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Indigenous knowledge and Resource Management for sustainability

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ABSTRACT

Prioritizing drinking water and its source sustainability, building climate resilience, both demand & supply side management, enhancing water storage both at large & small scale, application of state-of-the-art technology, encouraging interlinking of rivers and enhanced people's participation to take these actions The Indian Parliament approved a national Agriculture Policy in 2000. Later, in 2007, the Union Cabinet also endorsed a National Policy for farmers. Both aim to harness the vast untapped growth potential of Indian agriculture for accelerated, inclucisive and sustainable growth and development leading to improved economic conditions and social status of farmers, agricultural workers and their families. According to the Indian Constitution, agriculture is a State subject, yet many facts of the sector are either in the Central list or under the concurrent list. Often the policies pertaining to agriculture sector are initiated at the Centre, especially to ensure needed support for development related activities throughout the country. Considering the concerns and best interests of the farmers and farm workers, it is desirable that each State formulates an Agriculture policy of its own. It is in this context, Haryana Government has decided to formulate a progressive agricultural policy with the help of Haryana Kisan Ayog. Accordingly, this draft document based on comments received from various people. Our strength is our rich cultural heritage, our hardworking farmers, our mixed farming, our favorable best climate for Basmati rice. Our weakness is rapid diversion of cultivated land for non- agricultural purpose is currently a matter of great concern. Soil health and water quality are declining. Soil organic carbon is low and the organic matter recycling is not practiced as mostly the wheat and paddy straw is burnt in the fields. Our vision to ensure overall progress and prosperity of Haryana farmers by making farming efficient, economically viable, progressive, knowledge based sustainable and respected profession.

Keywords: Agricultural, rabi, kharif, crops, seasons, production, sustainability, Resource.

INTRODUCTION

Indigenous groups are able to manage local ecosystems and biodiversity in a sustainable manner thanks to time-tested, generationally passed traditions, beliefs, and understandings known as indigenous knowledge (IK). It frequently outperforms contemporary, technocratic conservation techniques by providing a comprehensive, non-exploitative, and resource-efficient approach to environmental management. The preservation of biodiversity, water management, and sustainable agriculture are important topics. Haryana is a predominantly agricultural state, even with its recent industrial boom. Approximately 70% of the population works in agriculture. In terms of the nation's production of food grains, Haryana comes in second. The two main crops are rice and wheat. Haryana is the second-largest contributor to India's central food grain pool and is autonomous in food production. The two primary crops in Haryana are Rabi and Kharif. Some major crops include wheat, rice, cotton, and sugarcane. 96% of the land is under cultivation, with the remaining 86% being arable. About 75% of the area is irrigated, through tube wells and an extensive system of canals. Haryana contributed significantly to the Green Revolution in India in 1970s that made the country self- sufficient in food production. Haryana has Asia's biggest university –chaudhry Charan Singh Haryana Agricultural University is located in Hisar. Dairy farming is also an essential part of the rural economy. Milk and milk products form an essential part of the local Diet. There is saying "Dessa maine des Haryana , Jit doodh dahi ka khanna". Haryana has 660 gram per capita per day on other hand in national level this is 232 gram per day. Murray breed buffalo is Black Gold of Haryana. Now innovative Agricultural programmers are come with innovative ideas. Best irrigation is our strength and best soil quality is also available in Haryana. North Haryana is furtile but south Haryana is sandy soil area. So in this area we produce less water crops which

need less care. Haryana is 2nd in wheat, cotton crop in India. They have so much production od crops and then economy of Haryana is good other state of India.

ACTION PLAN AND KEY RECOMMENDATIONS OF 1ST ALL INDIA ANNUAL STATE MINISTERS' CONFERENCE ON WATER VISION @2047

1. Need for a more comprehensive and integrated Water Vision@2047, including adaption and mitigation strategies with timeline, addressing both demand and supply side needs. Need for a Task Force on Water Vision@2047 to work out a complete strategy for implementation of the recommendations of the Conference, clearly outlining the role of Central Government and State Governments with deliverables and timelines to achieve the outcomes of a water secure future .

2. To minimize loss of water in the water conveyance system, building of piped distribution network may be encouraged.

3. Micro irrigation may be promoted in an accelerated manner to utilize the estimated potential of about 70 million hectares fully.

4. Use of technology including It in irrigation may be promoted to optimize water uses on one hand, and improve productivity on the other.

5. People's participation or jan bhagidari is key to sustainability of initiatives in the water sector. Formation of Water Users Association in Command Area, their effective functioning and linking them to Farmers' Producer Organizations (FPOs) is important to reduce the IPC-IPU gap estimated to be about 20%. Village water and sanitation committees to be actively engaged in operation & maintenance of rural drinking water schemes.

6. A single regulating body is required at the State level, for groundwater as well as surface water, including water pricing and reuse of waste water to regulate the water sector in a holistic manner.

7. Mapping of health of drinking water sources and measures to restore health of degraded sources (both quality and sustainability) through convergence of resources need to be undertaken. Spring shed management in hill areas may be promoted in a focused manner for this purpose.

8. Use of geo-sensing, geo-mapping, remote sensing and 3-D modeling may be promoted for better assessment and planning of water resources.

9. Circular economy in water sector may be promoted by treating all waste water generated in urban areas and re-using such treated used water progressively. In rural areas also, grey water should be reused / used to recharge groundwater.

10. Water budgeting and management (both supply and demand sides) at gram panchayat and village as well as town/city level may be taken up universally with people's participation and leadership of rural and urban local bodies.

11. Water storage capacity may be enhanced, both at large scale and small scale, to manage existing and future demand and build climate resilience.

12. Effective management of sedimentation in reservoirs, rivers and other water bodies through suitable means may be encouraged.

13. Potable water for drinking should have priority over all other uses of water. Areas and regions vulnerable to shortage of drinking water should be mapped and connected to the water grid suitably.

14. Inter-basin transfer of water from flood prone areas should be encouraged.

15. Agriculture uses 80-90% of water; therefore appropriate cropping patterns, crop varieties, efficient water utilization may be promoted with 'whole of Government' approach.

Diversification of agriculture in Haryana

Agricultural diversification indicated a subsistence style of farming where farmers grew multiple crop types on a plot of land and engaged in various activities within their farming operations. The fundamental goals of agricultural diversification were household food and income stability. In recent years, agricultural diversification is increasingly viewed as a remedy

for various issues in the nation's agricultural progress. Farm-level diversification is intended to boost farm income; however, its effectiveness as a risk management strategy persists. Factors contribute to diversification. In Haryana, there is considerable diversification; in northern Haryana, abundant irrigation and excellent soil allow us to cultivate rice in this region. The Karnal district in Haryana is the rice bowl of the state. In southern Haryana, we cultivate bajra, grams, and gawar due to the sandy soils and limited irrigation options. In the Hisar region, we cultivate cotton and wheat. There is a great deal of diversity in this state.

Role in Future

- Temperatures will continue to rise
- Frost free season will lengthen
- Changes in precipitation patterns
- More drought and heat waves
- Hurricanes will become stronger and more intense
- Sea level will rise 1-4 feet by 2100
- Arctic likely to become ice free
- Many regional effect seen in U.S area.

Navigating Water Challenges for a Sustainable Future

Geospatial technologies, like GIS and remote sensing, revolutionize water resource mapping, offering real-time data on river flows, groundwater, and quality. In a world grappling with population growth and climate change, they predict water stress, enabling proactive management. These tools also monitor water quality, ensuring safe drinking water, and aid disaster response during floods and droughts. As we journey towards 2047, we must recognize water as a lifeline for sustainable futures. Geospatial technologies empower us to make informed decisions that promote responsible water use, protect our environment, and ensure access to clean water for all. It’s a lifeline we cannot afford to ignore, and with technology as our ally, we have the tools to safeguard this precious resource for generations to come.

Sustainable Resource Examples

Sustainable resources are classified as natural resources that are renewable and can be replenished at the same rate, or faster than they are being consumed.

Some examples include:

Hydropower: Hydropower generates electricity directly by using flowing water to turn turbines. This electricity is renewable and sustainable when managed to protect aquatic ecosystems and water quality.

Solar power: This is classed as a sustainable resource because the sun’s energy can be captured without the depletion of the sun itself. Wind power: Like solar power, wind power can be harnessed through the use of wind turbines, without its depletion.

Green hydrogen: An energy carrier produced from sustainable sources such as wind or solar power, to split water into hydrogen and oxygen. This process creates a low-carbon fuel that stores energy and can power industries and transport sectors where direct electrification is difficult. It also offers a way to store surplus renewable energy for use when demand is high or supply is low.

Sustainable resources such as these are increasingly valued in light of the UK government’s sustainability plans, including the Clean Power 2030 Action Plan and its Net Zero Strategy. According to the 2025 UK Net Zero Business Census, 73% of UK organizations are prioritizing net zero (despite over half facing barriers), with 65% aiming to achieve this by 2050. However, not every renewable, natural resource is always sustainable or better for the environment. For example, while biofuel is a renewable energy source, its production and use can involve greenhouse gas emissions and significant resource consumption, meaning it is not always guaranteed to be fully sustainable. Nevertheless, biofuel continues to play a role in the transition to greener energy sources. Although exact figures for UK organizations using renewable energy are not available, over 50% of the UK’s electricity was generated renewably in 2024, indicating that many organizations are likely contributing to this transition.

Benefits of Sustainable Resource Management

Improved reputation

Demonstrating a commitment to sustainable resource management could help position your business within the sustainability movement, strengthening brand reputation and client and stakeholder loyalty. For example, some global

brands have gained recognition for their significant sustainability efforts, including the use of recycled materials and support for environmental causes.

Win more business
Highlighting your organization's sustainable resource management efforts could help to build trust with clients and stakeholders, and support your organization's commercial positioning. It could make your organization more appealing to potential clients and stakeholders, as it demonstrates a commitment to supporting a sustainable future. In some cases, contracts or business opportunities may only be won if you have demonstrable sustainable practices, such as ISO 14001 certification or clear and accessible reporting. Showing that sustainability is at the forefront of your business can encourage those with similar standards to work with you, rather than a competitor who may not hold the same environmentally friendly standards.

Cost-effective
Using renewable resources can help your organization to manage costs over time. By installing your own ways of capturing renewable energy, like solar panels, on your organization's premises, you're able to capture and use your own energy, rather than paying other organizations that supply it.

Other Initiatives
The creation of a sustainable future depends in part, on the knowledge And involvement of the people, as well as an understanding of the consequences Of individual actions. Towards this end, the Government will continue efforts to enhance the level of environmental awareness and civic consciousness among the people. The DOE will step-up its efforts to promote and enhance public understanding of environmental issues through the publication of environment information booklets, pamphlets and posters. The operation and services of DOE's environ-library will be expanded. Environmental education courses and environment-based co-curricular activities under the Ministry of Education will be strengthened. The private sector, NGOs and the media will also be encouraged to continue their active role in the protection and maintenance of the environment, especially through the promotion of a community-based approach. Industries, particularly the SMIs will be encouraged to adopt.

CONCLUSION

The Government of Haryana trusts that this State Agriculture policy will receive fullest support of all sections of society. It will lead to an accelerated annual agriculture growth of more than 4 per cent. All out efforts will be made for its effective implementation so as to ensure increased income and profitable for improved livelihood of Haryana farmers. A detailed exercise to develop the Road Map around strategic areas specified in this policy will be undertaken on priority and needed resources shall be provided to achieve desired goals.

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