



Forum: Sustainable Development Goals 17

Issue: Creating and implementing innovative and sustainable technology

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Introduction

The United Nations have defined sustainability as ‘meeting the needs of the present without compromising the ability of future generations to meet their own needs.’ It was this fundamental concept that then laid the foundation for the Sustainable Development Goals, replacing the Millennium Development Goals in 2015.

The pace at which technology is advancing is almost inconceivable. The conception of green technology has also witnessed an evolution, yet it is rare to observe the successful integration of both sustainability and digital convenience. It is a delicate balance that requires innovation and a comprehensive understanding of the consequences of focusing on one side only.

The world strives for economic prosperity, often achieved through the employment of the latest cutting-edge technology, but it is important to understand that there can be severe repercussions on not only the environment but the global population as well.

It is therefore vital to find and solidify concrete and innovative solutions that don’t exploit the needs of the poor; contributing to progress in economic, environmental and social challenges. LIDC’s in particular are posed in a precarious position, often left without the resources or the funds to invest in research and development; their situation worsened by the outbreak of the Covid-19 pandemic.

Definition of Key Terms

Sustainability

Sustainability is defined as the avoidance of the depletion of natural resources in order to maintain an ecological balance.

Low Economically Developed Countries (LEDC’s)

LEDC’s are low-income countries confronting severe structural impediments to sustainable development.



Infrastructure

Infrastructure is the basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise.

Background Information

In order to achieve a state of sustainable and innovative development, the various aspects under its sphere of influence must be considered. Agriculture, education, finance and the environment are all elements central to the idea of sustainability and innovation.

Environmental aspects

As mentioned earlier, at the heart of sustainable and innovative technology are environmental concerns. In today's world technology is growing at a rapid pace, with little concern to the environment or sustainability. Truly achieving innovative solutions for a more sustainable future entails consideration aspects such as transport, energy, the recycling of materials and oceans.

Transport

It has long been consolidated the level of damage that individual ownership of vehicles causes to the environment. However, although slightly better - public transport also runs on diesel which contributes to local particulate levels and consequently the enhanced greenhouse effect. In order to combat this China has implemented widespread use of Public Electronic Transport. Although the initial acquisition costs are much higher due to upfront battery costs, the total ownership costs are significantly lower due to independence from diesel.

Public transport is a form of transport that is affordable to people of nearly all economic backgrounds. In this way, implementing sustainable public transport could fit into wider economic schemes, especially in LIDC's; although this would require refined funding from governments.

In order to truly make the transition into sustainability all forms of transport must be considered – especially heavy-duty vehicles such as trucks. Although not widely available yet, hybrid trucks are currently available in limited numbers - although unable to travel long distances. Gradually the transformation must be made to fuel-free vehicles to completely minimise fuel emissions.

Energy



Energy has long played a pivotal role in the debate about sustainable development with countries seeking renewable energy sources with the ever-looming threat of global warming. However, currently the main sources of renewable energy are solar power, hydropower and wind power. The main problem with those options however is that they are dependent on factors that can't be controlled, in other words; they are unreliable. The world relies unequivocally on 'fast and cheap' energy that often comes from non-renewable sources. The International Energy Agency estimates that an additional 36 trillion US\$ is required for clean energy investment in order to stabilize and cancel out the effects of global warming.

In regards to carbon emissions the current method of carbon capture and storage entails direct air capture which essentially grabs carbon dioxide from the air and converts it into synthetic fuel. However according to a study from Stanford University, this costs roughly \$600 per ton of carbon dioxide - which is why it is considered too cost prohibitive to implement on a large scale. It is predicted however, that this could drop to less than \$100 per metric ton of Carbon Dioxide eventually.

Infrastructure

SDG 9 is commonly titled as 'industries, innovation and infrastructure.' Essentially it aims for 'inclusive and sustainable industrialisation, together with innovation and infrastructure, to unleash dynamic and competitive economic forces that generate employment and income. They play a key role in introducing and promoting new technologies, facilitating international trade and enabling the efficient use of resources.'

Thus it can be understood that infrastructure plays a fundamental role in sustainable development, and it is vital to establish concrete and feasible solutions to develop the rate of global manufacturing growth which has been steadily decreasing over the past few years. However, with the recent outbreak of the Covid-19 pandemic this has only worsened, due to massive disruptions in global value chains and the supply of products.

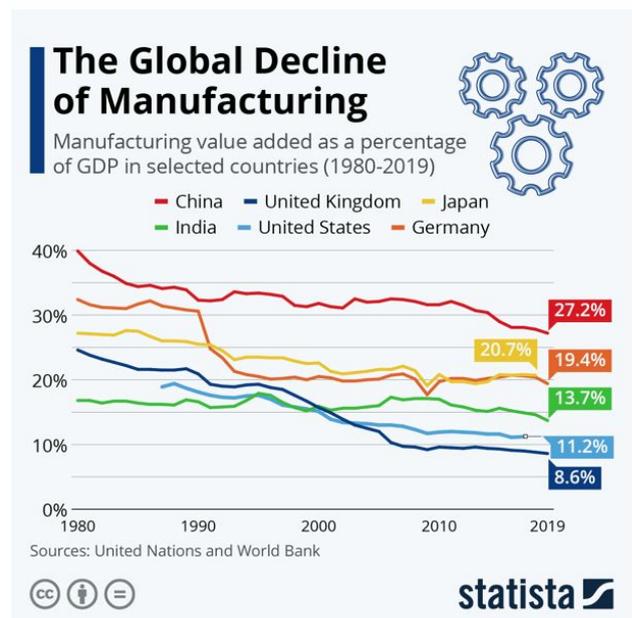


Figure 1: Decline in global manufacturing rates



Retrospectively, the pandemic has exposed an imminent need for infrastructure to uphold the increasing demands of the growing population in a sustainable and innovative manner.

One major issue that needs to be addressed immediately is the need to rectify infrastructure; specifically in LIDC's. According to the Asian Development Bank critical infrastructure

Education

The European Union has strongly spoken about the idea of implementing sustainable solutions to the education sector. According to the most recent report from the United Nations Educational Scientific and Cultural Organisation (UNESCO), approximately 264 million children do not have access to education worldwide. Considering the level of technology present at this day and age, this is a staggeringly high statistic that needs to be addressed imminently in a way that does not affect or exploit resources for future generations.

The outbreak of the Covid-19 pandemic in the early stages of 2020 forced many schools to go online and 'paperless'. In terms of sustainability, a digital and paperless school environment seems revolutionary but still does not provide those without access to a digital device any sort of compensation.

Finance

The global financial sector, including the banking, insurance and investment industries have become increasingly more open to the idea of sustainable development. In spite of this the percentage of capital flowing into a sustainable economy is minimal, as capital is instead diverted to resource-inefficient, carbon-intensive, polluting economies. Consequently, global and regional and even national social and economic inequalities are broadening - resulting in an increased vulnerability to disasters. According to the UN Secretary General, direct losses from natural disasters have been underestimated by roughly 50%, and are in the range of 2.5 trillion US\$ within this century alone - conclusively asserting that economic losses from disasters are spiralling out of control.

Major Countries and Organizations Involved

Sweden, Denmark, Norway, Finland, Switzerland



The UN sustainable Development solutions NEtwork have created a prototype index that measures how close an individual nation is to meeting the Sustainable Development GOals by 2030. The country with the SDG index across all 17 sustainable development goals is Sweden, completing roughly 85% progress towards the SDG's.

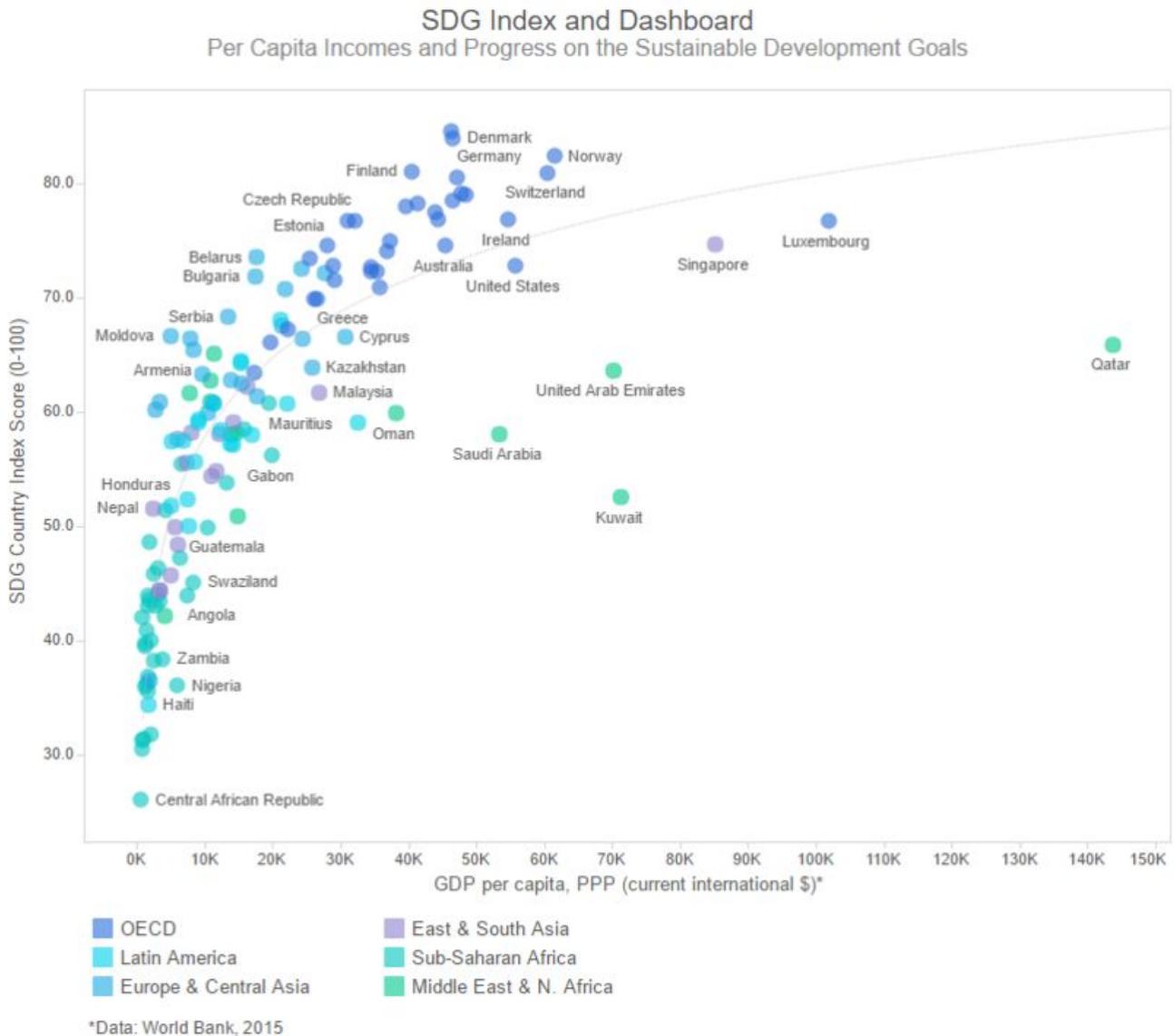


fig 2: The SDG index score

Qatar

The Qatar National Vision (QNV) was adopted in 2008, and essentially it aims to transform Qatar into a 'developed country capable of achieving sustainable development, and ensuring a continuous decent living for it's current and future generations.' One standout



partnership is [IHO Hydrography Capacity Building Programme for Coastal States](#) which aims to make wider use of the oceans and seas in a more sustainable manner.

United Nations

UN agencies committed to the advancement of sustainable and innovative technologies include but are not limited to:

United Nations Economic and Social Council (ECOSOC) who 'conduct cutting-edge analysis, agree on global norms and advocate for progress.' Their collective solutions advance sustainable development.

United Nations Environmental Programme (UNEP) which is the main focus point for all environmental efforts.

The Economic Commission for Africa (ECA) created by the Committee on Food Security and Sustainable Development (CFSSD) to 'serve as a forum for the promotion of cooperation, exchange of information, and sharing of experiences in the areas of food security, agriculture, environment, land, climate change, and broader sustainable development issues.'

Food and Agriculture Organization of the United Nations (FAO) which provides information and publications from all departments of the FAO. In essence it aims to defeat hunger, helping developing countries to modernise and improve agriculture, forestry and fishing practices thus ensuring good nutrition and food security.

International Agencies

Other international agencies committed to the advancement of sustainable and innovative technologies include but are not limited to:

Intergovernmental Panel on CLimate CHange (IPCC) which is the leading international body for the assessment of climate change.

United Nations Research Institute for Social Development (UNRISD) which is an 'autonomous UN agency engaging in multidisciplinary research in social dimensions of contemporary problems affecting development.'

The World Bank which is working for a poverty-free world and the World Bank Projects and Operations which can be used to search for reports and evaluations of projects funded by the world bank.



Timeline of Events

Date Description of Event

1967	The Environmental Defense Fund (EDF) is founded to pursue legal solutions to environment
1968	An Intergovernmental Conference for Rational Use and Conservation of the Biosphere (UNESCO) is held; where early discussions occur on the concept of ecologically sustainable development.
1968	Paul Ehrlich publishes 'The Population Bomb' which diverges on the connection between human population, resource exploitation and the environment.
1969	Friends of the Earth is founded. It is an advocacy organization dedicated to the prevention of environmental degradation, the preservation of diversity and the role of citizens in decision-making.
1977	UN Conference on Desertification is held.
1981	World Health Assembly unanimously adopts the Global Strategy for Health for All by the Year 2000,
1982	The UN World Charter for Nature and the UN Convention on the Law of the Sea are adopted. The World Resources Institute is established in the United States.
1988	Intergovernmental Panel on Climate Change (IPCC) is established to assess the most up-to-date scientific, technical and socioeconomic research in the field.
1990	International Institute for Sustainable Development (IISD) is established in Canada
1992	Earth Summit held in Rio de Janeiro, where agreements are reached on the action plan Agenda 21, the Rio Declaration, and the non-binding Forest Principles.
1993	The first meeting of the UN Commission on Sustainable Development,
1995	The World Trade Organization (WTO) is established, with formal recognition of trade, environment and development linkages.
1995	World Summit for Social Development is held in Copenhagen, where a clear commitment to eradicating poverty is expressed
1996	ISO 14001 is formally adopted as a voluntary international standard for corporate environmental management.



2002	World Summit on Sustainable Development is held in Johannesburg
2004	HIV/AIDS pandemic in sub-Saharan Africa.
2005	The KYoto Protocol introduced which legally bound developed country parties to goals for greenhouse gas emission reductions, and establishing the Clean Development Mechanism for developing countries.
2005	Millennium Ecosystem Assessment
2007	Montreal Protocol on Substances that Deplete the Ozone Layer
2009	Copenhagen Climate negotiations
2009	The concept of 'planetary boundaries is introduced' which quantifies our proximity to limits in nine areas, including biodiversity, chemicals, climate change, oceans acidification, fresh water and others.
2010	China becomes the world's largest domestic market for wind power
2010	The Economics of Ecosystems and Biodiversity final report calls for wider recognition of nature's contribution to human livelihoods, health, security and culture by decision-makers.
2011	The Arab Spring; where people across the Arab region rise up to demand sweeping democratic reforms in a number of countries
2011	China begins to shift to a 'green economy',
2012	Percentage of world's population without access to safe drinking water is cut by half

Relevant UN Treaties and Events

- Progress towards the Sustainable Development Goals, 25 July 2019–22 July 2020 **(E/2020/xxx)**
- Science, Technology and Innovation for Development, 20 December 2017 **(A/RES/72/228)**
- Science and Technology for Development, 26 July 2011 **(2011/17)**
- Science and Technology for Development, July 2010 **(2010/03)**
- Innovative solutions for environmental challenges and sustainable consumption and productions, 20 December 2017 **(UNEP/EA.4/17)**
- Sustainable Development - World Creativity and Innovation Day, 19 April 2017 **(A/71/L.61/Rev.1)**



- Transforming our World: the 2030 AGenda for Sustainable Development, 21 October 2015 **(A/RES/70/1)**
- Culture and Sustainable Development, 20 December 2013 **(A/RES/68/223)**
- Science, Technology and Innovation for Development, 20 December 2013 **(A/RES/68/220)**
- Policies and programmes involving youth, 20 January 2000 **(A/RES/54/120)**
- Micro-, small and MEdium-sized ENterprises Day, 11 April 2017 **(A/RES/71/279)**
- Innovative solutions for environmental challenges and sustainable consumption and production, 27 March 2019 **(UNEP/EA.4/HLS.1)**
- Innovative pathways to achieve sustainable consumption and production, 12 March 2019 **(UNEP/EA.4/L.2)**
- Addressing environmental challenges through sustainable business practices, 13 March 2019 **(UNEP/EA.4/L.5)**
- Sustainable infrastructure, 13 March 2019 **(UNEP/EA.4/L.6)**
- Promoting sustainable practices and innovative solutions for curbing food loss and waste, 13 March 2019 **(UNEP/EA.4/L.3)**
- Sustainable mobility, 14 March 2019 **(UNEP/EA.4/L.4)**
- Marine plastic litter and microplastics, 14 March 2019 **(UNEP/EA.4/L.7)**

Possible Solutions

In order to actualise the concept of sustainability a concrete foundation must be established. According to the United Nations Economic and Social Council (ECOSOC) investment in research and development as a proportion of GDP increased from 1.5% in 2000 to 1.7% in 2015. However this value remained almost unchanged in 2017 and most concerningly is still below than 1% in developing regions.

Therefore it can be established that the most logical starting point would be the establishment of dedicated research centres tackling the various issues surrounding sustainability and the constant re-evaluation of these institutions and centres. In order to globalize sustainability there must be an attempt at transparent communication including sharing of resources and findings.

Another point of emphasis is the imminent requirement for resilient infrastructure, especially in regards to response to natural disasters and climate change. On the topic of climate change global warming, particular attention must be paid to fuel emissions as well as energy resources which essentially are the two main factors influencing the enhanced greenhouse effect.

The sub-saharan has the highest recorded level of sunlight worldwide, followed by the Carribbean region- yet the relative amount of solar power generated is extremely low - being recorded as the largest unelectrified area in the world. Therefore a possible initiative would be seeking to divert the majority of energy generation through solar power in an accessible anner. However, this requires innovative



financial plans in order to make Solar Housing Systems not only accessible to the vast majority but also affordable.

Carbon emissions are another talking point in the ongoing debate about energy. Recently the concept of Carbon Capture and Storage has come into being - which essentially allows industries to capture carbon at its source, compress it and then store it permanently or for however long is required. This will significantly reduce greenhouse gas emissions. Furthermore, this stored carbon can then be used profitably in the production of other carbon-based products - particularly in the plastic industry, such as in the manufacturing of polyurethane.

Taking into consideration hydrogen in energy transition would also be a viable starting point, particularly as the global-warming benchmarks by 2050 are currently very ambitious, powering vehicles through hydrogen-fuel cells could decrease carbon emissions by 60%. However in order for this to happen, the costs for producing hydrogen must drop significantly. Furthermore the infrastructure in place must be refined in order to facilitate long-term transport and storage solutions.

In order to concretely make any progress towards achieving sustainability governments and co-operations must work together. Although the public sector plays a significant role in developing incentives for more adaptive decision making, it is almost certain that the private sector will play an outsized role catalyzing government action.

Guiding Questions

1. How is your delegation affected by this?
2. To what extent is your delegation affected by this issue?
3. What is your delegation currently doing to resolve this issue? How can this be developed/ improved/ built upon?
4. What partnerships/associations/organisations is your delegation currently affiliated with and how does this affect the delegation's stance on the issue?
5. What UN treaties has the delegation already signed regarding this issue?
6. How can your delegation contribute to achieving sustainability within your nation/ in other nations?
7. What partnerships/associations/organisations could your delegation be affiliated with in the future and how will it change this affect the delegation's stance on the issue? Does it change?
8. Are your solutions viable? Can they be implemented on a mass scale within the foreseeable future?



9. Does your solution make efficient resources that are abundant and affordable?
10. Is your solution applicable to all nations?
11. What limitations or constrictions are there?
12. Are your solutions ethical? Are they contradictory or controversial? Are they inclusive? Do they conflict with a specific race/religion/background/ethnicity/identity?

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Appendix or Appendices

- I. https://sustainabledevelopment.un.org/content/documents/26158Final_SG_SDG_Progress_Report_14052020.pdf (Secretary General's report on Progress towards the Sustainable Development Goals)
Provides an overview of what is currently being done about the sustainable development goals and the overall progress towards each goal
- II. [Science for a Sustainable Future](#) (UNESCO's website)
Breaks down what the organisation is doing to achieve sustainability
- III. <https://www.un.org/sustainabledevelopment/blog/tag/innovation/> (The Sustainable development goals blog)
Information on current events and policies, regularly updated
- IV. <https://www.unoosa.org/oosa/en/ourwork/space4sdgs/sdg9.html> (The Sustainable development goals blog)
Information on how space stations tie in to sustainable development
- V. <http://www.fao.org/nr/sustainability/home/en/> (The Food and Agriculture Organisation of the United Nations' sustainability site)
Provides information regarding the agricultural sector
- VI. https://www.iisd.org/system/files/publications/sd_timeline_2012.pdf (The International Institute for Sustainable Development's timeline)
Provides in depth information about the events central to sustainable development through time
- VII. <https://www.mckinsey.com/business-functions/sustainability/our-insights/sustainability-blog/the-five-lessons-from-our-annual-global-sustainability-summit> (Analysis of the global sustainability summit)
Provides insightful glances at lessons to be learnt and how these can be built upon going forward