Dr. M M S S B Yalegama[1], **Ms Fathima Bushra**[2]
Additional Secretary[1], Junior Consultant[2]
Ministry of Sustainable Development, Wildlife and Regional Development

Clean Air – An Essential Requisite For Achieving SDGs

Atmosphere

The atmosphere of the planet Earth is a vital element for the Earth's sustainability. It is made of five layers of gasses and is the key player in sustaining the Earth into living planet. The vertical structure of the atmosphere determines the temperature variation of the earth and its surrounding. The lowest layer, the Troposphere that extends up to 10 to 12 km from the sea level is where the major activities that control wind circulation and climate happen. The Ozone layer which is spread in the lower part of the stratosphere absorbs the harmful UV radiation without letting it enter the earth's surface.

Polluted air with harmful foreign substances or gasses, dust particles or smoke leads to create an unsustainable atmosphere where the life on earth will disappear. Pollutants are released to the atmosphere by both natural and anthropogenic sources. Dust raised from the wind blow; pollen spread by insects; smoke created by the forest fire; and volcanic ashes are some of natural sources.

Pollution caused by human activities includes transportation, Industrial activities, agriculture and power generating plants. Thermal power generation plants or stations which burn tons of petroleum materials or coal to generate electricity, release massive amounts of pollutants such as carbon monoxide, sulfur oxides, nitrogen oxides and other pollutants such as ashes and smoke into the atmosphere.

Motor vehicles used for transportation release enormous amount of pollutants in to the air. Motor vehicles emit carbon monoxide, Nitrogen oxides, Hydrocarbon along with smoke particles. The density of these pollutants is usually high in cities. Number of Personal vehicles is increasing on a daily basis adding more pollutants to the atmosphere.

Pollutants discharge from the industrial activities and its impacts depends on the product they manufacture and the fuel they use for energy. For instance, pollutants release by the Cement Factory as cement dust particles and fossil fuel substances are most likely to be accumulated in the atmosphere

surrounded the factory. This may cause health issues among the people who live in the neighborhood. The harmful effects of the pollutants are mainly decided by its density in the air. If a particular area is constantly surrounded by pollutants, the damages can be severe. Wind is the supportive factor that helps to move the pollutants away from the dense area and this may reduce the intensity of the damages at the particular area.

Impacts

Air pollution has both direct as well as indirect impacts. When Sulphur dioxide and Nitrogen oxides are emitted to atmosphere, they react with water vapor and pour down on the surface as acid rain. This can harm not only human health but also the plants, soil, pond and animals as well. Acid rain can destroy the leaves of the plants and this will disrupt the process of photosynthesis as well.

Sustainable Development Goals and Mitigation of Air Pollution

Realizing the importance of protecting the atmosphere for the survival of life on earth and for that maintaining a balance between human activities and nature, many agreements have been signed to protect the atmosphere. These include the UN Framework Convention on Climate Change (1992) including Kyoto Protocol (1997) and Paris Agreement (2015), Vienna Convention for the protection of the Ozone Layer (1985) including Montreal Protocol (1987).

In 2015 United Nations Development Programme (UNDP) launched the Agenda 2030 for Sustainable Development Goals (SDG) with 17 goals and 169 targets to achieve worldwide. SDGs cover all social and economic development issues like poverty, climate, health, energy and city development. 2030 Agenda on SDGs was released following the Rio+20 Conference in 2012.

Sustainable Development Goals have presented many solutions and impacts of the air pollution with the interlinkage between goals. Though SDGs don't have a straightforward goal for air pollution many goals and targets are related to air pollution directly or indirectly. Thus, with respect to air pollution, we can identify SDGs in two broad categories: those leading to air pollution and those victimized by the impacts of air pollution, the majority.

Many Experts have stated that the poverty and air pollution have strong linkage. SDG 01 talks about the poverty alleviation measures. Air quality is highly at risk around the deprived areas. This condition arises due to their economical inability to have the clean environment. Many poor communities reside near places like garbage dumping places (which release methane gas -CH4)– for example, Meethotumulla community, sewage canal surroundings, places with inadequate infrastructure are vulnerable to air pollution. Deprived people who live close to the air pollution sources such as industrial zones are more likely to

be exposed to the air pollution impacts. Also, rural area people who lack awareness on air pollution and its impacts follow an imbalance practice of burning the garbage and practicing chena cultivation which vastly affect the air quality of those areas. SDG 01 have set five targets and means of implementation to reduce the poverty by the government intervention to mobilizing necessary resources, building resilience and creating accelerated investment to alleviate poverty. The only way to reduce the air pollution hazard that is attached to poverty will be elevating the living standard of the poor community. Health hazards, especially those diseases related to breathing are a common incidence of air pollution. Unhealthy conditions in the atmosphere, or dirty air is a serious threat to ensure well-being. Therefore, in order to achieve the SDG 3, the quality health and well-being, mitigation of air pollution is compulsory.

Industrialization and energy generation are essential to enhance the lives of people as they provide for many supplies including employment, investment, income and comfort. It is this context that industry and economic growth (SDG 9) and energy (SDG 7) have been identified as two Sustainable Development Goals. However, achieving these goals could become root causes of air pollution. Coal and other fossil fuel are being used to power the industrial activities releasing tons of carbon dioxide and harmful air pollutants into the atmosphere. This has significantly contributed to many environmental issues including the climate change. The atmosphere has been degraded fast since the time of industrial revolution.

SDG 7 has adopted effective targets to promote and initiate sustainable and modern energy usage. SDG 7 has urged all the countries to increase investment in energy efficiency, develop renewable energy such as solar power, wind power energy generation including hybrid system to reduce carbon emission. Goal 9 promote inclusive and sustainable industrialization through adopting targets to reduce carbon release and encourage clean and environmentally friendly technologies and industrial activities.

SDG 12, Responsible Consumption and Production, has stated in 12.8 to ensure people have relevant information on climate change and the target 12.c pressured to reduce the unnecessary subsidies on fossil- fuel which encourage the wasteful consumption as well as environmental impact. Awareness building, enacting tough law to control the excessive consumption of fossil fuel and introducing new energy sources required to be implemented.

SDG 11, discusses about the cities and the human settlements. City atmosphere is widely polluted due to the large number of private vehicles and other transportation that enter into cities and the inappropriate methods of waste disposal. In urban areas in Sri Lanka 60% of the air pollution is believed

to be generated from mobile sources. Garbage disposal in Sri Lankan cities has emerged as a huge issue. Sri Lanka generate 7500MT solid waste per day and waste collection per day is 3500MT (CEA). Solid waste that is not being disposed appropriately can release methane gas into air. Wastage odour can also disturb the living environment in a bad way. SDG target 11.6 has urged the world nations to reduce the environmental impact of cities by improving air quality and increasing the urban waste collection out of total urban solid waste. Actions should be taken to reduce, reuse and recycle the waste created by the communities by saving money and energy.

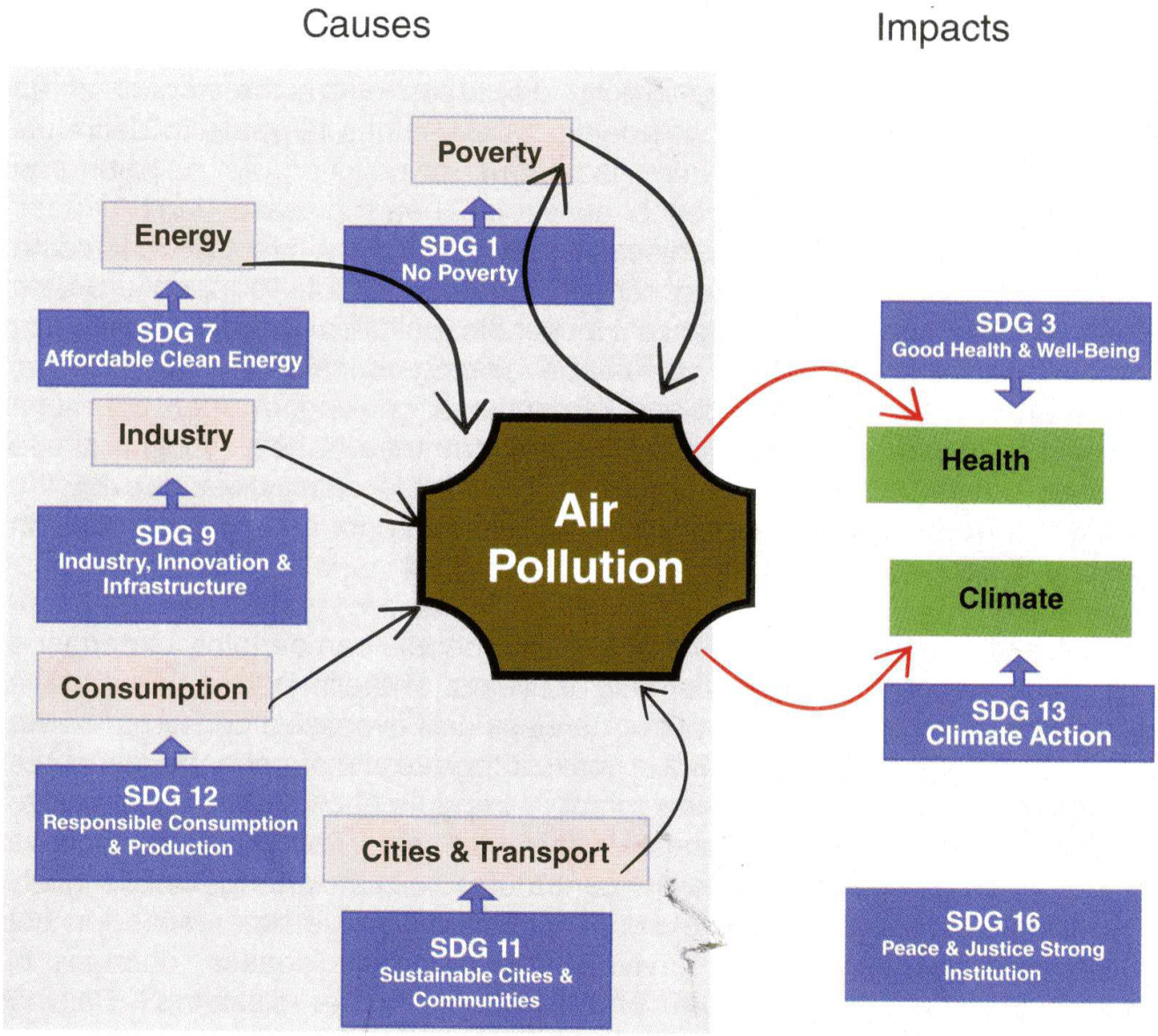
SDG 3, Ensure Healthy Lives, directly discusses about the impact of air pollution to human health and well-being. SDG 3.9 has targeted to decrease number of deaths and illness from hazardous air pollution. Air pollution can cause many health diseases such as stroke, heart disease, lung cancer, chronic obstructive pulmonary disease and respiratory infections including pneumonia. WHO has revealed recently that 9 out of 10 people breath containing high level of pollutants. Household pollution is one of the main causes for many health issues. In many developing countries, particularly rural people practices burning wood and kerosene for cooking. Women are much exposed to house hold air pollution and this can lead to heart, lung and eye diseases as well. Practicing and providing suitable energy sources for the middle-income people and setting minimum standard for housing construction houses should be implemented systematically.

When the air becomes polluted for a long time people can certainly experience a (negative) climate change after 5 to 10 years. The climate change that we experience today is the results of our careless and excessive consumption we had years before. SDG target 13.2 urges to integrate climate change measures into national policies and planning to adapt impacts of climate change and to initiate low greenhouse gas emission development. The initiatives that we implement to mitigate the factors that contribute to climate change will definitely bring a stable climate for our future. The climate change has resulted in hot days where people suffer to survive, more dreadful diseases, changes in precipitation pattern, seasonal changes and more disasters. Raising awareness on climate change among people including school children is required to minimize the causes that leads to climate change in future. Also, every government should include policy arrangements to reduce the factors that cause the climate change such as carbon tax on motor vehicles, strictly monitoring industries who obtain the Environmental Protection License as per the categorization of industries according to their pollution potential, reducing the motor vehicles and machines that consume fuel and promoting non-fuel (renewable) energy sources.

Air pollution is one of undeniable environmental issue that directly impact every

aspect of human live. Achieving a sustainable healthy life and well-being is all rely on our air quality. Taking needful actions to protect the air quality, reduce carbon emission, and to create clean cities will absolutely enhance the lives on earth. It will also help achieve SDG 16 on peace and justice for the deprived communities who are mostly exposed to polluted air.

Air Pollution and SDG Solutions



Reference:

1. Jillian Mackenzie. (2016, November 01). Air Pollution: Everything You Need to Know. Retrieved from https://www.nrdc.org/stories/air-pollution-everything-you-need-know#sec1
2. The Stratosphere – overview. Retrieved from https://scied.ucar.edu/shortcontent/stratosphere-overview
3. Trends in Atmospheric Carbon Dioxide. Retrieved from https://www.esrl.noaa.gov /gmd/ccgg/trends/global.html

4. Ambient (outdoor) air quality and health. (2018, May 02). Retrieved from http://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health
5. 9 out of 10 people worldwide breathe polluted air, but more countries are taking action. (2018, May 02). Retrieved from http://www.who.int/news-room/detail/02-05-2018-9-out-of-10-people-worldwide-breathe-polluted-air-but-more-countries-are-taking-action
6. National Solid Waste Management Program in Sri Lanka. Retrieved from https://www.unescap.org /sites/default/files/6_CEA.pdf
7. Marc Lallanila. (2018, March 07). What Is the Greenhouse Effect?. Retrieved from https://www.livescience.com/37743-greenhouse-effect.html
8. Solar Radiation, Earth's Atmosphere, and the Greenhouse Effect. Retrieved from https://eesc.columbia.edu/courses/ees/climate/lectures/radiation_hays/
9. Yatagama Lokuge S Nandasena, Ananda R Wickremasinghe, and Nalini Sathiakumar. (2010, June 02). Air pollution and health in Sri Lanka: a review of epidemiologic studies. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2893095/
10. Car Emissions & Global Warming. Retrieved from https://www.ucsusa.org/clean-vehicles/car-emissions-and-global-warming#.W5ILT-gzbIU