Module II

Sustainable Management

Syllabus: Sustainable management of water and sanitation-introduction, key components, challenges and innovative approaches. Ensure access to affordable, reliable, sustainable, and modern energy-introduction, importance, key targets, challenges and strategies. Sustainable Cities and Communities-Definition of sustainable cities, current challenges, strategies, innovative solution, smart city

Sustainable management of water and sanitation

The sixth goal of the United Nation's 2030 Agenda for Sustainable Development commits member States to ensure the availability and sustainable management of water and sanitation for everybody. North and Central Asia (NCA) is particularly affected by water stress and struggles to achieve several SDG targets. While sanitation targets are often met in the region, the same does not hold for water targets, where ambitious actions are required. Governments need to increase water use efficiency and preserve water-related ecosystems, enhance transboundary cooperation, and avoid conflicts over the use of water resources. Progress is needed to safely treat domestic wastewater and ensure access to affordable drinking water for all. Finally, data collection capacities, together with transparency, should be improved since these are necessary to understand weaknesses in implementation and plan future actions.

Why worry about water?

Healthy living for all: UN recommends that each person needs about 20-50 litres of good quality water per day to meet drinking, cooking & cleaning needs.

Reduce deaths and diseases: About 30,000 deaths occur every week from unsafe water and/or unhygienic living conditions.

Reduce Pollution: In the developing countries, about 90 per cent of waste water is discharged untreated into lakes, rivers & oceans.

Climate Change: Since the year 1900, more than 11 million people have died as a result of drought.

More girls in schools: Close to 54 percent of rural women, as well as some adolescent girls, spend an estimated 35 minutes getting water every day, equivalent to a loss of 27 days of school or wages every year.

Healthy food for all: Globally, agriculture alone accounts for about 70 per cent of freshwater withdrawls.

Protect Biodiversity: Between 1970 and 2000, the population of freshwater species declined by about 55 per cent.

Water stress:

Water stress, together with the protection of water-related ecosystems, are major concerns for North and Central Asia. No country has made considerable progress since the introduction of the 2030 Agenda in 2015.

Data availability issues:

Data is missing for many countries and many indicators. Governments should increase their capacities to collect data and enhance their transparency since without close monitoring of the indicators of the SDGs it is impossible to record progress, understand weaknesses in implementation and plan actions. Moreover, governments should provide more detailed data, disaggregated by gender and other social groups. In this way, it will be possible to analyse the achievement also with respect to fragile groups.

Sanitation:

While overall achievement is high in North and Central Asia, some issues remain. The proportion of the population using safely managed sanitation services is still low.

Measures

1. Improve water use efficiency

Since agriculture is the main responsible for water use, a shift is required to less water-intensive crops, especially in countries with higher water stress. Developing new methods of irrigation, such as drip irrigation, is also an important step. Countries are already investing in new methods of irrigation and have started the shift towards less water-intensive crops, this trend continue, and more effort should be put into supporting the transition. Overall water use efficiency could also be enhanced through upgrading existing infrastructure and introducing new regulations about the treatment and re-use of wastewaters.

2. Ensure equitable access to drinking water and sanitation

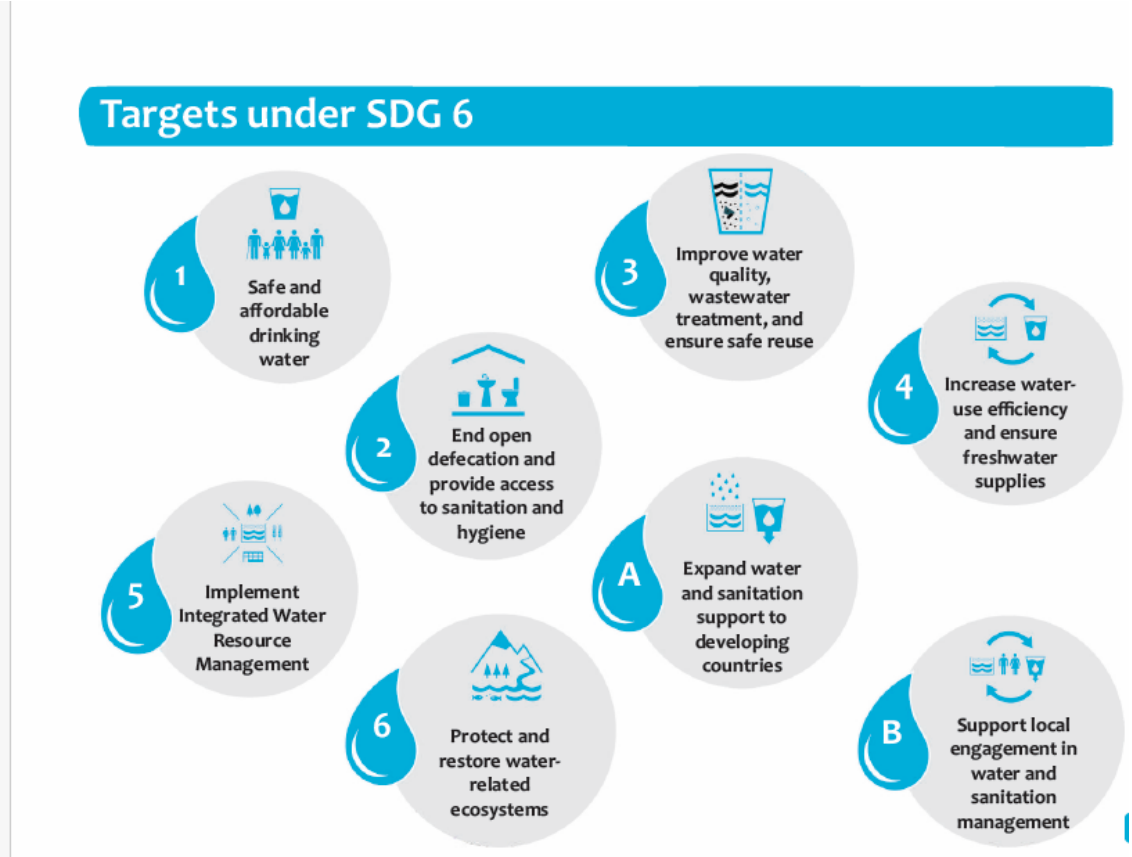
Governments should promote the participation of women and minority groups in water management, considering gender-differentiated needs and the impact of accessibility of water services. Governments could intervene with a targeted program of fiscal incentives to encourage the adoption of handwashing facilities and sanitation services by households, with particular attention to the poorest ones.

3. Ensure quality and sustainability of water resources

Improving water quality is a high priority for the region, more so since the availability of water is scarce. Every town should have a system to collect, process and treat wastewater. More stringent regulations are required for industries and agriculture to prevent the pollution of water aquifers.

4. Strengthen regional cooperation for water management

Countries need to improve cooperation on water resources because in North and Central Asia water is a transboundary issue. This is a challenge for the region because water is scarce, and tensions can arise over its control. There should be an increase in the proportion of transboundary basins with an operational cooperation agreement in place.



Some efforts initiated in India, to ensure that all its citizens have access to safe drinking water and sanitation, are:

India has a dedicated department of Drinking Water & Sanitation within the Ministry of Jal Shakti;

The Government has launched Rural Water Supply (Jal Jeevan) Mission. This mission aims to provide safe and adequate drinking water through individual household tap connections by 2024 to all households in rural India.

To accelerate the efforts for achieving universal sanitation coverage and to put focus on sanitation, the Prime Minister of India had launched the Swachh Bharat Mission on 2nd October, 2014.

- **Clean & Affordable Energy**

Now let us look at our daily life activities. We use energy in every bit of our lives. From producing our food in the farms, to cooking the food in our kitchen; getting the water supply; to even going to the school; every activity of our day requires one or the other form of energy. For us and for all creatures on this earth, the ultimate source of energy is the Sun.

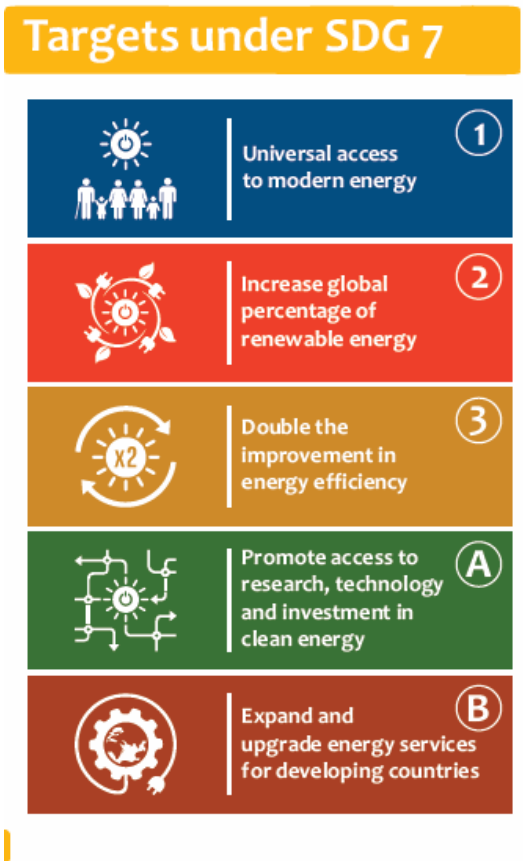
Why do we need SDG7

Early humans met the need for energy largely through food and solar energy; fire was then invented and the form of energy used by humans changed drastically. Further, the advent of automobile and electricity forms of energy changed the way humans lived on the earth. With creation and installation of power grids, the various systems that support our living also got transformed. Access to electricity and petroleum, or the lack of it therefore defines the way one lives.

Reaching affordable, clean, sustainable, modern and reliable energy is the main aim of the Sustainable Development Goal 7. Energy is placed at the centre of environmental and economic issues. Despite this significance, 20% of people living worldwide cannot access electricity in 2021. Adaptation towards SDG-7, Affordable and Clean Energy, brings in new investments and creates a significant economy around it. While private investments and

government spending in developed countries concentrate on achieving efficiency and renewable energy production, developing countries focus on obtaining access to electricity and clean energy sources.

Also, the utilisation of renewable energy sources must increase because of the high-level demand for energy. For example, the ratio of people reaching for clean energy for cooking has increased from 50% in 2010 to 66% in 2019. The renewable and non-renewable energy sources are obtained from the environment. Examples of these energy sources are coal, natural gas, petroleum, hydropower, solar wind, etc. Energy sources, including fossil fuels and renewables, are in high demand worldwide. Despite excellent progress in expanding access to power, increasing the use of renewable energy in the electrical sector and improving energy efficiency during the past decade, the world remains far from obtaining cheap, dependable, sustainable and contemporary energy for all. With an average yearly electrification rate of 0.876 percentage points, the worldwide power access rate improved from 83% in 2010 to 90% in 2019. The worldwide access deficit has shrunk from 1.22 billion in 2010 to 759 million in 2019. Despite significant efforts, there may still be 660 million people without access to electricity in 2030. Whereas bioenergy is the most common renewable energy source, approximately three billion are utilising the energy sources such as wood, coal, animal waste and so on.



Do you know?

Have you ever seen these star stickers on equipments at home or when you go out to purchase them? What do these stars mean? Who can give these stars to equipments?

These are called BEE star labels and they show how much electricity the appliance consumes in a year. Each appliance gets between one and five stars, with five stars meaning that it's extremely efficient and is likely to keep your electricity bills in check. These star labels are issued by the Bureau of Energy Efficiency (BEE), which is an Indian government agency that falls under the Ministry of Power.

You can find out more about these BEE Stars on https://beeindia.gov.in/ content/star-labelled-appliances

BEE has also developed a manual on 'Energy Management in your School'. This resource can be accessed at: https://beeindia.gov.in/sites/default/files/guidebook-School.pdf

CHALLENGES

ONE IN FIVE PEOPLE STILL LACK ACCESS TO MODERN ELECTRICITY and three billion people rely on wood, charcoal or animal waste for cooking and eating

Every year **INDOOR AIR POLLUTION** kills 4.3 million people most of them women and children

Energy provide by **FOSSIL FUELS** is the **MAIN CONTRIBUTOR OF CLIMATE CHANGE** representing 60% of all greenhouse gas

SOLUTIONS

Ensure everyone has access to **CLEAN, AFFORDABLE, RELIABLE** and **MODERN ENERGY**

Invest in **RENEWABLE ENERGY** and disseminate its use

Put in place **ENERGY SAVING POLICIES**

Why do electricity and clean energy matter?

Powering Education: Electricity provides heating, cooling, and lighting so students can learn. Schools can stay open till late, providing a space for students to study and teachers to prepare.

Powering Communities: Electricity helps strengthen communities. For example, lighting makes communities safer at night, and electricity can pump and filter water, so clean drinking water is available. Electricity improves the quality of life.

The Power of Electricity

Powering Health Care: Health care workers and facilities need electricity to refrigerate vaccines, sterilize and power equipment, and provide light for emergency procedures that can't wait until daytime, like when a baby is to be born at night!

Powering Businesses: Businesses need electricity to turn on the lights, run machinery, and power communications technologies.

Powering Agriculture: Electricity enables farmers to increase productivity by improving the production, processing, and storage of crops.

- **Sustainable Cities & Communities**

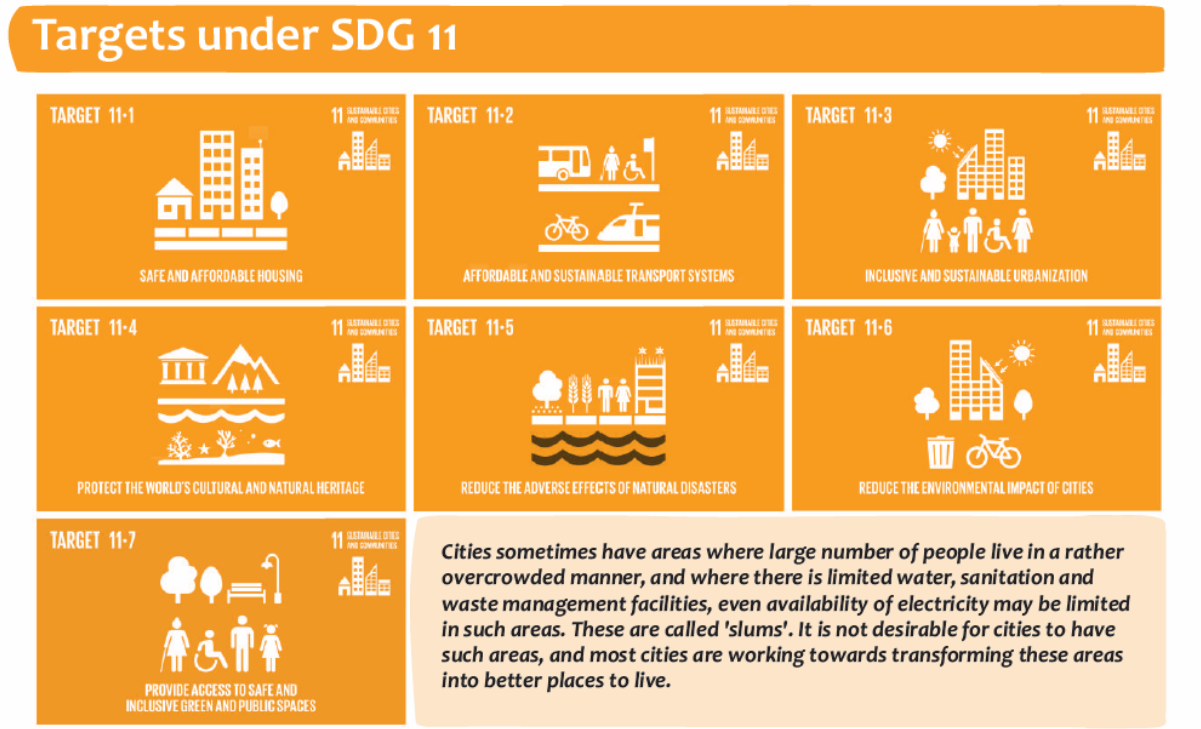
Human population is constantly increasing. For want of modern living, good earning opportunities, better education opportunities and living, several families and individuals are moving from rural areas to urban areas—mainly the cities. Therefore cities today are facing a pressure of very fast growing populations! For all to survive well and prosper, the world needs well-planned cities. Cities which provide safe living to the urban residents and which also maintain a non-polluted environment—sustainable cities!

Sustainable City

Sustainable city has a broad meaning—a city that can take care of the health and happiness of its residents, while also maintaining a good pollution free environment. A city which is able to recycle its waste well, does not generate too much carbon dioxide and which returns positively to the villages and near-by towns from where the city gets the supply of several of the resources (like vegetables, water, labourers, etc.).

Ancient Cities

Well planned cities of Harappa & Mohenjo-daro existed in the Indian subcontinent region in 2500 B.C, which is more than 4500 years ago! These were planned and well-designed cities. The ruins of the site show skillful design. Their buildings had two or sometimes more stories. The bathrooms were attached to the rooms. One of the unique features of the cities was the elaborate drainage system. A brick-lined drainage channel flowed alongside every street. Removable bricks were placed at regular intervals for easy cleaning and inspection. Do you think these ancient cities were more sustainable than the modern ones?


Targets under SDG 11
TARGET 11·1
SAFE AND AFFORDABLE HOUSING
TARGET 11·2
AFFORDABLE AND SUSTAINABLE TRANSPORT SYSTEMS
TARGET 11·3
INCLUSIVE AND SUSTAINABLE URBANIZATION
TARGET 11·4
PROTECT THE WORLD'S CULTURAL AND NATURAL HERITAGE
TARGET 11·5
REDUCE THE ADVERSE EFFECTS OF NATURAL DISASTERS
TARGET 11·6
REDUCE THE ENVIRONMENTAL IMPACT OF CITIES
TARGET 11·7
PROVIDE ACCESS TO SAFE AND INCLUSIVE GREEN AND PUBLIC SPACES
Cities sometimes have areas where large number of people live in a rather overcrowded manner, and where there is limited water, sanitation and waste management facilities, even availability of electricity may be limited in such areas. These are called 'slums'. It is not desirable for cities to have such areas, and most cities are working towards transforming these areas into better places to live.

Urban Terms


Sustainable
Clean energy
Resilience
Crime
Carbon footprint
Public spaces
Recreational spaces
Drainage
Green cover
Public transport
Pedestrian zones
Cycling track
Water bodies
Slums
Metro rail

City Planning