

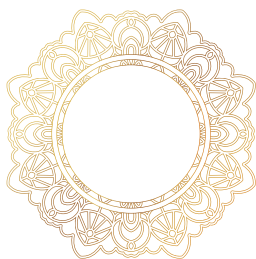


► SUSTAINABLE DEVELOPMENT THROUGH ANCIENT WISDOM

DR J P GUPTA

Climate change and global warming is real, now proven that it is caused by human activities and that it is accelerated by the burning of fossil fuels.

As of early September 2015, the average global temperature has risen 1.4 degrees Celsius since 1880, and nine of the ten hottest years on record have occurred since 2000. Carbon dioxide stands at 400.84 parts per million, the highest levels the Earth has experienced in 650,000 years. Since March 2022 there has been an unusual rise in temperature, surpassing 47 degrees Celcius, the first time ever, in certain northern parts of India.



Evidence from ocean sediments, ice cores, tree rings, sedimentary rocks and coral reefs show that the current warming is occurring 10 times faster than it did in the past, when Earth emerged from the Ice Age, at a rate unprecedented in the last 1,300 years.

Humans' dependence on fossil fuels, economy of consumption, achieving ever-higher profits and continuous growth, are all part of the dream of the modern world. For decades, we've assumed that, in the face of development, destruction of nature is inevitable. We allowed tree-felling in favor of luxury apartment complexes or ignored the razing down of critical forests to make way for highways. But the scary reducing amounts of forest cover, the high rates of pollution, and unbearable weather shifts have put paid to that. We have and even still now acting in certain ways that drive global warming and put life on Earth—not only human life but that of all plants and animals as well—at risk.

However, the world is finally waking up to the stark reality that we can no longer degrade nature for development or stand neutral ground. To restore some semblance of balance, whatever we create next must add to nature.

Now, the search for a new paradigm – Sustainable Growth or just Sustainability that can ensure economic development without jeopardizing environmental quality is being intensified. The world seeks to establish a philosophical foundation, where people think about nature before thinking about themselves, which can make us realize the deeper underlying reality of basic oneness. Natural Science doesn't simply describe nature, it is part of the interplay between nature and mankind. This ecological harmony is possible when the entire universe is seen as a single large family, including all the living beings of the world. Vedic civilization realized this world view when they say, 'vasudhaivakutumbakam.' This world view further developed in the Upanishadic Age with a firm philosophical foundation through its cosmological unity and sustainability.

Such a holistic world view offers a new paradigm for development, a new socioeconomic system free from exploitation, defining in a novel way the relationship between man and nature, thus realizing the ecological balance we need today.

Sustainability, however, is often viewed through a futuristic prism, yet what we often miss out is that ancient wisdom can hold important lessons. The struggle to be more sustainable is a relatively new phenomenon, but inspiration can be drawn from ancient farming and water management techniques. Innovation and technology can help us adapt these techniques to meet our present-day needs.

When we think of 'innovation' and 'technology,' we probably link it directly to modernity, futurism and industrial development. The word that probably won't make the list is 'ancient.' And yet, ancient natural technologies might well give us the answer to adapting to climate change that we desperately seek in modern innovations.



Ancient wisdom can guide and teach us more sustainable infrastructure without exploiting or outright destroying nature. In responding to climate change, with complex infrastructures and monotonous high-tech design, we're forgetting that we are sitting on a goldmine of millennium-old knowledge — about living in symbiosis with nature and striking a balance between growth and harmony.

The Ancient Wisdom has always been in the world. It is knowledge of the nature of things and of human nature. It is the wisdom of understanding and compassion, of which all of us feel in need in the depths of our being. One way to shift our focus and incorporate a more Earth-friendly (and life-friendly) way of living into our everyday lives, is to weave together modern knowledge and ancient wisdom.

While we may not be able to resurrect everything we left in the past, but

it's worth understanding that some ancient innovations and processes might still serve us well. The point of looking both forward and backwards is to arm ourselves with a wide range of tools to adapt to climate change. It isn't loud claim but a number of countries around the world are looking to ancient wisdom for guidance and have reached levels of innovation that perfectly balance what was previously considered un-balanceable.

Some of the examples that elucidate how ancient knowledge or ancient wisdom is being utilised:

- A study found that Tibetans living in Himalayan region are very susceptible to climate change, yet the people utilize a wide range of ecological zones for their subsistence.

Many other studies are underway to determine how mankind can utilize this type of wisdom on a global scale.

Extreme weather has played havoc with farmers across globe. While some have started adopting new technologies, others are looking back to explore old processes that worked then. Keith Elverson, an expert at UNEP, says there is probably no 'silver bullet' to solve everything but to look both forward and backwards to develop a wide set of tools as we adapt.

Below are some of the examples of such adaptations and utilizing ancient wisdom in various part of world. It's

fascinating to read about lost ancient wisdom:

'Floating Rice' of Vietnam Mekong Delta, where farmers were shown by a researcher Nguyen V K how to work un-conventionally against intense floods and swamps to grow high yield variety and rediscovering ancient grains. Floating rice has become well adapted to floods as the foliage grows much above the level of floods.

Harvesting rainwater: In west coastal India's Bhuj, the ancients seem to

have mastered the art of harvesting rainwater, diverting it from two ephemeral channels and then storing it in large reservoirs built on the site.

In Bhuj itself, a group called Arid Communities and Technologies (www.act-india.org), has been working for long to understand the traditional water harvesting and management system and they tried reviving it with the help of local communities. A small old well recently cleaned up by people voluntarily is now supplying water to about 50 families.



In Kolkata, India, BHERI wastewater aquaculture system management is the innovation in organic technology that has made its way to a number of countries for organic aquaculture and to use wastewater in a sustainable way. It features around 300 fishponds that carry out chemical-free water purification by relying on a combination of bacteria, algae, sewage and sun instead of coal-based power. It's also a source of food, an agricultural field, and a way of cleaning wastewater before it enters the Bay of Bengal.

There are other ancient techniques as well like using ducks instead of pesticides to manage insects etc. In Heilongjiang, China, Fang Yongjiang, a farmer, thought up a chemical-free approach that required no technology — only the clever thinking of ancestry of 600 years — and introduced ducks into rice paddies to feed on the weeds and insects so pesticides wouldn't be needed. Their droppings doubled up as natural fertilizer, which was a win-win. Fang initially began with a handful of ducks over 25 acres. In just a few years, other rice growers also implemented the ancient wisdom to bring the number up to 500 acres of pesticide- and fertilizer-free rice paddies monitored by ducks.

In Bolivia, Oscar Saavedra's non-profit, Sustainable Amazonia, has taught 500 families a method of agriculture dating back 400 BC — 7-foot high elevated fields that stood higher than floodwater levels and were surrounded by canals. During flood season, the canals would

hold the water to prevent the fields from flooding. During drought, the same nutrient-rich canal water would be used to irrigate the fields.

By going back to the culture of the open well, by using only the dynamic water table, by recharging aquifers, and by reserving the deeper aquifers for droughts and other emergencies we can hope to tide over droughts in the era of climate change. This is the water wisdom, which we must learn from our ancients.

Many of ancient innovations are absolutely in tune with nature, using available resources smartly to create a mutually beneficial relationship. They might be simple or complex, but usually, they're already there in our history books if we took a closer look. As they say, history repeats itself — and a lot of our modern problems were also faced by ancestors when their times were considered 'modern'.

The Borana, a cattle-herding tribe in Kenya, is surviving droughts in arid Isiolo county by reintroducing an abandoned, centuries-old traditional grazing management method. Called 'Dedha' (which means 'council' in the local dialect), the system relies on placing decision-making authority in the hands of the elders, who ensure that all herders have adequate pasture and water for their animals. Since Dedha was reinstated in 2011, the Borana have lost fewer animals to drought, according to Victor Orindi of

the Adaptation Consortium, a group that works to mitigate the effects of climate change in Kenya. Conflicts over natural resources have also been reduced, he adds. The county is in the process of passing legislation that will officially recognize the authority of Dedha councils.

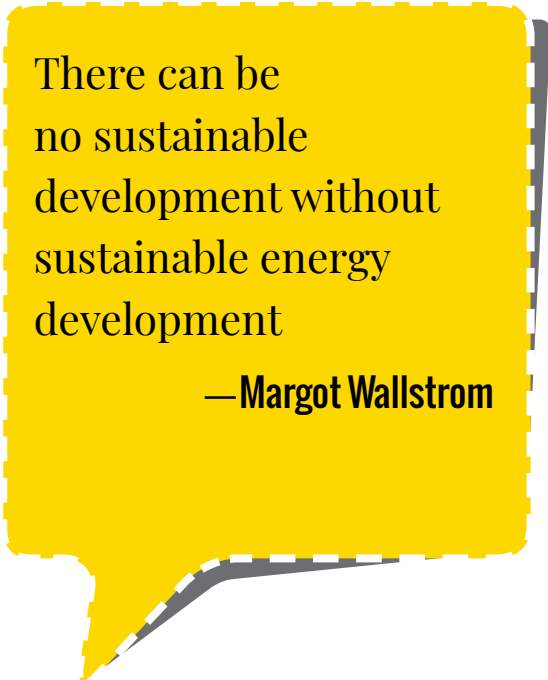
Projects like AlUla's Cultural Oasis in Saudi Arabia are trying to integrate lessons from the past to create a more sustainable future for areas in need of development. These ancient techniques are being updated with new technology and innovative thinking to address sustainability issues such as desertification.

The Azawak region of West Africa has badly suffered from desertification and water scarcity due to the impact of climate change. The water crisis has had a severe impact on both the local environment and the traditional nomad communities who farmed it. NGO Amman Imman is using water harvesting methods to restore ecosystems to improve the livelihoods of those forced to migrate.

On a concluding note, large part of world's remaining ecosystems is in the heart of the lands of indigenous people. For millennia, they've lived in harmony with nature without giving up on progress – and that goes to show that there is hope for environmentally-friendly solutions to modern problems through ancient wisdom.

Ecology depends on the interdependence of multiple processes and schools of thought, so it's impossible to say that there's one right way to tackle all of the world's environmental problems. The smart way to go about adapting to climate change is to listen to those who've shown resilience in the face of it for years and reach a happy balance.

No matter where we live, we're all still dependent on the same web of life. There is immense value in looking at solutions that succeeded in the past to see whether we can correct our course in time. Ancient Wisdom integrating with Sustainability means not only integrating the economy with nature and society but also integrating the past with the present, the present with the future, and technology with culture. This will bring spiritual and cultural transformation from greed-based to need-based development.



There can be
no sustainable
development without
sustainable energy
development

—Margot Wallstrom

SUSTAINABLE DEVELOPMENT THROUGH LIFESTYLE CHANGE

DR J P GUPTA

In the era of Industrial Revolution, there has always been a struggle for survival between humans, nature, and other species. The existence of life on this planet is intricately linked to the environment we live in. It fulfils all the necessities required for survival of human beings and animals of this planet. Before the era of industrial revolution humanity lived in harmony with nature. The problem occurred as industrialisation began. It marked a major shift in the relationship between humans and nature. The real impact of the Industrial revolution started appearing in the early 1960s. The real problem arises when human greed increased and they started demanding more than required. It was the time when machines started replacing humans and mass production of goods increased. Simultaneously, automation and mechanization in various aspects like agriculture increased, which in turn reduced employment opportunities in rural areas, which resulted in more and more people moving from rural to urban areas. Apart from that, because of better facilities and modern healthcare, the global population increased exponentially.

The sole purpose of the Industrial revolution was to improve living standards of human life and fulfil their needs, but now we see the focus has shifted from fulfilling necessities to

extract more and more comfort. Which in turn is making the human body increasingly prone to diseases and damaging the environment badly. For example, by 2018 approximately 1.6 billion air conditioning were installed worldwide, with the international Energy Agency expecting this number to grow to 5.6 billion units by 2050. Installing more and more air conditioners will increase the global temperature, which in turn will make the survival of humans difficult. Mental illness has been increasing in the society. People are getting prone to more and more diseases. More than one-third of Americans are obese. There has been a lack of harmony in society.

Greenhouse gas emissions are increasing rapidly. There has been frequent droughts and floods in various parts of the world. Weather patterns are becoming more and more unpredictable, resulting in manifold natural disasters all over the world. The sea level is rising at a slow and continuous rate, Oceans are absorbing more and more CO₂, resulting in ocean acidification. Increased plastic has been accumulating in the sea bed, affecting marine life severely. Massive deforestation in order to meet increased demand for agriculture and human habitation has reduced forest cover drastically.

Detaching oneself from nature has created many problems. In ancient times people lived in harmony with nature and with their surroundings,

which helped them to live a happy and prosperous life. Even their rituals and practices were those that motivated them to live in harmony with nature. Each and every ancient practice and ritual has a hidden benefit for humans and helping them exist in nature with harmony. Since the time the roots of ancient wisdom started weakening in society, the relation between human and nature started deteriorating. Unnecessarily increasing demands for extracting comfort and money has brought this world to a stage of extinction. Although there has been massive economic growth, it has come at a great environmental cost. There has been a huge decline in agriculture and available fresh water.

In today's fast-moving world, humans are exploiting natural resources by deforestation, mining, fossil fuel usage, industrialization, carbonisation, and emission of harmful chemicals in air, water, and land. Ignoring their consequences has led people to resume traditional and sustainable way as used by our ancestors. Though the current development cannot be stopped but it can be harmonized through several ancient practices for sustainable and mutual growth of nature and everything that exists. Some of these techniques or practices could be organic farming to lower the land pollution and air pollution caused by emission of harmful pesticides and chemicals used in their production. Rainwater harvesting was one of the major practices used in ancient

civilizations and even now in some parts of Rajasthan to ensure availability of potable water.

In modern day lifestyle there has been a lot more use of vehicles. In some families, number of cars exceed the family members. Number of clothing are far more than what is needed. Number of houses are more than the family members. That is lifestyle-greed-based and not need-based, If we look at Ancient India and even today in Indian villages, people use motor vehicles only when they must travel exceedingly long distances. For covering short distances walking is preferred, which not only saves environment but also keeps the human body fit and healthy. Materialistic possessions were bare minimum, just what were needed. Used ones were reused and recycled. Entire life style was based on circular economy.

Yoga practice empowers changing behavior to safeguard the community and environment. Yoga helps to change, on both an individual and a community level. Yoga is all about working with nature's forces, which are more than simply physical energies; they are also spiritual forces, at both internal and outward levels, harmonizing you with nature. We must balance the energies of our own, such as body, mind, breath and spirit, on an internal level. We must reconcile ourselves with the natural world and the Cosmic Spirit that underpins it from the outside. Each of us is a manifestation of the

entire universe, and we can only utterly understand our purpose in life when we discover the universe within ourselves.

SPIRITUAL AND CULTURAL TRANSFORMATION

- Yoga emphasizes principles such as expressive thought, non-violence, discipline, and even honesty when it comes to developing ethics. These factors contribute significantly to the development of diligent people who are deeply engaged to both the socio-political and physical environments. Individuals value simplicity and make long-term environmentally friendly decisions.
- Through yoga, body and mind come together in the pursuit of inner peace and understanding. Spiritual transformation is seen in yoga practitioners.

- Yoga relieves stress and trauma, and induces relaxation. It strives to reach an inner tranquilly unlike any other, in which negativity is expelled from our bodies and positive energy is diffused throughout our surrounding area.
- The physical benefits of yoga should not be overlooked. You can get a lot more fit and strong, and assist your systems to work at their best.
- Regular practice of yoga induces a dedication and a sense of respect for mother earth, and this helps a person to act in a specific way at home and work toward a better future. Individuals who work cooperatively, on the other hand, play a key role in gaining public support. Furthermore, living on a small budget, volunteering locally while thinking worldwide, and so on, to help lessen carbon footprint, resulting in innumerable advantages to the planet around us.
- Yoga and meditation help to bring harmony and peace to society and even can stop exploitation of natural resources. The aim of a practitioner's life was not earning a lot of money or to collect physical facilities but to work for the betterment of self and society, this created a sense of responsibility, which made them aware of their environment and surroundings.





- In ancient India, people were more dependent on fresh materials (foods) but nowadays, because of increased demand of processed materials, there has been a significant increase in population level (Like polyethene left after taking food items out are a major source of pollution). Apart from that the machinery used for processing foods produces a lot of pollution.

There has always been a race for happiness and pleasures in the modern society. This race filled humans with greed and jealousy. To fulfil their unwanted needs, people started exploiting nature in their own ways. Ancient wisdom never focused on storing and accumulating things and materials for the future and never gave much importance to material things (like money, physical facilities). It only

focused on having what is required. The human-caused climate change is the result of human greed rather than human necessities and ancient wisdom has rituals and components that have the ability to inspire the global community beyond that. Stress and depression have become silent killers of today's society. In Circular economy, Yoga is a practical way to relieve stress and find peace.

All corporate houses should go for small cars, small and simple offices and small houses. To show off wealth should be seen as sin and this will make an important shift. Similarly, all politicians and leaders should lead a very simple life, as they interact with public. This will be a message, which India can convey to international community. Khadi woven clothes should be used, this will reduce consumption of polythene and Rayon fibre.



CIRCULAR ECONOMY

DR J P GUPTA

India aspires to be a five trillion-dollar economy by 2025 that would generate business and new entrepreneurs. This would also increase resource and energy consumption and waste generation. To achieve the target of five trillion-dollar economy in tune with sustainable development principles, it is necessary to ensure low carbon footprints for climate-change. Principles of circular economy will be the key driver to achieve this mission.

Circular systems emphasize on reuse, repair, refurbish, remanufacture and recycle, thereby minimizing wastes that reach landfills or incinerators, reducing carbon emissions and utilizing clean energy. In contrast to the linear systems that have been working on the concept to create, use and dispose, the circular system is a closed-loop system, where the use of created products is extended, useful parts of the old equipment are suitably used in refurbishment of same or other type of equipment or for creating a new one. Such materials reduce the need of raw materials, resources, energy (retain embedded energy) and the polluting processes. The wastes of a process or a by-product is used as raw material for the other process or there is resource recovery for manufacturing of a new product. This prevents the waste from going to landfill sites or incinerators. Only the residual material not worth using again and again goes to landfill/incinerator. The non-toxic biological materials are returned to soil.

Circular economy can be implemented in all sectors. The 'regenerative' approach of circular economy is in contrast to throw away attitude of capitalist society of 'make, use and dispose'. The developing world has been observing circular strategy since long due to lack of resources and has been reusing, recycling and remaking objects with same or different use. This saves on the material and other costs.

With the environment law enforcing agencies enacting stringent environment laws, many vehicles not conforming to these will go off the roads. This provides immense opportunities for circular strategies to remake vehicles with the old parts of abandoned vehicles.

Plastic industry is another important sector for circular economy. Globally, 8.3 billion tons of plastic was produced between 1950-2015. Out of 6.3 billion tons, which became waste, 4.9 billion tons reached the dumpsites. With the increasing trend of plastic manufacturing, an estimated 12 billion tons of plastic will be dumped in the environment by 2050. Circular strategy in the closed-loop system encourages its reuse, recycle, remanufacturing and finally safe disposal. Waste

plastic can be used for thermal insulation of houses. In India, major industries dealing with plastic have come together last year, to form an alliance against plastic waste. India recycles or reuses over 90 per cent of all the PET (polyethylene terephthalate plastic) manufactured in the country. India has also shown improved electronics recycling. By signing 'extended producer responsibility' more than 700 electronics producers have come together to reduce e- waste.

There is a huge scope of reusing, repairing, refurbishing, remaking and recycling in the textile industry. Craze for new variety and style has pushed new generation into buying surplus clothes. The owner's utilization time and recycling of the clothes is very low due to which natural resources of more than \$ 500 billion are lost every year, according to the experts.

Economic analysis shows that three important areas, viz. cities and construction, food and agriculture, and mobility and vehicle manufacturing could bring annual benefits of Rs 40 lakh crores worth circular economy by 2050.

India's material consumption is expected to rise from 7.5 billion tons in 2015 to 15 billion tons in 2030. India's rate of resource extraction, including mining of virgin resources, is nearly three times higher than global average. In light of this, resource efficiency and waste management can bring down consumption and waste to almost nil. This will result in huge reduction in millions of tonnes of waste and CO2 emissions.

The government policy arises to enable reuse of waste and redouble recycle rate of key materials to 50% in five years. It envisions setting up a National Resource Efficiency Authority, which like the Bureau of Energy Efficiency, strategies for key sectors – automobiles, plastic packaging, building and construction sector, electrical and electronic sector equipment sector, solar photo-voltaic sector, and steel and aluminum to begin with.

To implement circular economy principles and circular economy strategies in organisations, the British Standards Institution (BSI) had launched the standard 'BS 8001:2017'. India is realizing the importance of having its own regulatory framework such as National Material Recycling Policy, National Policy on Resource Efficiency, Bureau of Resource Efficiency (BRE) etc. There is a need to integrate resource circularity in the Industrial Revolution (IR) 4.0 strategies.

In India, it is estimated that circular economy may provide opportunities worth \$218 billion per year by 2030. According to NITI Aayog CEO Amitabh Kant, fast increasing human population will raise the total global mineral and material demand from 50 billion tonnes in 2014 to 130 billion tonnes in 2050. For sustainable development, resource efficiency and circularity is imperative.

Produce, consume and discard needs rejuvenation. Resource efficiency and waste management will need to be the key drivers of a green strategy, because it is now the only viable path, capable of creating growth, new enterprises, and a clean environment.



CARBON MARKET

UMESH SAHDEV

India has let the world know its disquiet and approach towards Climate Change by Hon. PM of India announcing India's Climate Change commitments at the Glasgow COP26.

Under the 'Panchamrit' strategy – the Five Elixirs for Climate Change mitigation commitment announced, are:

- Achieve Non-Fossil/Renewable Energy capacity of 500GW by 2030.
- 50% of its energy demands to be met through renewable sources by 2030.
- Reduce Total Projected Carbon emissions by 1 billion tons till 2030.
- Reduce Carbon Intensity of its Economy by 45% by 2030.
- Achieve 'Net-Zero' by 2070.

India's expedition
to 2070 Net
Zero – Case for
Carbon Pricing &
Emissions Trading
Instruments