



Sussing Out A Sustainable Future - A Review

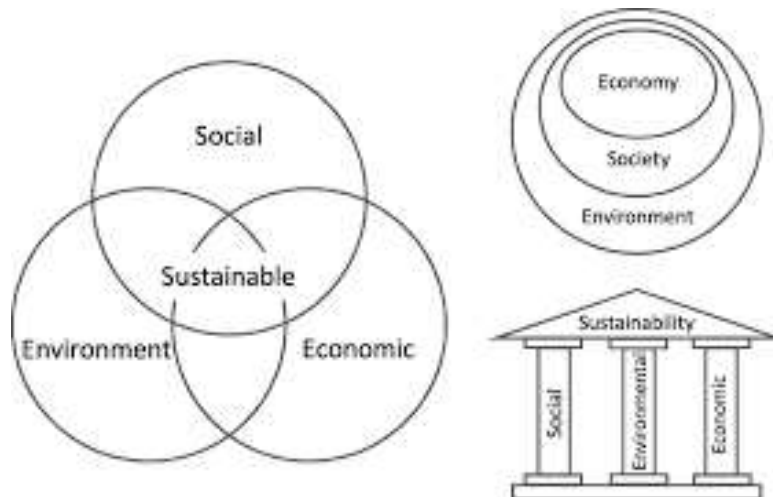
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INTRODUCTION

Sustainability is a long-term societal goal aiming for humans to coexist safely on the planet for a long time. In everyday use of the term, sustainability often focuses primarily on environmental aspects. The most dominant environmental issues since 2000 have been climate change, loss of biodiversity, land degradation, and pollution. Key terms that are used to illustrate the meaning of sustainability include: Choices matter; sustainability is a normative concept; sustainability can be positively understood as a vague concept; scale matters both in space and time; place matters; systems thinking is an organisational concept; there are limits; sustainability is interlinked to other essential concepts; and change is a fundamental consideration and challenge for sustainability.

1.1 Dimensions of Sustainability



Three different dimensions or pillars of sustainability are usually distinguished: environmental, social and economic. This understanding is shared by several concepts of sustainability, although they may differ in detail. The emergence of the three-dimensional paradigm has little theoretical basis, but it gradually emerged without a single starting point. However, the distinction itself is rarely contested. In fact, the “three dimension” concept of sustainability is the dominant interpretation in the literature.

1.1.a. Environmental sustainability is the responsibility of conserving natural resources and protecting global ecosystems in order to promote health and well-being, now and in the future. The reason being, so many decisions that impact our environment are not felt immediately.

1.1.b. Economic sustainability refers to practices that promote long-term economic growth without negatively impacting the social, environmental, and cultural aspects of a community.

1.1.c Social sustainability is ensuring that people do not get hindered by structural obstacles in health, competence, impartiality, and meaning-making areas.

The notion of “trade-offs” between different dimensions is frequently discussed in literature, including discussions of the relative importance of the three dimensions. The literature refers to the need to “integrate”, “balance” and “reconcile” the dimensions without necessarily articulating what this means in practice.

1.2 Sustainability Barriers



Major barriers to implementing sustainable practices are:

1.2.a. Lack of knowledge: Despite the growing interest towards sustainability in people, knowledge gaps and misconceptions still exist. Establishing a culture of sustainability requires understanding of the concept in the masses.

1.2.b. Lack of motivation: The lack of involvement and enthusiasm among the people towards the cause presents an incredible challenge to the planet

1.2.c. Lack of experience: Many people lack the experience and confidence that is necessary to act as champions of sustainable practices.

2. SUSTAINABLE DEVELOPMENT

Sustainable development is a core conceptual assumption for meeting human development goals while preserving the ability of natural systems to provide the natural resources upon which the society and economy depend. Sustainable development is often considered synonymous with the concept of sustainability. According to UNESCO, *sustainability* is often thought of as a long-term goal, while *sustainable development* refers to the many processes and pathways to achieve it.

Many of the challenges facing humanity, such as climate change, water scarcity, inequality and hunger, can only be solved at a global level and by promoting sustainable development: a commitment to environmental balance, social progress and economic growth.

As part of a new plan for sustainable development, the UN approved the 2030 Agenda, which includes the Sustainable Development Goals, a call to action to protect Earth and ensure the global well-being of people. These common goals require the active involvement of individuals, businesses, governments and countries across the world.

3. SUSTAINABLE DEVELOPMENT GOALS



Securing a sustainable future requires good decision-making and engagement with complex social, economic and environmental challenges to bring about a change.

In 2015, the United Nations adopted The Sustainable Development Goals (SDGs), also known as the Global Goals, as a universal call to action to bring poverty to an end, conserve the planet, and ensure that by 2030 all people enjoy peace and prosperity.

The 17 SDGs are integrated as such that they recognize the action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

Countries have committed to prioritise progress for those who are furthest behind. The SDGs are designed to bring poverty, hunger, AIDS, and discrimination against women and girls to an end.

The 17 goals are :



4. FUTURE OF SUSTAINABLE DEVELOPMENT

Achieving this sustainable future for people and nature is possible with existing and expected technological advancements and consumption, but only with major shifts in production patterns. Making these shifts will require overcoming substantial economic, social and political challenges. Overall, it is not likely that the biophysical limits of the planet will determine our future, but rather our willingness to think and act differently by putting economic development and the environment on equal footing as key parts of the same equation.

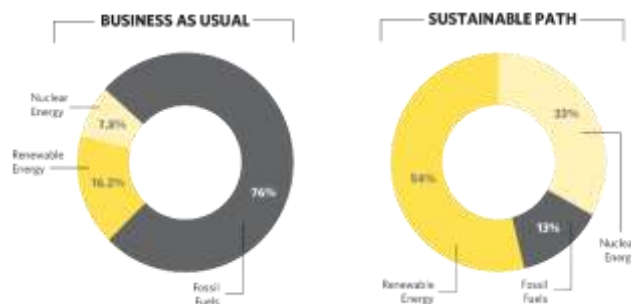
4.1 Climate, Energy and Air Quality

Perhaps the most pressing need for change is in energy use. In order to both meet increased energy demand and keep the climate within safe boundaries, we'll need to change the way we produce energy, controlling emissions of carbon and other hazardous chemicals.

Under a business scenario, fossil fuels will still claim a 76 % share of total energy in 2050. A more sustainable approach would reduce that share to 13 % by 2050. While this is a sharp change, it is necessary to stop the flow of harmful greenhouse gases into the atmosphere.

A Changing Energy Portfolio

In order to both meet increased energy demand and keep the climate in safe boundaries, we'll need to alter our energy makeup to curtail emissions of carbon and other harmful chemicals.



The reduction in carbon-based energy could be offset by increasing the share of energy from renewable sources to 54 % and increasing nuclear energy to one third of total energy output, delivering a total of almost 85 % of the world's energy demand from non-fossil fuel sources.

Moreover, we will only achieve the full extent of reduced climate impacts if we remove existing carbon from the atmosphere. This can be done through greater investment in carbon capture and storage efforts, including natural climate solutions like land management plans such as avoiding forest loss, reforestation, investing in soil health and coastal ecosystem restoration.

The net benefit of these energy redistribution efforts is twofold. First, they lower the rate at which greenhouse gases are flowing into the atmosphere—taking atmospheric carbon projections down to 442 ppm, compared to business-as-usual estimates that put the level closer to 520 ppm.

Second, these energy source shifts would create a marked decrease in particulate air pollution. Our models show that the higher fossil fuel use in the business-as-usual scenario is likely to expose half the people on the planet to degraded air quality by 2050. Under the sustainable scenario, that figure drops to just 7 % of the world's inhabitants, because of lower particulate emissions from renewable and nuclear energy sources.

4.2 Food, Habitat and City Growth

Meeting the sustainable targets we propose requires a second front on land to shift how we use available real estate and where we choose to conduct necessary activities. Overall, the changes we include in our more sustainable view allow the world to meet global food, water and energy demands with no additional conversion of natural habitat for those needs—an outcome that is not possible under business as usual.

While transitioning away from fossil fuels is essential to meet climate goals, new renewable energy infrastructure siting will present land-use challenges. Renewable energy production takes up space, and if not sited well it can cause its own negative impacts on nature and its services to people. In our more sustainable path, we address this challenge by preferencing the use of already converted land for renewables development, lessening the impact of new wind and solar on natural habitat. We also exclude expansion of biofuels, as they are known to require extensive land area to produce, causing conflicts with natural habitat and food security.

Perhaps most encouraging, we show that it is possible to meet future food demands on less agricultural land than is used today. Notably, our scenario keeps the mix of crops in each growing region the same, so as not to disrupt farmers' cultures, technologies, capacity or existing crop knowledge. Instead, we propose moving which crops are grown within growing regions, putting more "thirsty" crops in areas with more water, and matching the nutrient needs of various crops to the soils available.

If we were able to reduce meat consumption, especially by middle- and high-income countries where nutritional needs are met, reducing future agricultural land, water and pollution footprints would be even easier.

Meanwhile, on the land protection front, our analysis is guided by the Convention on Biological Diversity, the leading global platform most countries have signed. Each signatory country has agreed to protect up to 17 percent of each habitat type within its borders. While many countries will fall short of this goal under business as usual, it can be achieved in our more sustainable option.

4.3 Drinking Water, River Basins and Fisheries

Water presents a complex set of challenges. Like land, it is both a resource and a habitat. Freshwater resources are dwindling while ocean ecosystems are overburdened by unregulated fishing and pollution. Business-as-usual projections estimate that 2.75 billion people will experience water scarcity by 2050 and 770 water basins will experience water stress. Africa and Central Asia in particular would see fewer water stressed basins in the sustainable scenario.

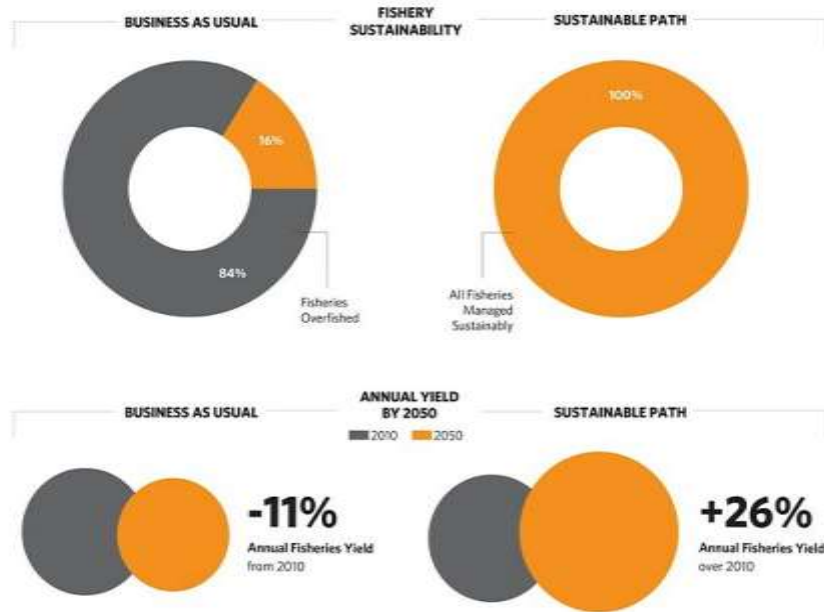
Changes in energy sources and food production (see above sections) would lead to significant water savings by reducing use of water as a coolant in energy production and by moving crops to areas where they need less irrigation. Thanks to these changes, our more sustainable option for the future would relieve 104 million people and biodiversity in 25 major river basins from likely water stress.

Meanwhile, in the seas, we find an inspiring possibility for fisheries. Continuing business-as-usual fisheries management adds further stress to the oceans and the global food system as more stocks decline, further diminishing the food we rely on from the seas. But more sustainable fisheries management is possible, and our projections using a leading fisheries model shows that adopting sustainable management in all fisheries by mid-century would actually increase yield by over a quarter more than we saw in 2010.

And, while we know that aquaculture is a certain element of the future of fish and food, many questions remain about precisely how this industry will grow, and how it can be shaped to be a low-impact part of the global food system. Given these unknowns, we kept aquaculture growth the same in both our views of the future.

Zero Overfishing, Greater Catch Yields

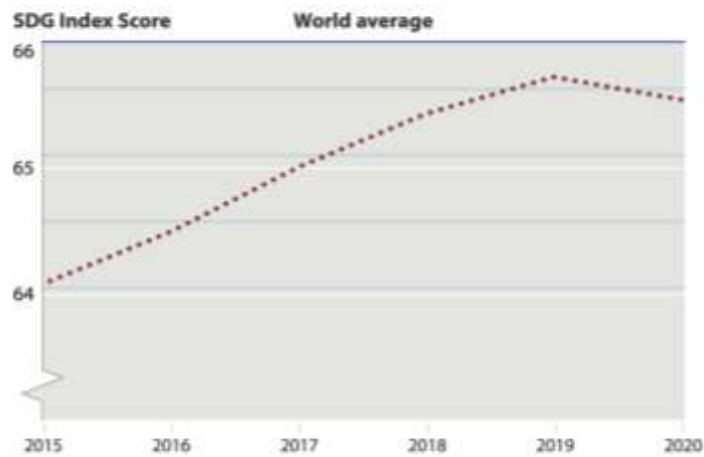
We believe that a two-part strategy of sustainable management for all wild fish stocks—which could actually increase fisheries yields to 26 percent above today's thresholds—while continuing to develop aquaculture along current growth projections can provide both much-needed protein and nutrients to the world and ensure the biodiversity necessary for healthy ocean ecosystems.



5. SETBACKS DURING THE PANDEMIC

The COVID-19 pandemic has been an obstacle to sustainable development everywhere. For the first time since the adoption of the SDGs in 2015, the global average SDG Index score for 2020 decreased from the previous year: a decrease largely due to increased poverty and unemployment rates following the outbreak of the COVID-19 pandemic. The global decline in SDG performance is likely to be underestimated in this year's report, with many indicators for 2020 not yet available due to time lags in international statistics. The pandemic has affected all three dimensions of sustainable development: economic, social and environmental. Containment of the pandemic through non-pharmaceutical interventions and global access to vaccines must remain the highest priority of any government. As long as the pandemic rages on, there can be no sustainable development and economic recovery.

Progress on the SDG Index



CONCLUSION

First and foremost, we must take care of our planet. We have several natural ecosystems that must be in balance for us to live here. One of them is the climate system. This system ensures that the temperature is just right and that the atmosphere radiates just the right amount of solar energy. When we emit harmful greenhouse gases like CO₂, we

clog the atmosphere. This changes the temperatures on Earth, which in turn affects our development. The way we produce and use energy is incredibly important. Oil and coal are examples of energy that we can run out of. However, water, wind and sun will always be there. Using permanent, self-renewing energy sources is good for the planet and can provide jobs for years to come.

Pretty much everything we develop, buy and trade starts with nature. We will be more sustainable if we use our natural resources in a smarter way, and create better systems for fair distribution. One way to contribute to a more even distribution is to be more aware of what we buy and how it is produced. If we wish to win the battle for a sustainable future, we must play according to fair rules that apply to everyone.



We humans are part of nature, but we are also important resources for the world, just like water, forest and the Sun. We have minds that are able to create the strangest and most creative things. However, in order for us to be the best version of ourselves, there are certain things that must be right, such as equal opportunity, education, safety, food and medicine. This provides greater opportunities for us as human beings, but also for the planet. We just have to think in a new way.

References

https://www.researchgate.net/publication/47697344_What_is_Sustainability

https://www.researchgate.net/publication/292906714_Sustainability_A_Comprehensive_Literature

3 Barriers to Implementing Sustainable Practices (and How to Overcome Them) - 2030.Builders

Securing a sustainable future | WWF

A Sustainable Future: Two Paths to 2050

Suss out our sustainability - The Economic Times