



JK Policy Institute

“Our planet’s alarm is going off, and it is time to wake up and take action” – Leonardo DiCaprio



World Environment Day 2022

**Theme for the year:
“Only One Earth”**

05 JUNE

From the very beginning, we have been committed to highlighting the importance of conserving the environment and also contextualizing the people’s lives within it to make sure Jammu and Kashmir Policy Institute remains a platform for raising awareness on environmental concerns such as sustainable development, pollution, overpopulation, global warming, conservation and wildlife issues.

Here are some of our best articles on the importance of the environment and to remind people that nature should not be taken for granted.

Kashmir's wetlands continue to be degraded and, sooner or later, they will come back to haunt us

Wetlands form an indispensable part of the natural water systems that are capable of preventing flood-like disasters. Above all, these vulnerable ecosystems are necessary for the survival of diverse flora, fauna, and, naturally, of humans as well.

Kashmir valley, situated in the north-western Himalayas, is home to a vast number of wetlands, some of which have disappeared in the last few decades alone. Urbanization is one of the major factors leading to the decline of these natural flood sponges. That is to say, the majority of flood basins in and around Srinagar city and wetlands of ecological importance around Dal Lake have been gradually diminishing due to urban expansion. And areas like Babademb, Khushalsar, Shallabug, Narkara, and Hokera, located within and along the borders of Srinagar, have been transformed into major residential areas.

The population of Srinagar city as per the 2011 census was 12.2 lakh with the number projected to cross the 23.5 lakh mark by 2021. With this expected increase in the population, the city residents are starting to prefer quiet and uncongested areas for housing, eventually occupying ecologically critical areas by massive land-filling.

Survey of India Topo Sheets (1971) and Landsat-ETM (2010) claim that Srinagar's wetlands, spread over 13,425.90 hectares in 1911, had shrunk to 6,407 hectares by 2004. Thus registering an estimated loss of 7,018 hectares in 95 years.

Using case illustrations, this article attempts to explain human interventions happening since the last couple of decades

that have led to a permanent diminution of Narkara, a semi-urban wetland located on the outskirts of Srinagar. The current status and level of encroachment of Narkara are also discussed in this article which takes us to a plan of action required to achieve efficient solutions for its restoration and protection.

Status of Narkara Wetland

A semi-urban wetland, with human settlements, agricultural fields, and tablelands called karewas as its catchment, situated on the outskirts of Srinagar, Narkara has shrunk to an awful extent in the last 50 years. The wetland reserve is now primarily an urban locale with the area under construction mushrooming almost 28 times in the past half-century. The built-up area covers nearly 37.12% of its total catchment.

The J&K government had proposed to build an Indian Institute of Management (IIM), Krishi Vigyan Kendra, and Sabzi Mandi over hundreds of kanals of Narkara. This was decided without getting approval from the Rakhs and Farms department (custodians of Narkara) and the Irrigation and Flood Control department, Srinagar. The government had also allocated about 100 kanals of the wetland for the construction of Transworld Muslim University. Moreover, an amount of Rs 101 crore is estimated to be required for filling the earth into the marsh. This comes from the detailed project report prepared by the Public Works Department (PWD) Kashmir. Henceforth, the IIT project has been stalled as the High Court issued a stay order on construction and urban development in and around Narkara. The PIL was filed by En-

vironment Policy Group – an NGO based in Kashmir.

Need for protection of Narkara Wetland

The presence of wetlands in any region is beneficial to the community, both human and wildlife, in a number of ways. It must be understood that reckless urbanization, within Narkara and its catchment area, will not only affect the hydrology and ecology of this semi-urban wetland but increase the chances of flooding in its surroundings.

Wetlands in semi-urban or urban areas, such as Narkara, act as flood protection systems, water purifiers, and habitat to a large variety of migratory avian species.

Russian and Central Asian fowl species have recognized Narkara as their breeding ground during winters. Apart from these, Mallards, Indian Moorhens, Purple Moorhens and Dabchicks are also found in Narkara. But the expansion of residential and industrial areas has led to disruption of avian breeding cycles. Narkara is basically a detention basin. That is to say, it is designed to allow a 3-day detention period for surplus flood water arriving from the Doodhganaga stream. However, unreasonable filling and absence of breathing space has affected its buffering potential to hold back floodwater and stormwater run-off.

Plan of action

1. The initial step to prohibit construction, in and along the periphery of Narkara, could be to employ local informants, either indigenous residents deriving a livelihood from the wetland or officers posted in the concerned department (Lakes and Waterways, Irrigation and Flood Control), to provide clues about illegal activities that have potential to cause harm to the wetland.

2. Custodian of Narkara, the Rakhs and Farms department, has to be well informed too. It has to properly report illegal activities, whether construction of residential complexes, industries, educational institu-

tions, or roads, for the protection of Narkara.

3. Domestic garbage dumped along the bund of Narkara wetland by residents must be dealt with strictly. A solid waste disposal system provided by Srinagar Municipal Committee (SMC) to all residential colonies constructed along the peripheries is not in use. So, regular inspections and penalty, in case of non-cooperation, is a must.

4. Inclusion of boatmen and fishermen community in the protection of migratory and local avian species during breeding seasons is essential. Bird hunting should also be banned.

5. Rehabilitation and relocation of residents/commercial centers, especially the ones that have encroached upon the original wetland area, is mandatory. The government can assist all parties in relocation while making sure they comply.

6. Dredging the canals leading up to Narkara also forms a necessary step towards protection and preservation of the wetland. Garbage-choked streams, nallahs, and canals must be properly cleaned to ensure ceaseless movement of surplus flood water during high rainfall season.

Conclusion

Nobody wants a repeat of the 2014 floods when residential areas, hospitals, schools, industrial complexes in and around Srinagar were flooded for more than 3 weeks. The Valley remained cut off from the rest of the world given all network stations were inundated. It's horrifying to think history could repeat itself if these wetlands are not preserved. The reason is simple. Nature has the power to restore natural floodplains to their original state, if and when disturbed or encroached upon. It doesn't look away nor does it maneuver away from human habitation. This incessant need to amass everything, to be in control, will cost us far more than we think.

Biopesticides for Environmental Safety and Sustainable Agriculture

Pesticides are used in agriculture, globally, to reduce yield losses and maintain produce pre/post-harvest quality by eradicating unwanted insects and controlling disease and extend its shelf-life in order to keep pace with the growing demand for food. This extensive use of chemical pesticides has certainly provided protection to the crops. However, the practice has also raised concerns about pesticide residues in the food and environment.

In Kashmir valley, chemical pesticide use has reached a high. Human well-being and loss of productivity have, although, remained stagnant. Ignorance among less knowledgeable farmers has resulted in the indiscriminate application of pesticides. Studies have found that about 1/3rd of the pesticides used are spurious in nature. Chemical pesticides adversely affect beneficial organisms, leave harmful residues in food, feed, and fodder, and cause environmental pollution.

Food Crisis, Intensive Agriculture, and Environmental Issues

The Food and Agricultural Organization (FAO) of the United Nations forecasted the need to increase world food production by 70% in order to keep pace with the increasing demand for food. Maximizing food production is the primary objective of all nations, as the global population is expected to reach approximately 10 billion by 2050.

Thus, arose a need to produce more food from less per capita arable land and available water. But providing ample food was only the first part of the challenge. The second and more important challenge was to produce and protect

them in a safe and sustainable manner. This is where intensive agriculture was deployed, using green revolution technology, characterized by the use of high-yielding varieties, chemical fertilizers, and pesticides.

There are an estimated 67,000 agricultural pest species that damage crops. However, due to the issue of pest resistance and withdrawal of some products on either regulatory or commercial grounds, only a few chemical pesticides are available in the market. Out of the 215 pesticides registered for use in India, 39 have been banned for use or withdrawn from the market. Thus, the requirement for the manufacture of even more pesticides has built up.

While the progress in agricultural production has been very impressive, intensive agriculture has resulted in several undesirable effects on the environment, and the overall sustainability of farming systems.

There are rising concerns about the loss of biodiversity and endangered species, set against the requirement to increase agricultural production without excessive reliance on chemical pesticides. Hence, the need of the day is to produce maximum from the decreasing availability of natural resources, without adversely affecting the environment.

Need for Biopesticides

Environmental safety and agricultural sustainability are equally important for survival on Earth. This is where biopesticides come into the picture.

Biopesticides or biological pesticides refer to the use of living biological organisms or their metabolites for pests,

pathogens, weeds, nematodes, rodents, etc. In accordance with the United Nations Food and Agriculture Organization standards, biopesticides are generally natural compounds or genetic modification agents, including biochemical pesticides (pheromones, hormones, plant regulators, insect growth regulators) and microbial pesticides (fungi, bacteria, or genetically modified microorganisms), which do not include antibiotic agricultural preparations. However, in the practical application of agricultural production, biopesticides generally refer to the large-scale industrial production of microbial pesticides.

Biopesticides are made from naturally occurring substances that control pests by non-toxic mechanisms and in an eco-friendly manner. Hence, biopesticides pose less threat to the environment and human health. They are generally less toxic than chemical pesticides, often target specific, have little or no residual effects, and have acceptability for use in organic farming.

Biopesticide Use and Management

Increasing demand for pesticide residue-free crop produce is one of the key drivers of the biopesticide market. Growing organic food market and easier registration than synthetic chemical pesticides are other important driving factors.

The development of biopesticides has largely followed a chemical pesticide model that does not fully exploit favorable biological properties of the biological agents. While there is commercial pressure from the manufacturing side to develop products, the environmentalists prefer narrow-spectrum products based on the strains from the area of use.

To reconcile these divergent demands, biopesticides in the market have been maintained at minimal negative impact, if any, on the environment. Increased

public concerns about potential adverse environmental effects associated with the use of synthetic pesticides prompted the search for products based on natural resources.

One such innovation is the Integrated Crop Management (ICM) program. It is a pragmatic approach to maintaining an intricate balance between environmental safety and agricultural productivity with sustainability being an important factor.

Objectives of ICM are:

- Reducing external inputs, such as inorganic fertilizers, pesticides, and fuel by means of farm-produced substitutes.
- As complete replacement of these inputs is not possible without significant loss of yields, partial substitution of the inputs can be achieved by the use of natural resources.

In recent decades, the focus on crop production has shifted from yield to quality and safety. Evidence suggests that biopesticide is an important component for promoting sustainable agriculture, hence it has gained a lot of interest, particularly in view of the growing demand for organic foods.

On this note, let's also know some downsides of biopesticides:

- Slower rate of control, often a lower efficacy, and shorter persistence compared to conventional pesticides
- Greater susceptibility to adverse environmental conditions
- Greater level of knowledge required by the grower to use them effectively

Recommendations

Globally, there are 175 registered biopesticide active ingredients and more than 700 products available in the market. The global biopesticide market has been valued at US \$2.3 billion. It was expected to reach US \$5.2 billion by 2020.



But there is still a lot to achieve in this regard, now of all times, when people are consciously leaning towards safety rather than yield.

- Identifying the ill effects of synthetic pesticides, most countries have amended their policies to ensure minimal use of chemical pesticides and promote the usage of biopesticides. However, biopesticides are still under the regulatory system originally developed for chemical pesticides. This creates a market entry barrier by imposing burdensome costs on the biopesticide industry.

- Biopesticides represent only 1% of the global market for agrochemicals. So, policy measures need to be strengthened in order to minimize the use of chemical pesticides and promote the use of biopesticides.

- There are certain technical difficulties in making biopesticides more effective and applicable. Generally, biopesticide application is not complicated, however, it may require training and knowledge about pests/pathogens against which they can be applied successfully.

- The other challenging task is to develop a balance between the broadly defined costs and benefits of biopesticides compared with synthetic pesticides.

- The new-found biopesticides may bring with them new regulatory and economic challenges that must be addressed jointly by the social and natural scientists, policymakers, and the industry.

- One other major obstacle in promoting biopesticides is the lack of profile which again reflects the weakness of the policy network. The relative immaturity of the policy network, lack of trust between regulators and producers, and limited resources and capabilities are some of the serious issues that need to be addressed.

- A better understanding of the mode of action of biopesticides, their effects, and regulatory issues that arise during their adoption may help to raise their profile among the public and policy-makers.

Future Prospects

As environmental safety is a global issue, there is a need to create awareness among the common people to switch over to biopesticides for their pest management requirements. Biopesticides are expected to provide predictable performance. Deployed properly, biopesticides have tremendous potential in bringing sustainability to agriculture and ensure environmental safety.

Environmental Management is needed to address Environmental Impacts of Industries

Due to rapid growth in emerging economies like China and India, global GDP grew by 3.8% in the last couple years. This economic growth led to a rise in global energy demand of 2.1%, more than twice the rate as that in 2016. Fossil fuels being the main energy producers, global emissions rose again, by 1.1%, having been continuously increasing for the past 3 years.

The first instalment of the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report confirmed that impacts of climate change are increasing, largely driven by anthropogenic greenhouse gas (GHG) emissions. These emissions accumulate from developing new businesses, industries, hydroelectric plants, automobile factories, chemical manufacturers, and the lot. Every year that the global economy is unsuccessful in decarbonising at the required rate, the 2°C goal of the global carbon budget becomes even more difficult to achieve. Given the present scenario, the world is, unfortunately, on track to exceed the prescribed budget in only 30 years. To make matters worse, exposure of communities to severe weather, precarious forest fires, droughts, and other climate impacts is likely if emissions continue relentlessly.

Besides, improper management of chemical industries, which produce more than just CO₂, has the potential to cause hazardous exposure to the local population and the environment. The Bhopal gas tragedy (1984) and Vizag gas leak (2020) are just some examples in this context. Malfunction of the cooling sys-

tem, which regulated toxic chemicals present in the plants, was held responsible for these disasters. But the gases had been inhaled and it was too late to repent.

Business Advantages of Undertaking Environmental Management

To decelerate exploitation of the ‘source and sink’ structure, i.e. environment, management is the only way forward. In addition to bringing about a positive change in the surroundings, environmental management has a number of business advantages as well.

- **Cost Savings:** Though it may seem protecting the environment may cost a company more, the opposite actually stands true. By increasing process efficiency, modifying product design, regulating proper sourcing of raw materials and waste disposal, altering infrastructure layouts, and taking appropriate measures during packaging and transport, a company can save large sums of money.
- **Reduction in Environmental Risk:** By making sure assessment of environmental risks is, by and large, accurate, investors, banks and insurance agencies are more likely to commit to a company. Thus, standardized environmental assessment will go a long way to help a company in being decently insured.
- **Meeting Supply Chain Requirements:** With the world heading towards accountability in all sectors, suppliers are often required to provide evidence of their environmental policies. Therefore to gain a strong supplier foothold, a company is mandated to meet its set policies.
- **Improved Public Image and Re-**

lations: Both for gaining a positive reputation among consumer base and regulatory authorities, environmental management is the way to go. It showcases a company's good faith in protecting and developing at the same time.

- **Employee Benefits:** Environmental protection is the new trend. A company preserving ecosystem rights administers enthusiasm in its employees. For they know, in some way or the other, they are doing their bit to save the planet.

- **Ensuring Legislative Compliance:** Avoiding public or media outrage by drafting sound environmental policies, while being aware of possible legislative changes, makes a company less susceptible to cash flow problems. Inculcating policies that cover all legal domains will cut down non-compliance fines for the company.

Guiding Principles for Environmental Management

Including social issues, related to human interaction with the environment, has always been a requirement in the management rules. However, application of the same has not been given much importance. Nevertheless, these rules can be rewritten to emphasize social issues related to environmental management. Some of these rules are:

1. **Precautionary Principle:** Here respect is given to peoples' way of life and integrity of their community. Mitigation measures are to be followed with certainty no matter the response from the community.

2. **Uncertainty Principle:** This principle pays attention to the fact that we don't fully know about social processes, and cannot comprehend these all the time, as these keep changing constantly from one place to another.

3. **Intra-generational Equity:** The interventions planned should not fall dis-

proportionately on certain sections of the society like children and women, socially excluded and disabled or particular generations, more than the other.

4. **Inter-generational Equity:** The plans are to be made so that the needs of the present generation are met without compromising the ability of future generations to meet theirs.

5. **Recognition and Preservation of Diversity:** Every community has diverse societies, thriving in their own way. And they have been doing so for many generations. The plan needs to respect that and make sure diverse social setups are not compromised or diminished.

6. **Internalization of Costs:** All costs, ecological and social, must be included when drafting a policy. No plan should be approved until these costs are enclosed in the planning structure and deemed manageable.

7. **The Prevention Principle:** It is always preferable and cost-effective to plan properly beforehand than restore any social or ecological impact after the project is finished.

8. **The Protection and Promotion of Health and Safety:** The plans must necessarily take into consideration all health and safety protocols devised to prevent any untoward social or environmental impact on workers, locals, and future generations. This includes activities and impacts before, during and after completion of the project at hand.

9. **The Principle of Multi-sectoral Integration:** All policies, plans, and infrastructural programs should consider social needs and social development requirements.

10. **The Principle of Subsidiarity:** The whole planning and developing process should be decentralized, i.e. taking into consideration the opinion of all stakeholders, especially people who are



going to be most affected by the project.

11. The Polluter Pays Principle: It is a fundamental principle in US environmental law and a regional custom because of the support received by the majority of OECD (Organisation of Economic Co-operation and Development) and European Union countries. The principle demands that the whole cost of compensating for social impacts of a plan must be borne by the one who proposes the intervention. In simple terms, this principle states that as much as pollution is unavoidable, the industry or person responsible for it must pay some amount for restoration of the affected environment. It is mentioned in Principle 16 of the Rio Declaration on Environment and Development of 1992.

Environmental Management Tools and Techniques

Now that we have established that environmental management is im-

To make matters worse, exposure of communities to severe weather, precarious forest fires, droughts, and other climate impacts is likely if emissions continue relentlessly..

portant for any business to grow sustainably, another aspect to be appreciated is tools required for a business to effectively manage environmental and social affairs. The International Organisation for Standardization (ISO) in early 1990s recognized the need of introducing standardization in the arena of environmental

management. Thus, 1993 saw the birth of a committee that would write standards related to the following management tools:

1. Environmental Management System (EMS): It takes into consideration the company's techniques to manage environmental issues pertaining to its business. It also provides a way to methodically address all concerns on improvements related to environmental management. ISO 14001 and EMAS are required to be addressed in this EMS scheme.

2. Environmental Auditing: This tool focuses on the company's ability to deliver what it has legally accepted. Auditing makes sure the business is proceeding as per required standards.

3. Environmental Labeling: To make sure a product has the least environmental impact within the same product group, it is important to know about environmental labeling. Only 20-30% of products in a group fulfil the criteria set by a labeling scheme organiser. If a company wishes to obtain a label, it has to apply for it, and fulfil all criteria needed. If it does, then the product is certified as being one of the least harmful ones in a product category.

4. Life Cycle Assessment (LCA): This takes on the 'cradle to grave' approach. LCA determines the impact of a product from its inception to its expiration, assessing raw materials, energy used, and waste disposal in its wake. This tool is important for a company to boldly support claims about the environmental influence of its products. Also, it makes known when and where a firm should find cost-effective ways to reduce impact.

5. Environmental Indicators: These indicators are used to assess environmental performance and improvements that

can be included to enhance operations in a company. It can also be used in firms without a developed EMS.

6. Environmental Policies: Drafting a policy is of utmost importance before undertaking any project. It signals commitment towards sound environmental management. It also makes sure that aims, objectives, and intentions of the company seamlessly converse with the environment.

7. Eco-balances: This tool is important to understand about a company's inputs, stocks, and outputs. It takes into consideration raw materials, energy, resources, products and wastes that enter and leave the company. This is to know about the business's overall impact so as to practise environmental management earnestly.

8. Environmental Reporting: To make known a company's methods and standards in reducing the environmental impact of its products, it may release the results for public viewing. Environmental reporting increases chances of a firm improving relations with various stakeholders and gaining a good image. All companies, large, medium or small, can find reporting a useful tool. An example in this context is CDPs (Carbon Disclosure Project) reporting for the world's principal publicly traded companies.

9. Environmental Charters: Subscribing to numerous charters or guidelines can enhance a company's image and showcase its commitment to responsible environmental management.

Environmental Management is essential to ensure effective strategies are implemented so that development, economic zenith, and environmental protection go hand in hand. Businesses must invest in constituting dependable environmental management systems for the benefit of both man and nature.

Here is why you should consider adopting a slow lifestyle.

Why on Earth are we trying to hurry? It is not good to be lazy or procrastinate, but what's required is slowing down. A slower lifestyle helps calm nerves, make deep personal connections, and, paradoxically, allows way more time than when we are frantically moving around.

One has to recognize that slowing down is a choice open to all. Even if you are busy, there are always ways to take it easy. You can start small and make your life fulfilling.

This slow-living phenomenon has roots in the Slow Food movement, started by Carlo Petrini in the 1980s, in Italy. Slow living rests on the simple idea of slowing down enough to enjoy life – from eating meals to the way of working to spending free time.

Reconsider commute

One way to embrace slowness and sustainability is by modifying or even doing away with a traditional commute. You could ride a bike or scooter – or even walk – to work instead of driving. Using public transportation instead of your own vehicle, or asking your supervisor about telecommuting a few days each week is a reasonable enough option.

Exploring other work opportunities – closer to home – if your current work situation requires a lengthy journey is another way to opt for a breather. Or if this isn't possible, you could always leave early to avoid traffic jams. Use your commute time to listen to a meditation recording, refreshing music, or audiobook for overcoming stress.

Spend free time on a hobby rather than on Google

Instead of checking email, continually updating social media, or even shopping

online, spend your time on a hobby. These online activities can take up a lot of time if we let them! We're simply choosing to spend our free time online rather than doing something productive. It will help connect to yourself and increase productivity. Knit or play an instrument or write – devote one evening a week to what will help you slow live through life.

A little boredom is okay

Thich Nhat Hanh – a spiritual leader and peace activist – writes in his book *Planting Seeds*, that it is actually quite difficult to be lazy.

“Not doing anything, just enjoying ourselves and whatever is around us, is a very deep practice. All of us have energy within that constantly pushes us to do this or that. We cannot sit or lie still and enjoy ourselves or the beautiful sky. If we aren't doing something, we can't stand it.”

Choose to not always rush off into a new activity. Instead, pay close attention to the colour of the sky, your feelings, the people around you.

Slow parenting

Rushing from school to sports, to after-school activities, and then spending the remaining time on homework or looking at a screen, kids eventually get stressed out and run-down. The same is true for parents chauffeuring and catering to them. Making room in the daily schedule for screen-free, unstructured time is very important to help everyone relax. Creative pursuits, such as using art supplies, woodblocks and building materials, and regular trips to the garden or exploring a nearby nature area will go a long way in helping you enjoy and relish life. At the same time, your kids might learn a thing or two about their environment.

Make from scratch

Making something you would normally buy brings satisfaction, costs very little, and can easily replace more typical and expensive forms of entertainment. It can be a collaborative activity, enough to include your family or friends, thus adding up to the memory drawer! Bake bread, brew coffee/tea, make jam, knit, try to create your own soap or scrub, or sew some cloth napkins.

Sharing reduces your ecological footprint

By spending with others, you share your footprint with theirs. At home with your family, being together in one room, cooking and eating together, or being entertained together, the amount of energy used is greatly reduced compared to when everyone is acting separately. This includes the energy consumed by cooling/heating, lighting, electronics, and cooking appliances. When people assemble, they merge their energy use.

Sustainability supports an individual's choice of slow living.

Voluntary simplicity – a practice where the focus is on having less but experiencing life more – is representative of sustainability.

The benefits of simple living are significant. Shedding the produce-and-consume way of life, you are able to focus more on aspects that support well-being like self-improvement, relationships, and pursuit of the meaning of life. You don't often get to experience such important parts of life in urban set-ups, given that the hubbub of rushed life steals away most of your 'me time'.

However, usually travelling to health resorts or countryside immediately has that soothing effect. You tend to appreciate simple living more. People from villages are mostly not aware of new technological advancements and continue living their lives in the lap of nature, taking their time, with no social media to overwhelm them. Thus, they invest energy in grooming their

health and soul to the best of their capabilities. They are, in fact, way healthier than the city folk. Being with them and settling into their habits makes you more serene inside out!

Slow living promotes health and sustainability.

It encourages walking or cycling over automobiles. It promotes fresh local food over processed food. Sustainability assists in having warm, dry homes that ward off illness. It also supports the use of harmless natural products over synthetic ones.

The whole society also benefits from slow living. If individuals are healthy, it will help make a robust society. Sustainable practices also include sharing, providing, and supporting each other – to achieve higher levels of social well-being in all communities.

Social consumption

It not only helps you save energy but can increase your happiness too. Studies have shown that people are filled with positive energy when actively engaged in social, cultural, and creative experiences – more than if they are consuming mindless entertainment alone.

In-person interaction is not always easy. However, even just having a good conversation, is more enjoyable than being alone. The major reason is that you've to put some effort into it.

With the pandemic switching our priorities, people have – even more so – realized the importance of social circles and human interactions that are not done over virtual networks. We must never forget the importance of human touch. Machines might replace the physical presence of human beings but they can never provide the same emotional closeness. Using these lessons as true mantras for a fulfilling life, we must act together, eat together, and spend time in each other's company – to conserve energy, promote sustainability, and improve our living standards.

Kitchen gardening: A culture model for environmentally sustainable food production

The agriculture sector in Jammu and Kashmir has always been at the mercy of uncertain weather, structural problems and lack of investment. However, a rapidly changing climate is making the sector even more vulnerable in the face of droughts and extreme weather. With changes in rainfall patterns, agriculture faces threats from both drought and flooding. These growing vulnerabilities can destroy crops and exacerbate the threat of food scarcity. The impacts of extreme weather events and shifting climates also mean that agricultural pests, that retard growth or kill plants, can now expand to areas where farmers hadn't previously dealt with them. They are expected to impact ecosystems as well, such as affecting pollinators, and natural predators that cater to pest control.

The bottom line is the following. Kashmir valley has a largely agrarian economy with a strong agricultural food sector, but every bit as vulnerable to unprecedented challenges that climate change poses.

Kitchen gardening offers low-cost and sustainable solutions, in harmony with the environment, to problems in the food system; threatened by climate change, mainly through the effects of predicted abiotic stresses.

The practice of setting up and maintaining a kitchen garden in Kashmir, locally known as Ve'ar, is as old as farming itself. Recognizing its importance at present, most people in Kashmir are tending to kitchen gardens, through experience and necessity. They have

chosen to be self-reliant, especially at a time when it has become indispensable to grow food simply at home; in inhospitable climates. For many Kashmiris, especially women in rural areas, setting up and maintaining a kitchen garden has become their way of life. Cultivating a kitchen garden in an environmentally friendly way not only offers respite from stress, but it has numerous ecological and financial benefits. Freedom from daily visits to markets to buy expensive vegetables is one such benefit. The most common vegetables grown in kitchen gardens in Kashmir are tomatoes, spinach, gourd, cucumbers, cauliflower, string and green beans, green chilli, potatoes, mint, bottle gourd, coriander, and the famous collard greens -haakh. The kitchen garden acts as a saviour; protecting people from pesticide exposure, and helping them meet their daily nutrient requirements. On top of this, the vast majority of food waste generated in households is efficiently managed and utilized as compost for the soil, fertilizing it naturally, in kitchen gardens. This results in less garbage in landfills and less resource consumption.

Climate change represents the greatest challenges to maintaining the sustainability of agricultural systems stressed by increasing food demands. Therefore, agrarian activities such as kitchen gardening that favour agricultural sustainability by bringing economic and environmental benefits merit further discussion.

By 2050, the world population is expected to increase to almost 10 billion. With 3.4 billion more mouths to feed and the dependence of the middle class



on dairy and meat products in developing countries, global demand for food could possibly increase by 59%-98%. What this means is agriculture around the world needs to rev up production and increase yields. But scientists are of the opinion that impacts of climate change — extreme weather, drought, higher temperatures, sea-level rise, and increasing levels of carbon dioxide — threaten the quantity and quality of food supplies.

It has been well known that warmer temperatures may increase crop yields. However, the overall impact of climate change on agriculture is expected to be negative — reduction in food supplies and increase in food prices. Many regions in the world suffer from high rates of hunger and food insecurity which include parts of sub-Saharan Africa and South Asia. These are predicted to experience the greatest declines in food production. And to top it off, elevated levels of atmospheric carbon dioxide (CO₂) are expected to lower levels of iron, zinc, and other important nutrients in crops.

Kitchen gardening offers low-cost and sustainable solutions, in harmony with the environment, to problems in the food system; threatened by climate change, mainly through the effects of predicted abiotic stresses.

Floods wash away the fertile top-soil farms depend on for productivity, whereas droughts dry it out. Higher temperatures increase water needs and make crops more vulnerable during dry periods. Certain species of insects, weeds, and other pests benefit from this higher temperature and elevated CO₂. It also increases their potential to damage crops, creating financial hardship for farmers.

With higher temperatures, most of our planet's glaciers have begun to recede. This is affecting farmers — those who depend on glacial melt-water for irrigation. Meanwhile, rising sea levels com-

pound flood dangers for coastal farmers. It also increases saltwater intrusion into coastal freshwater aquifers, thus making these water sources too salty for irrigation purposes.

In such scenarios, home-based gardens for food production will go a long way in pacifying, to some extent, the ever-increasing resource needs of most urban/rural lower and middle-class families in India. Apart from self-reliance, food security, thus, represents a significant factor in highlighting the importance of kitchen gardens in Kashmir. It encourages the idea of safeguarding our food production by being sustainable in approach and mindful in waste generation. People who cultivate crops and raise cattle; know their environment very well. Even though many among them might still be unsure or ignorant about scientific developments in crop production, yet they have an established sense of preservation. And in doing so, they act as front-runners in the race to save our planet. Self-sustainability is one of the main attributes of people with the least ecological footprint.

Recommendations

Our challenge is not to dismantle our current system of food production, but to help it evolve. And to better protect and promote public health, preserve natural resources, and improve food production and quality. No one-size-fits-all approach can help achieve these goals, given the complexity and dynamic nature of agriculture and our food system as a whole. Instead, a range of evidence-based approaches is needed. Approaches combining traditional wisdom with current science to ensure a sustainable, healthy, and equitable food system for everyone, at all times.

Therefore:

1. Cultivating a kitchen garden must

become a sense of pride and accomplishment for every Kashmiri. It should not be perceived as unsophisticated or retrograde. Simply put, in this day and age, whilst examining the current world scenario, it represents the optimal way to overcome food scarcity.

2. Brainstorming for projects to maximize food production and reduce crop loss by adequately predicting and managing flood and drought risk should be encouraged by all concerned departments/research centers/educational institutes.

3. Improving financial practices and helping farmers explore new schemes for sustainable food production should be considered. These schemes can be extended to farming at home, strengthening the concept of kitchen gardening in Kashmir. Motivating people towards growing their own food and providing them incentives to help wherever possible is a must.

4. Before a food crisis unfolds, the need for relief efforts must be identified.

5. State-of-the-art climate information and prediction tools to be introduced.

6. Building quantitative economic models to examine vulnerabilities in our food system under different scenarios. This can be used to explore how changing certain policies might reduce vulnerabilities of the food system to disruptions.

Being strong in body and mind, acting resolutely, and adapting to survive makes us humans apex predators in the global food chain, and also the ones responsible for protecting it. Kitchen gardening will make us sustainable and independent for daily necessities. It highlights the basic human attributes we still share with our prehistoric ancestors today — our will to survive, even in turmoil.

The survival of ‘Himalayan Black Bear’ hinges on how humans live now



Climate change (CC), loss of forests, habitat destruction, biodiversity extinction, and man-animal conflict. These events are tearing apart our planet’s ecosystem and dimming our hopes of survival. As much as humans are suffering, the animal kingdom is too. Talking about the Himalayan region Asia is blessed with, CC has damaged multiple micro-ecosystems nestled in this famed third pole. One such affected species is the “Himalayan Black Bear”.

With climate change altering weather patterns and the duration of snow and summer, the hibernation period of the black bear has taken a hard hit over time. Constant conflicts with the neighbouring human population due to loss of habitat and insufficient hibernation have impacted the species drastically.

This commentary focuses on the Moon bear, another name for the Himalayan Black Bear, settled in Dachigam National Park. It quotes park officials, forest guards, and the local population surrounding the National Park and tries to gather as much information as possible on the “Gardener of the forests”.

The Himalayan black bear – also called Moon bear or Asiatic black

bear – is responsible for tending to the Himalayan forest ecosystem. However, its population is on an unfortunate decline due to climate change. Also, Global warming is threatening the bear population by reducing snowfall and melting high-mountain glaciers. Snowfall in the Himalayas is now spread out over more months, but it is scanty. At the same time, climate change is affecting food availability. For example, berries that would flower in May are flowering early, leaving bears with less food for winter.

Indian Institute of Tropical Meteorology – Ministry Of Earth Sciences (IITM-MoES) in its study in 2020 found out that several areas in the Hindukush Himalayas have exhibited declining trends in snowfall and retreating glaciers during the recent decades. As a result of this, the Hibernation period of the Himalayan bears has been drastically reduced, forcing them to survive longer and longer with less food. Wildlife scientists learnt that the hibernation period of Himalayan bears has decreased from four to five months to two months.

“The average hibernation period (three to five winter months) of Asiatic black bears is now down to 54 days. We found that one radio-collared bear hibernated for just 32 days,” said Lalit Kumar Sharma, a wildlife expert with the Zoological Survey of India in Kolkata. He also asserted that the reproductive cycle of the said species may be affected due to the changes in their hibernation period.

Experts also warn that the changing hibernation patterns may influence the animal’s behaviour, making it more

aggressive and leading to increased bear attacks.

S. Choudhury, who is affiliated with the Wildlife Trust of India, conducted a study on human-wildlife conflict in 2008 in Kashmir valley. He writes in his paper: “Almost 90 per cent of the attacks occur in daylight hours, with the majority happening in agricultural areas (including orchards). Most of the bear attacks occur during the time coinciding with the fruit harvesting season and ripening of corn.”

In 2008-2009, 25 people were killed and 342 injured by bears in Kashmir. By 2011-12, this number reached 40 and 562 respectively, according to the Jammu and Kashmir Department of Wildlife. These events of man-animal conflict have thrown the black bear population out of balance. Approximately 25 per cent of forest divisions in the state of Jammu and Kashmir have reported bear-human conflict, reported Down To Earth magazine.

Popularly and locally known as Maali (gardener) of forests, the Himalayan black bear has great significance in the wild. Nazir Malik, a forest guard in Dachigam, said that the bear helps propagate the forest by excreting and distributing seeds. “The black bear excretes about 85% of the food material consumed, scattering undigested seeds all over the forest floor,” Malik said.

Malik says that when the bear searches for food, it forages for fruits and berries towards the top of the trees. “Though it may seem the black bear is destroying trees, actually it is quite the opposite. Because in doing so, it creates a pathway for sunlight to reach the lower growth such as herbs, shrubs, or other smaller vegetation.”

The Himalayan black bear also acts as a scavenger. Abdul Rehman, a wildlife guard and mountain trekking veteran,

who has had his fair share of run-ins with the Himalayan black bear, threw some light on its eating habits. “It eats diseased animals to maintain balance in the forest ecosystem. One of the reasons the black bear does so is due to its strong immune system. It also searches under fallen, partially decomposed logs for grubs, insects, and other organisms,” Rehman said.

Reduction in the number of black bears is affecting forest cover. And with climate change now, the combined effect continues to cause a decline in vulnerable endemic floral species in the Himalayan forests.

Dachigam National Park, located amidst the Zabarwan hills of the Himalayan mountain system that stretches out in Kashmir valley, is witnessing a decline in the black bear population. Although the census conducted in April 2021 did not include the Himalayan black bear, park officials claim its population has decreased owing to human-wildlife conflict and improper rehabilitation of the animal. The current population rests between mere 50-70 black bears. Despite a ban on killing wild animals, unofficial reports have suggested that at least 10 black bears are killed on average every year.

Former director of the State Forest Research Institute for Jammu and Kashmir, OP Sharma, explains in an interview with The Third Pole that construction of roads, pollution and stress on habitat contribute to the destruction of many endemic plant species in the Valley. “Some species can grow under a particular climate. When there is an increase in temperature, these plants shift upwards and also disturb ecosystems there.”

Excessive urban sprawl has also increased along peripheries of forests, where the black bears reside. According

to a report published in Down to Earth on land use around the Himalayan black bear habitats in Kashmir, about 30% of forest divisions, where bears reside are under heavy to very heavy use by humans. Livestock use in about 35% of forest divisions is increasing as well. State-of-the-art farms and orchards, laden with fresh fruits, are a welcome treat for the black bears dislocated from their home, making the human population susceptible to attacks.

Kashmir's orchards have almost doubled in size from 70,364 hectares in the 1990s to 127,759 hectares today as farmers have shifted from paddy to apple cultivation. Apples provide enough sustenance to keep black bears active during the winter.

Nazir Ahmad, a wildlife photographer working in Dachigam National Park, expressed his concern about a load of urban development on forest cover and wildlife. "Construction of urban jungles and horticulture farms leads to hostile interactions. What people don't realize is that encroaching upon the forest land, where a variety of species already exist and thrive, will eventually lead to conflict," Ahmad said.

Abdul Hameed, a local trekker, said that awareness is insufficient regarding the human-bear conflict in the region. "Although hostile interactions with the Himalayan black bear have substantially reduced in our area, compared to a decade or two ago, yet awareness amongst masses is insufficient to see a further drop in the conflict graph," Hameed said.

Faroosha Firdous, a Masters in Environment student from S.P. College, Srinagar, spoke about the importance of

this statement in the context of the black bear. Ms Firdous is a climate change activist and advocates environment protection through inter-college debates and seminars. "The Himalayan black bear is a unique species, protecting and preserving the ecosystem. But negatively modifying its habitat, which affects breeding patterns and population, is irresponsible behaviour," she said.

Nazir Ahmad, a wildlife photographer working in Dachigam National Park, expressed his concern about a load of urban development on forest cover and wildlife. "Construction of urban jungles and horticulture farms leads to hostile interactions. What people don't realize is that encroaching upon the forest land, where a variety of species already exist and thrive, will eventually lead to conflict," Ahmad said.

Abdul Hameed, a local trekker, said that awareness is insufficient regarding the human-bear conflict in the region. "Although hostile interactions with the Himalayan black bear have substantially reduced in our area, compared to a decade or two ago, yet awareness amongst masses is insufficient to see a further drop in the conflict graph," Hameed said.

Faroosha Firdous, a Masters in Environment student from S.P. College, Srinagar, spoke about the importance of this statement in the context of the black bear. Ms Firdous is a climate change activist and advocates environment protection through inter-college debates and seminars. "The Himalayan black bear is a unique species, protecting and preserving the ecosystem. But negatively modifying its habitat, which affects breeding patterns and population, is irresponsible behaviour," she said.

CONTRIBUTORS: ADEELA HAMEED AND MUKHTAR DAR

SUPERVISION: TOUSEEF RAINA AND JAVAID TRALI

EDITOR: AKEEL RASHID | **DESIGN:** TANVEER LONE

Website: www.jkpi.org | Sector 5, Bemina, Srinagar, Jammu and Kashmir, India, 190018