originality of the SDGs – is that each ministry could have its own carbon footprint and budget. This would incentivise each ministry or each local authority department to internalise, at its own level, objectives that are currently viewed as falling under the remit of the ministry of Environment.

Likewise, thresholds for land artificialisation, the use of pesticides or the volume of generated waste would facilitate SDG trade-offs. Budgets and regulations are all mechanisms that de facto impose trade-offs related to nexuses and the SDGs.

Given the current complexity of the SDG framework, it seems illusory to imagine that each ministry or institution show concern for all 17 SDGs and associated 169 targets. Yet, as the green/planet-related SDGs and inequality SDGs are losing ground, we think it reasonable that they receive special attention, that each ministry become partly responsible, that future key policymaking be systematically and specifically analysed with respect to these two aspects, and that these be open to democratic debate so that everyone can take them on board.

11 Press release by Secretary of State Mike Pompeo of 4 November 2019: <https://2017-2021.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement/index.html>

12 Speech of President Donald Trump of 1st June 2017 on the United States’ withdrawal from the Paris Agreement, annotated. <https://www.npr.org/2017/06/01/531090243/trumps-speech-on-paris-climate-agreement-withdrawal-annotated?t=1618825314121>

13 Clarifying the utility functions.

2.5 – Reconcile the 2030 and 2050 time horizons

2.5.1 – Update the SDGs to scale up their ambition

The Sustainable Development Goals will need to evolve not only as and when research on the environmental, social and economic indicators progresses, but also in line with diplomatic advances. On the climate front, for example, even though the Paris Agreement is not explicitly included in the SDGs given that it was signed several months after their adoption, a 50% target for carbon emissions reduction by 2030 is advocated at UN level and used de facto to measure the progress of the SDG on climate.

To avoid rapid obsolescence, the 2030 Agenda thus needs to systematically integrate diplomatic advances on sustainable development issues (e.g., climate, biodiversity, gender or inequality). Failure to update the SDGs would entail the risk that UN agendas again diverge. Other agreements adopted under the same international framework would gradually be added to the SDGs. This means that, to survive and retain their role of ensuring coherence, the SDGs will have to adapt.

For this, **a review mechanism should be put in place so that each enhancement of the sustainable development ambitions approved by the international community is drafted into the Agenda.** The major international gatherings planned for 2021, COP26 on climate in the United Kingdom and COP15 on biodiversity in China, should offer the opportunity to scale up ambitions for environmental objectives and revise downwards national carbon emissions trajectories. Late 2019, the United Nations Environment Programme warned that countries would have to triple the ambition of their current national contribution under the Paris Climate Agreement if they wished to collectively reach the 2°C target, and raise their ambitions fivefold to meet the 1.5°C target (UNEP, 2019b). The outcome of the forthcoming talks could lead to an update of

the SDG framework, so that these new sustainable development pathways are duly integrated into the policy framework that sets the course of action to support sustainable development.

2.5.2 – Start thinking about the 2050 goals

The debate on thresholds and trajectories also highlights the question of time when it comes to analysing decision-making. The time horizon for decisions made by stakeholders (policy-makers, private sector or civil society actors) is often short-termist, reduced to four or five years depending on the cycle of a project or election. What time scale should be chosen for environmental phenomena (whose effects are slow to materialise)? Why reduce the use of pesticides today if the time horizon for health objectives is limited to 2030 given that, by then, we will still not be able to precisely measure their impact on consumer health? It is important that we be able to take different time horizons into account – be it 2030, 2050 or a still more distant date – in order to integrate a long-term dimension depending on each SDG.

The Agenda for the sustainable development goals was designed with the target year 2030 in sight, but this deadline is nothing more than a milestone. If we begin as of now to set goals for 2050, this will allow us to build sustainable development pathways in the longer term and become aware of the magnitude of change required to achieve these goals. The further away the time horizon, the more crucial it is to plan for renegotiation points in order to integrate changes in scientific consensus, the evolution of societies and their democratic choices, and changes in their chosen priorities. Nonetheless, the adoption of a longer-term horizon must not lead to delays in urgent decision-making, quite the opposite. This is why we also consider it necessary to foresee milestones every five years, to ensure that policymaking time and sustainability time are also reconciled.

Conclusion

The debates on the future of the 2030 Agenda are clear signs of the interest shown in the SDG framework as a key incentive for continuing discussions between researchers and policy-makers on the directions for sustainable development paths. Given the mixed results on the achievement of the SDGs, there is a legitimate need to pursue the fruitful discussions between researchers and policy-makers on the framework for action.

Among the potential avenues to be explored, we have presented five that would help steer the SDGs back on track: step up research efforts to define environmental indicators at the global level and engage in a discussions on the environmental thresholds to be set at the local level; identify synergies and tensions between goals to promote trade-offs and work concretely on SDG interactions with a focus on specific nexuses; work on interactions by building sustainable development trajectories based on limited number of key variables; reconcile the 2030, 2050 and longer-term time horizons by updating the indicators as and when research and diplomacy make progress, but also by thinking as of now about the goals for 2050.

There are many other possible ways forward and doubtless each one of them needs to be discussed to enrich exchanges and find responses to the multiple sustainable development challenges. As research moves forward and international commitments to sustainable development make headway, the SDG framework will inevitably need to evolve.

In its global report (GSDR, 2019), the Independent Group of Scientists on sustainable development, appointed by the UN Secretary-General, stresses that the current imbalances across the social, environmental and economic aspects of sustainable development are the result of an insufficient appreciation of the interlinkages between these dimensions, or of undue prioritisation of the short term. As a final point, beyond the realisation of the goals, the implementation of the 2030 Agenda should be viewed as a successful undertaking if it helps to give fresh momentum to the crucial need to improve coherence between public policies, between development sectors, between private and public actors and decision-makers, while also taking on board the intergenerational effects of these policies. In the realm of development aid, the topic of coherence has been on the agenda for many years, but it had so far been confined to policy impacts outside national borders.

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Acronyms and abbreviations

UNGA	United Nations General Assembly
CO₂	Carbon dioxide
COP (15)	Conference of the Parties to the Convention on Biological Diversity
COP (21 AND 26)	Conference of the Parties to the Convention on Climate Change
ESGAP	Environmental Sustainability GAP
GDP	Gross domestic product
GEMMES	General Monetary and Multisectoral Macrodynamics for the Ecological Shift
GSDR	Global Sustainable Development Report
IPCC	Intergovernmental Panel of Experts on Climate Change
MDG	Millennium Development Goal
NGO	Non-governmental organisation
SDG	Sustainable Development Goal
SES	Strong Environmental Sustainability
SESP	Strong Environmental Sustainability Progress
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNSG	United Nations Secretary-General

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