Path to sustainable development

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For the past few decades, the world has been searching for an answer to a critical question: How can we achieve economic prosperity without causing pollution? This question has become increasingly urgent due to the escalating global warming crisis. Scientists consistently warn us that if the Earth's surface temperature rises 1.5 degrees Celsius or more above the pre-industrial average, we will be leaving future generations on a burning volcano. The use of fossil fuels like oil and coal in production exacerbates the carbon intensity of the environment. There will come a point when there is no turning back. Therefore, it is crucial to understand how a clean environment can lead to economic prosperity and identify the obstacles we must overcome.

Manufacturing is the primary source of economic growth. When production increases, national income rises. However, it is not enough for overall income to increase; per capita income must also rise. The question then becomes: Is this growth sustainable? The term "sustainable growth" is a topic of discussion among economists worldwide, with different interpretations. Environmentalists argue that any growth that contributes to global warming is inherently unsustainable. The challenge is to achieve sustainable economic growth without pollution. Numerous challenges lie ahead. Production requires manpower, machinery, and technology, and until now, our machines and technology have been heavily dependent on fossil fuels. This dependency poses two problems. First, fossil-based production materials are non-renewable since they rely on finite resources like oil and coal, which will eventually run out. Second, carbon emissions from such materials have dire consequences for the world's climate. Consequently, fossil fuel-based growth is not sustainable.

So, what are the possible paths forward? The first step is to embrace green initiatives such as tree planting. Trees absorb carbon from the environment, although there are limitations to the extent of greening due to the finite amount of available land. Greening a concrete jungle like a city is no easy task, although some initiatives are being witnessed, such as those in Delhi.

Another approach towards sustainable development is the integration of waste products back into the production process. If the carbon released into the environment during production can be captured and returned to the factory, production can increase while keeping the environment carbon-free. This method, known as carbon capture, is currently employed in many European countries.

Plastic recycling is a crucial example of sustainable development. Plastic takes a significant amount of time to decompose once it enters the environment. Microplastics, in particular, are responsible for long-term soil pollution. When chlorinated plastics mix with water, they become toxic, endangering organisms that enhance soil fertility. Additionally, plastic-containing chemicals such as phthalates or bisphenol A (BPA) harm animals significantly. Plastic recycling efforts are taking place worldwide, although there is still much progress to be made.

Transitioning from fossil fuels to renewable sources of energy such as wind, solar, and hydroelectric power is a vital step towards sustainable development. Europe has made significant strides in utilizing wind and solar energy. Many individuals use solar panels to power their homes, and solar energy is being adopted by various heavy industries. Electric stoves are replacing gas stoves in households. While hydropower projects have been in operation for a long time, they do have environmental downsides, including the risk of catastrophic flooding that can displace people and wildlife. India has experienced some instances of this.

Sustainable growth requires reducing non-renewable components in production and gradually increasing the use of renewable components. However, this transition necessitates a radical shift in production technology, which can be time-consuming and costly for underdeveloped and developing countries. Wealthier nations are starting to shift away from petrol and diesel cars towards electric vehicles, although the high cost of electric cars and their reliance on expensive lithium batteries make them inaccessible to most people in poorer countries.

Another obstacle to achieving pollution-free growth is that countries interested in sustainable development often struggle to keep their own environments clean. According to a BBC survey, the United States is one of the leading polluters in the world. A World Bank study reveals that developed nations consume more plastic than underdeveloped countries. Many countries in America and Europe charge a price for exporting non-recyclable materials to the Third World.

It's important to acknowledge that each country has its unique environmental story, and a standardized remedy may not work universally. Take India, for example, which heavily relies on coal for its heavy industries, power generation, and transportation sectors. Coal, gas, and oil are consumed in significant quantities, and many livelihoods depend on coal. Asking such a country to achieve carbon neutrality by 2050 seems challenging. However, it's worth noting that what may seem impossible today could become feasible in ten years' time. Windmill power generation can be observed in various coastal areas of India, and battery-powered rickshaws called Totos have been in use for some time, albeit on a limited scale compared to the overall requirement.

It's essential to recognize that change, albeit gradual, is happening. Did we ever imagine in the early 1960s that each of us would carry a mobile phone in our pocket, connecting us to the entire world? We now even engage in conversations with AI-powered systems like ChatGPT to seek solutions to our problems! These advancements have emerged from innovative powerhouses. Perhaps, in another ten years, a more affordable alternative to fossil fuels will be discovered. This will undoubtedly have implications for employment rates and economic inequality, which only time will tell. Nevertheless, there is no harm in raising environmental awareness. As a child, I used to witness piles of garbage near my house in central Kolkata, and the air was heavy with smoke from coal ovens in kitchens. Today, both the government and the public have become somewhat more aware. People opt for cloth or paper bags instead of plastic ones when shopping, and there is increased research, attendance at meetings, and seminars on achieving net-zero carbon emissions.