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News: Air Quality Life Index (AQLI) 2024

- Recently, the Energy Policy Institute at the University of Chicago (EPIC) released the Air Quality Life Index (AQLI) 2024.

Air Quality Life Index (AQLI)

- The Air Quality Life Index (AQLI) is a **pollution index released by Energy Policy Institute at the University of Chicago (EPIC) annually, that translates the effect of particulate air pollution into its impact on life expectancy.**
- The **Index then combines the relationship between long-term human exposure to air pollution and life expectancy to provide the true cost of particulate pollution in communities around the world.**
- The **Index also illustrates how air pollution policies can increase life expectancy when they meet the WHO's guideline for what is considered a safe level of exposure, existing national air quality standards, or user-defined air quality levels.**

Air Quality Life Index (AQLI) – 2024 findings

- **Impact of Air Pollution on Life Expectancy:** The report revealed that if PM2.5 (particulate matter that are 2.5 micrometres or less in diameter) pollution were reduced to meet the guidelines set by the World Health Organization (WHO), the average person could live 1.9 years longer, adding a total of 14.9 billion life years globally.
- The WHO guidelines state that annual average concentrations of PM2.5 should not exceed 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
- **Deadlier than Chronic Diseases:** The effects of air pollution surpass those of smoking, heavy drinking and are several times greater than other major health risks like HIV/AIDS and malnutrition.
- **Uneven Distribution of Pollution:** The burden of pollution is not evenly distributed.
- People in the most polluted areas breathe six times more polluted air than those in the cleanest regions, reducing their life expectancy by an average of 2.7 years.
- **Non-Compliance:** While many countries have established national air quality standards, the report finds that enforcement and compliance remain significant challenges.

- According to the report, 94 countries have established PM 2.5 standards, of which 37 fail to meet their own guidelines. Additionally, 158 countries have not set any standards at all.
- **Potential Benefits:** The potential benefits of meeting WHO pollution standards are substantial.
- If all countries achieved their goals, the average person in these regions would gain 1.2 years of life expectancy.

Global Scenario

- **US, China, Europe:** The United States, Europe, and China have implemented stringent policies, leading to significant reductions in pollution levels.
- In China, air pollution has decreased by 41% since 2014 and extended the life of Chinese by 2 years.
- The US has reduced pollution by 67.2% since 1970, extending the average lifespan by 1.5 years.
- Europe has seen a 30.2% reduction since 1998, adding 5.6 months to life expectancy.
- **South and Southeast Asia:** South and Southeast Asia saw notable improvements in 2022, observing a 4% decline in PM2.5 levels compared to 2012.

- Despite this improvement, South Asia remains the world's most polluted region, accounting for 45% of global life years lost due to high pollution.
- Bangladesh, India, Nepal, and Pakistan are among the most polluted countries globally.
- In Myanmar, air pollution is reducing life expectancy by 2.9 years.
- **Africa:** Air pollution in Central and West Africa has remained largely unchanged in 2022.
- The region's average PM_{2.5} concentration is 22.2 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), 4.4 times higher than the WHO guideline.
- This pollution level is reducing life expectancy by an average of 1.7 years across the region.
- However, Nigeria, Rwanda and Ghana have recently implemented air quality regulations and standards.
- **West Asia:** Middle East and North Africa (MENA) region has emerged as a new pollution hotspot, reducing life expectancy by an average of 1.3 years across the region.
- Qatar and Iraq are the most polluted countries in the region.
- **Latin America:** Latin America's PM_{2.5} levels increased by 4.8% from 2021 and 3% from 1998.

- **Bolivia is the most polluted country in Latin America; air pollution in Guatemala reduces life expectancy by 2.1 years.**
- **Cities like Bogotá, Mexico City and Quito implement driving restrictions and improve public transport to combat pollution.**

India Specific Findings in Air Quality Life Index (AQLI) 2024

- **Impact of Cleaner Air on Life Expectancy in Delhi:** Cleaner air that meets WHO guidelines of $5\mu\text{g}/\text{m}^3$ can increase the life expectancy of Delhi's 18.7 million residents by 7.8 years.
- Achieving India's national air quality standard ($40\mu\text{g}/\text{m}^3$) could increase life expectancy by 4.3 years.
- **Current Air Quality and Trends in Delhi:** Delhi is the most polluted city in India, with an average PM2.5 level of $84.3\mu\text{g}/\text{m}^3$ in 2022.
- However, with an average annual PM2.5 concentration of $84.3\mu\text{g}/\text{m}^3$ in 2022, Delhi has seen significant improvement.
- **Improvement in Air Quality across India:** India saw a decrease in particulate pollution from an average of $49\mu\text{g}/\text{m}^3$ over the last decade to $41.4\mu\text{g}/\text{m}^3$ in 2022.
- If this reduction continues, the average Indian could live 9 months longer than if exposed to the previous decade's pollution levels.

- **Comparison with Other Health Risks:** While particulate pollution takes 3.6 years off the life of an Indian resident, malnutrition takes off 1.6 years, tobacco 1.5 years, and unsafe water and sanitation 8.4 months.

National Clean Air Programme (NCAP)

- National Clean Air Programme (NCAP) is a 5 year action plan with main objective to reduce concentration of PM 2.5 & PM 10 by 20-30% starting from 2019.
- 2017 is taken as the Base year for the purpose of calculation.
- Central Pollution Control Board (CPCB) will be the implementing agency of this programme.
- Programme has been launched with an initial budget of 300 crores for the first two years.
- The plan includes 102 non-attainment cities across 23 states & UT's which were identified by CPCB on the basis of their Ambient Air Quality data between 2011 & 2015.
- Non-attainment cities are those cities which have been consistently showing poorer air quality than National Ambient Air Quality Standards.
- Centre also plans to scale up the Air Quality Monitoring network across India.

- The plan proposes a three-tier system, including real-time physical data collection, data archiving, and an action trigger system in all 102 cities, besides extensive plantation plans, research on clean-technologies, landscaping of major arterial roads, and stringent industrial standards.

National Ambient Air Quality Standards (NAAQS)

- **Air (Prevention and Control of Pollution), Act empowers the Central Pollution Control Board (CPCB) to set the standards** for the quality of air.
- Current standards are set by CPCB in 2009. These standards are very much lower compared to WHO set global standards.
- Pollutants covered include: Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Particulate Matter 10 (PM 10), **Particulate Matter 2.5 (PM 2.5), Ozone (O₃), Lead (Pb), Carbon Monoxide (CO), Ammonia (NH₃), Benzene (C₆H₆), Benzo(a)Pyrene (BaP), Arsenic (As) and Nickel (Ni).**

System of Air Quality and Weather Forecasting

(SAFAR)

- **System of Air Quality and Weather Forecasting and Research (SAFAR)** is a national initiative introduced by **Ministry of Earth Sciences (MoES)** to **measure the air quality index of cities**, by measuring the overall pollution level & the location specific air-quality of the city.
- The system is indigenously developed by **Indian Institute of Tropical Meteorology, Pune** & is operationalized by **India Meteorological Department**.
- It has a **giant true color LED display** that gives out **real-time Air-quality Index based on color code along with 72 hour advanced forecast**.
- The ultimate objective of the project is to increase awareness among the general public regarding the air quality in their city so that appropriate mitigation measures and systematic action can be taken up.
- It organizes awareness drive by educating the public (prompting self-mitigation), and it also helps the policy-makers to develop mitigation strategies keeping in mind the nation's economic development.
- SAFAR is an integral part of India's first Air Quality Early Warning System operational in Delhi.

- In addition to regular air quality parameters like PM 2.5, PM 10, Sulphur Dioxide, Ozone, Nitrogen Oxides, Carbon Monoxide, the system will also monitor the existence of Benzene, Toluene and Xylene.
- It monitors all weather parameters like temperature, rainfall, humidity, wind speed and wind direction.