

Sustainable Development & SDGs

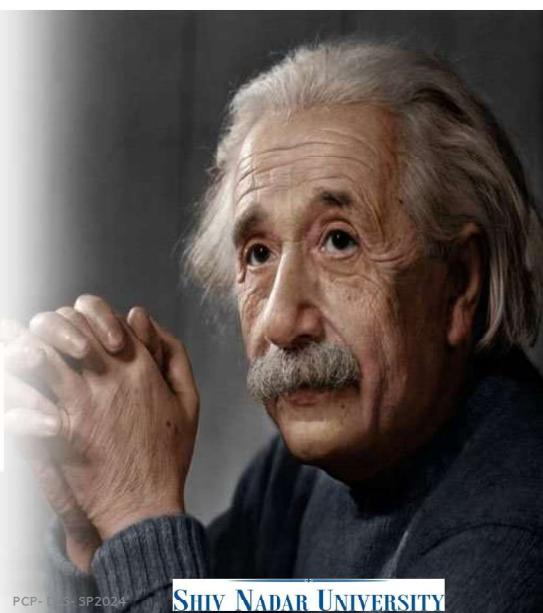


SUSTAINABLE DEVELOPMENT GOALS

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SUSTAINABLE DEVELOPMENT GOALS

“If the bee disappeared off the face of the Earth, man would only have four years left to live.”

— Albert Einstein



What is your unique #SDGtalent, which you can use to help achieve the #GlobalGoals?

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Natural resources and human needs

- Human history and civilization are inexorably **linked to natural resources**
- The human economy is driven by resources and energy.
- However, these raw materials and outputs of waste and pollution come from and are disposed of in the closed Earth system, which has limits...!
- Each stage in our **resource cycle** needs proper **management**.
- That requires **sustainable utilization** of our precious resources on planet Earth as per the **sustainability** of the resource.

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Sustainable Development



- In 1980 the International Union for the Conservation of Nature (IUCN) published a world conservation strategy that included one of the first references to sustainable development as a global priority and introduced the term "**sustainable development**".
- Two years later, the United Nations World Charter for Nature raised five principles of conservation by which human conduct affecting nature is to be guided and judged.
- In 1987 the United Nations World Commission on Environment and Development released the report *Our Common Future*, commonly called the **Brundtland Report**.

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Sustainable Development



To rally countries to work and pursue sustainable development together, the UN decided to establish the Brundtland Commission.

Sustainable development has been defined in many ways, but the most frequently quoted definition is from *Our Common Future*, also known as the Brundtland Report.

The report included what is now one of the most widely recognised definitions of sustainable development.

Ms Gro Harlem Brundtland was the former Prime Minister of Norway and was chosen as the Chairperson of the Commission due to her strong background in the sciences and public health.

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Sustainable Development



- “**Sustainable development** is *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

It contains within it two key concepts:

- The concept of '**needs**', in particular, the essential needs of the world's poor, to which overriding priority should be given; and
- The idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs.”

- — *World Commission on Environment and Development, Our Common Future (1987)*

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Sustainable Development (SD)

Thus, in brief Sustainable Development is the **organizing principle** for sustaining **finite** resources necessary to provide for the **needs** of future generations of life on the planet.

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Sustainable Development



Natural Resources and Ecosystem Services

- Sustainable development is the organizing principle for
 - meeting human development goals
 - while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend.

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What is sustainability?

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Sustainability

- Etymologically, the word **sustainability** comes from **sustainable + ity**. And **sustainable** is, for instance, a composition of **sustain + able**. So if we start from the beginning, to **<sustain>** means “**give support to**”, “**to hold up**”, “**to bear**” or to “**keep up**”.
- There is no universally agreed definition of sustainability. In fact, there are many different viewpoints on this concept and on how it can be achieved.
- What is sustainability, then?
- Sustainable is an adjective for something that is “able to be sustained”, *i.e.*, something that is “bearable” and “capable of being continued at a certain level”.
- In the end, sustainability can perhaps be seen as the process(es) by which something is kept at a certain level.

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Sustainability

Sustainability can be defined as the “practice of maintaining processes of **productivity** indefinitely—natural or human made—by replacing resources used with resources of equal or greater value without degrading or endangering natural biotic systems”.

In brief **Sustainability** can be defined as the practice of reserving resources for future generations without any harm to the nature and other components of it.

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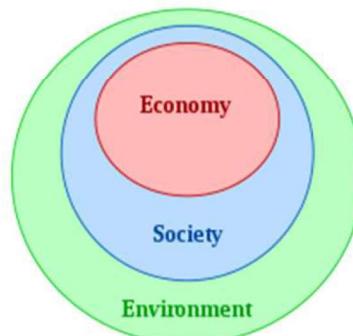
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Principles Of Sustainability: The 3 Pillars Of Sustainability

- The principles of sustainability are the foundations of what this concept represents. Therefore, sustainability is made up of *three pillars*: **Economy**, **Society**, and the **Environment**. These principles are also informally used as **Profit**, **People** and **Planet**. Diagram indicates the relationship between the *"three pillars of sustainability"*, in which both
 - economy and society are
 - constrained by environmental limits.
- Fourth Pillar --- Governance.



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Sustainability & Sustainable Development (SD)

Sustainability science is the study of the concepts of sustainable development and environmental science.

There is an additional focus on the **present generations' responsibility** to regenerate, maintain and improve planetary resources for use by **future generations**.

- Sustainable development ties together concern for the carrying capacity of natural systems with the social, political, and economic challenges faced by humanity.

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Sustainable Development (SD)

- Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally.
- An unsustainable situation occurs when natural capital (the sum total of nature's resources) **is used up faster than it can be replenished**.

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Sustainable Development

Following the publication of **Rachel Carson's *Silent Spring*** in 1962, the developing environmental movement drew attention to the relationship between economic growth & development and environmental degradation.

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Sustainable Development

- While the modern concept of **Sustainable Development** is derived mostly from the **1987 Brundtland Report**, it is also rooted in earlier ideas about Sustainable Forest Management and twentieth century environmental concerns.
- **Sustainable development** has its roots in ideas about **sustainable forest management** which were developed in Europe during the seventeenth and eighteenth centuries.

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Sustainable Development

- As the concept developed, it has shifted to focus **more on economic development, social development and environmental protection** for future generations.
- It has been suggested that "*the term 'sustainability' should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while 'sustainable development' refers to the holistic approach and temporal processes that lead us to the end point of sustainability'*"

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Sustainable Development-Natural Resources and Ecosystem Services

- Sustainable development is the organizing principle for **meeting human development goals** while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend.

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Sustainable Development-Natural Resources and Ecosystem Services

- The desirable end result is a state of society where **living and conditions and resource use continue to meet human needs** without undermining the integrity and stability of the natural systems.

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Sustainable Development (SD)

- It is a process that envisions a desirable future state for human societies in which living conditions and resource-use continue to meet human needs without undermining the "**integrity, stability and beauty**" of natural biotic systems.

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Sustainable Development Domains

- Scheme of sustainable development:
- Sustainable development, or sustainability, has been described in terms of **three spheres, dimensions, domains or pillars**, i.e. at the confluence of three constituent parts the **environment, the economy and society**.
- The three-sphere framework was initially proposed by the economist **René Passet in 1979.**

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Sustainable Development Domains

- It has also been worded as "economic, environmental and social" or "ecology, economy and equity".
- This has been expanded by some authors to include a **fourth pillar of culture, institutions or governance**, or alternatively reconfigured as four domains of the social - ecology, economics, politics and culture, thus bringing economics back inside the social, and treating ecology as the intersection of the social and the natural.

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The Sustainable Development Goals

The Sustainable Development Goals (SDGs)

- In September 2015, the United Nations General Assembly formally adopted the “Universal, Integrated and Transformative” 2030 Agenda for Sustainable Development, a set of 17 Sustainable Development Goals (SDGs).
- 169 Targets, 248 Indicators (of which 231 are unique and 17 appear in two or more indicators)
- The Goals are to be implemented and achieved in every country from the year 2016 to 2030.



17 Goals to Transform Our World

- In 2015, countries adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals.
- In 2016, the Paris Agreement on climate change entered into force, addressing the need to limit the rise of global temperatures.
- Governments, businesses and civil society together with the United Nations are mobilizing efforts to achieve the Sustainable Development Agenda by 2030.

SDG & Agriculture

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REVIEW ARTICLE

Sustainable Development GOALS

WILEY

Highlighting the role of agriculture and geospatial technology in food security and sustainable development goals

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Abstract
Food security is a global challenge that aligns with several Sustainable Development Goals (SDGs), including SDG 1 - "No Poverty", SDG 2 - "Zero Hunger," SDG 3 - "Good Health and Well-being," SDG 13 - "Climate Action," and SDG 15 - "Life on Land". To effectively address this issue, a convergence of agriculture and technology is crucial, incorporating precision agriculture, sustainable agriculture, bio-economy and advanced technologies such as machine learning, artificial intelligence-machine learning and geospatial technology. Recent trends in food security worldwide have witnessed the adoption of technological advancements. However, it is important to consider biodiversity when implementing and adopting technological advancements. The integration of technology in agricultural practices aim to reduce chemical usage in farms, while increased production remains the main objective of smart farming and Precision Agriculture. By minimizing the use or implementing localized approaches for chemicals on farms, we can preserve soil-faunal diversity, which is at risk along with targets due to excessive applications of pesticides, herbicides, and insecticides. Geospatial technology plays a significant role by leveraging remotely sensed images acquired through satellites, aerial platforms, and GPS-tagged drones to enhance agricultural practices, improve crop growth and increase crop yields. Through geospatial technology, we can map and monitor soil and crop conditions, and effectively conserve, protect, and manage biodiversity on a global scale. The applications of remote sensing technology consider ecological and environmental parameters, soil factors, crop conditions, and plant-soil diversity to optimize yields and agricultural productivity. Additionally, the evaluation of various agricultural practices such as sustainable agriculture, bio-economy, using technology can contribute to increased yields, profitability, and biodiversity conservation as central components of these practices. This study emphasizes that achieving the SDG objectives is attainable through agriculture, which has direct and indirect connections to all SDGs. Geospatial technology plays a vital role in supporting the

Sustainable Development journal (WILEY)
Impact Factor- 9.9

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SDG & Wetlands

Sustainable Development

EPP ENVIRONMENT

REVIEW ARTICLE

Wetlands contribution and linkage to support SDGs, its indicators and targets- A critical review

Smritsikha Mohanty, Prem Chandra Pandey, Manish Pandey, Prashant K. Srivastava, Chandra Shekhar Dwivedi

First published: 27 March 2024 | <https://doi.org/10.1002/sd.2948>

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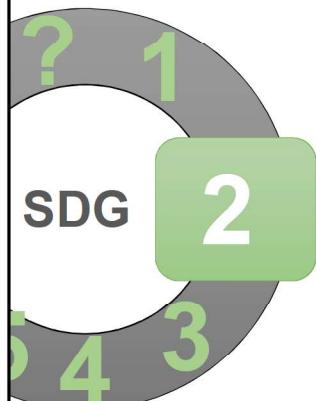
Abstract
This study marks one of the pioneering efforts to compile comprehensive information on Ramsar sites globally. It delves into the significance of wetlands and the designation of Ramsar sites across various countries, incorporating a concise exploration of the utilization of Unmanned Aerial Vehicles (UAVs) for wetland monitoring and assessment. Additionally, the study conducts a comparative evaluation of Ramsar sites, analyzing their percentage area and overall coverage worldwide. Incorporating a Scientometric analysis utilizing the Scopus database, the study features a co-occurrence map thematic map

Sustainable Development journal (WILEY)
Impact Factor- 9.9

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Sustainable Development Goals

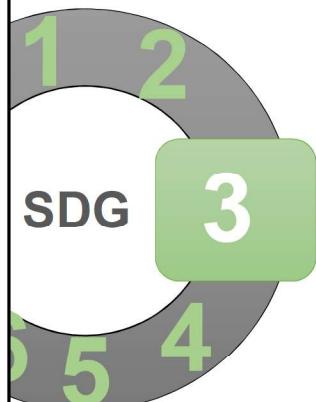
2. Zero HUNGER



End hunger, achieve food security and improved nutrition
and promote sustainable agriculture

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Sustainable Development Goals

3. GOOD HEALTH & WELL-BEING



Ensure healthy lives and promote well-being for all at all ages

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Sustainable Development Goals
4. QUALITY EDUCATION

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

SDG 4

SDG 2, 3, 5, 6

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SUSTAINABLE DEVELOPMENT GOALS

Sustainable Development Goals
5. GENDER EQUALITY

Achieve gender equality and empower all women and girls

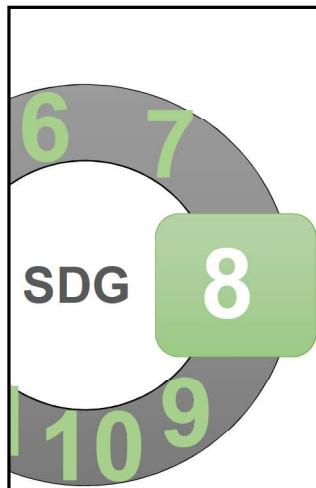
SDG 5

SDG 3, 4, 6, 7

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Sustainable Development Goals

8. DECENT WORK & ECONOMIC GROWTH

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

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Sustainable Development Goals

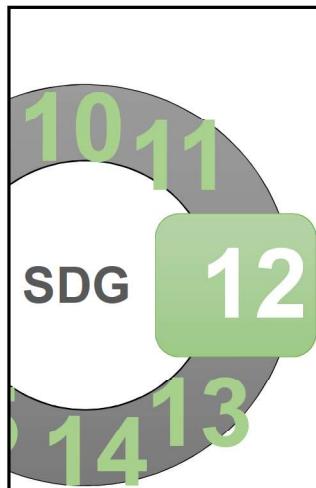
9. INDUSTRY, INNOVATION & INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

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Sustainable Development Goals
12. RESPONSIBLE CONSUMPTION & PRODUCTION



Ensure sustainable consumption and production patterns

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13. CLIMATE ACTION



Take urgent action to combat climate change and its impacts

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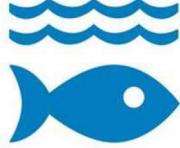
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Sustainable Development Goals

14. LIFE BELOW WATER



Conserve and sustainably use the oceans, seas and marine resources for sustainable development

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Sustainable Development Goals

15. LIFE ON LAND



Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

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Sustainable Development Goals

16. PEACE JUSTICE & STRONG INSTITUTIONS

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

14 15
SDG 16
? 17

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Sustainable Development Goals

17. PARTNERSHIP FOR THE GOALS

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



Environmental: A Viable Natural Environment
Social: Nurturing Community
Economic: Sufficient Economy
Sustainable Development: Sustainable Natural and Built Environment, Equitable Social Environment, Sustainable Economic Development

15 16
SDG 17
?

What Next

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The image is a presentation slide titled "Sustainable Development Goals". It features a graphic on the left showing a grey circle with the numbers "16" and "17" in green, and the letters "SDG" in white. A green square containing a white question mark is positioned next to it. The title "Sustainable Development Goals" is at the top right, followed by two questions: "How to achieve the goals & Targets ?" and "How to get the indicators fulfilled by the timeline?". Below the title, the word "What TIMELINE" is written in large green capital letters. At the bottom left is the date "11/8/2024" and at the bottom right is the code "PCP- DLS- SP2024".

Sustainable Development Goals

How to achieve the goals & Targets ?
How to get the indicators fulfilled by the timeline?

What TIMELINE

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The image is a presentation slide titled "UN Sustainable Development Goals". It features two main sections: a dark blue box on the left with the text "17 PARTNERSHIPS FOR THE GOALS" and a white box on the right with the UN logo and the text "SUSTAINABLE DEVELOPMENT GOALS". The dark blue box also contains a white circular logo consisting of three overlapping circles. At the bottom left is the date "11/8/2024" and at the bottom right is the university name "SHIV NADAR UNIVERSITY".

UN Sustainable Development Goals

17 PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

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