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ROLE OF EMERGING TECHNOLOGIES IN RURAL AND ECONOMIC DEVELOPMENT OF HIMACHAL PRADESH

Emerging technology refers to innovations and advancements in various fields that are in the early stages of development or adoption and have the potential to significantly impact industries, society, and the way we live and work.

➤ E.g., Artificial Intelligence (AI), Internet of Things (IoTs), Quantum Computing, Nanotechnology, Bio-Technology, etc.

➤ Himachal Pradesh, being a hilly and predominantly rural state in India, has faced challenges in terms of infrastructure, connectivity, and access to basic services.

➤ To address these challenges and promote rural development, various technological interventions have been employed.

These Interventions are:

➤ **Internet Connectivity and Digital Access -** Improving internet connectivity, particularly in rural areas, has been a major focus in Himachal Pradesh.

❖ E.g., projects like BharatNet aim to provide broadband connectivity to all gram panchayats, enhancing digital access across the state.

➤ **E-Governance -** Technology has revolutionised governance and service delivery, making government services such as land records and public distribution systems more accessible and transparent.

❖ E.g., HIMSWAN, Sugam, HP MyGoV, e-filling of Income Tax, Facial Recognition of Beneficiaries, etc.

❖ Also, the state government signed MoUs with FICCI to promote the use of drones in governance.

➤ **Agriculture and Farming -** Emerging technologies like precision agriculture, IoT-based sensors, and drone technology can improve crop yields, reduce wastage, and enhance the overall productivity of the agriculture sector.

❖ E.g., projects like AGRISNET aim to create a comprehensive agricultural data bank.

❖ Further, the Himachal Pradesh government has launched the "Transformation in Agriculture Using Emerging Technologies" project with Rs 108 crore funding from the Central government.

➤ **E-Education and Skill Development -** The adoption of online education platforms, e-learning tools, and virtual classrooms can help bridge the gap in education and skill development, especially in remote areas of the state.

❖ E.g., Har Ghar Patshala Campaign, e-Samwad etc.

➤ **Healthcare Services –** Telemedicine and remote healthcare technologies can help in providing healthcare services to remote and inaccessible areas of Himachal Pradesh.

❖ E.g., e-Sanjivani Portal of Himachal Pradesh government.

❖ Further, Apollo Tele-Health has been awarded a contract to provide remote healthcare to the district of Lahaul-Spiti.

➤ Financial Inclusion - Technology plays a vital role in improving financial services in rural areas, facilitating access to banking services, and government subsidies, and enabling digital transactions.

❖ E.g., Direct Benefit Transfer under various schemes like MGNREGA, PM KISAN scheme, etc.

➤ **Tourism Promotion -** The state leverages digital platforms and emerging technologies like Virtual Reality and Augmented Reality to promote tourism, providing information about local attractions and facilitating online bookings.

❖ E.g., Himachal Pradesh is all set to 'e-connect' temples to boost religious tourism.

❖ Also, under the Union Budget 2023-24, a "challenge mode" target is adopted to create 50 tourist sites in India, including H.P., to provide physical and virtual connectivity of tourism at the international level. make it short

➤ **Renewable Energy -** Himachal Pradesh utilises technology to harness renewable energy, particularly hydropower, efficiently managing energy resources and contributing to both power supply and state revenue.

➤ **Disaster Management -** Technology is employed for early warning systems and disaster management, crucial for a state vulnerable to natural disasters like landslides and floods.

❖ E.g., Landslide and flash flood sensors are installed statewide, monitored by the Integrated Command and Control Centre (ICCC) for prompt responses to potential incidents.

➤ **Environmental Conservation and Infrastructure**

Development - Emerging technologies aid in environmental conservation, forest management, and sustainable urban planning and infrastructure development.

❖ This includes the use of remote sensing and data analytics for forest management, wildlife conservation, and forest fire monitoring, to curb riverbed encroachment, track retreating of glaciers, etc.

➤ **Manufacturing and Industry -** Adopting Industry 4.0 technologies like automation, IoT, and data analytics can boost the state's manufacturing sectors' competitive edge.

➤ **Infrastructure Development** - Technologies like GIS (Geographic Information System) and AI can be used in urban planning and infrastructure development to ensure sustainable growth.

❖ E.g., Shimla town will have a GIS-based development plan that will deal with several issues besides providing relief to the people of the town.

By harnessing the power of innovations like IoT, AI, and data analytics, Himachal Pradesh is steadily moving towards a more connected, efficient, and resilient future.

BIOTECHNOLOGY

Biotechnology involves harnessing biological processes, living entities, or their components to produce or innovate various products.

➤ Biotechnology involves the large-scale production of biopharmaceuticals and biologicals through the use of genetically altered microbes, fungi, plants, and animals.

➤ The applications of biotechnology include therapeutics, diagnostics, genetically modified crops for agriculture, processed food, bioremediation, waste treatment, and energy production.

➤ To utilize the full potential of the biotechnological advances, the state government came up with a comprehensive policy.

The objectives of the Biotechnology Policy of Himachal Pradesh of 2014 are:

➤ **Elevating Global Competitiveness -** Aiming to transform Himachal Pradesh into a top choice for the development and innovation of biotechnology products, services, and processes.

➤ **Strengthening Educational and R&D Infrastructure -** Committing to the enhancement of infrastructure and resources in research and educational institutions to cultivate a well-qualified biotechnology workforce.

➤ **Accelerating Research and Development -** Intensifying research efforts in key biotechnology sectors such as agriculture, animal husbandry, human health, the environment, and industry.

➤ **Sustainable Utilization of Bio-Resources -** Focusing on the conservation and commercial exploitation of the State's unique bio-resources for sustainable growth and development.

➤ **Fostering Biotechnology Investments -** Raising awareness and promoting investment opportunities in various biotechnology and related sectors to boost industrial growth in the State.

Himachal Pradesh presents an optimal location for investments in biotech-driven industries due to:

➤ **Rich Biological Diversity** - Himachal Pradesh boasts an abundant variety of plant, animal, and microbial species.

❖ E.g., the state harbours more than 3,500 species of flowering plants, out of which about 800 species are estimated to be used for some or other medicinal purposes within and outside the State.

➤ **Diverse Ecological Conditions** - The State stands out with its wide range of ecological environments, leading to a predominance of specific flora and fauna in different regions based on the local eco-geographical conditions.

➤ **Clean Environment** - The low population density and extensive vegetation contribute to a pollution-free atmosphere in the State.

❖ E.g., the air quality index (AQI) of Himachal has improved from 81 to 61 over the past four years, in the latest "Swachh Vayu Survekshan-2022".

➤ **Moderate Weather Patterns -** The climate in Himachal Pradesh remains relatively temperate throughout most of the year, providing a conducive environment for industries that require temperature control, particularly cooling during the warmer months.

➤ **Accessibility to Industrial Resources** - Himachal Pradesh offers the essential resources for establishing and maintaining biotechnology industrial operations, including ample unused land, consistent and affordable electricity, and abundant water supply from natural perennial sources fed by melting snow.

➤ **Government Support for Biotechnology** - The State Government actively supports biotechnology ventures, ensuring swift and efficient processes for

initiating industrial units.

Scope of Bio-Technology in Himachal Pradesh:

➤ **Pharmaceutical -** This involves leveraging biotechnology to create pharmaceutical products.

➤ **Phytochemicals** - These are plant-produced chemical compounds that help in defence against pathogens and predators.

  ❖ E.g., In Himachal, the extraction of phytochemicals from local plants for use in herbal medicines is a potential application.

➤ **Bioprospecting** - This entails the search for bioactive compounds and genetic material in nature, which can be commercialized in various industries.

➤ **Fermentation** - Utilizing microorganisms for biochemical transformations, which can be applied in the production of food additives and animal feed.

➤ **Post-harvest processing** - Biotechnology can address the short shelf-life and susceptibility to damage of fresh produce.

  ❖ E.g., prevention of post-harvest losses of Tomatoes, apples, etc.

➤ **Genetically Engineered Micro-organisms (GEMs) -** These are microorganisms modified through modern biotechnology for specific functions.

  ❖ E.g., waste to energy production, extraction of minerals from hazardous mine sites, etc.

➤ **Environmental Protection** - Applying biotechnological processes for environmental conservation and restoration.

  ❖ E.g., in Himachal, the use of bioremediation to clean up contaminated water bodies.

➤ **Animal Husbandry** - Biotechnology can enhance animal breeding and reproduction.

  ❖ E.g., three Cattle Farms located at Kothipura (Bilaspur), Palampur (Kangra) and Bagthan(Sirmaur) are being run by the department to produce genetically superior breeding bulls.

➤ **Agriculture** - Also known as agritech, this field applies scientific techniques including genetic engineering to genetically modified crops suited to the local climate and soil conditions.

  ❖ E.g., the Rubber Research Institute has planted the world's first Genetically Modified (GM) rubber plant in Assam, specifically designed to thrive in the mountainous northeastern region's climate.

The Various Applications of Biotechnology in Horticulture Production of the State:

➤ **Crop Improvement through Genetic Engineering** - Genetic engineering techniques can be used to develop horticultural crops with improved characteristics, such as disease resistance, pest resistance, and increased yield.

  ❖ E.g., Scab disease in apples and Early Blight disease in tomato and potato.

➤ **Micropropagation** - Tissue culture techniques are widely used to multiply horticultural plants like apples, pears, and strawberries rapidly.

  ❖ This ensures the production of disease-free and genetically uniform planting material, leading to higher yields.

➤ **Fruit Ripening and Shelf-Life Extension** - Biotechnology can be used to manipulate the ripening process of fruits and extend their shelf life, reducing post-harvest losses.

  ❖ E.g., Ethylene management and controlled atmosphere storage are examples of such technologies.

➤ **Molecular Marker-Assisted Breeding** - Molecular markers can be used to identify and select desirable traits in horticultural crops, accelerating the breeding process and reducing the time required to develop new varieties.

  ❖ E.g., High yield crops.

➤ **Climate-Resilient Varieties** - With the changing climate patterns, biotechnology can be used to develop horticultural varieties that are more resilient to extreme weather conditions.

  ❖ E.g., flood, frost, high temperature, drought tolerant.

➤ **Organic Farming** - Biotechnology can support organic horticulture by developing organic-certified biotechnological inputs, such as organic biofertilizers and biopesticides.

➤ **Environment and Ecological Protection** – Biotechnology helps to produce bio-fertilizers and pesticides, which prevent soil, air or water pollution and ensure environmental and ecological conservation.

By continuing to invest in and promote biotechnology, Himachal Pradesh is poised to realize sustainable growth and development, contributing to the welfare of its citizens and the conservation of its unique bio-resources.

MEDICINAL PLANTS

The medicinal plant diversity in Himachal Pradesh is spread across more than 100 plant families with a few families being highly represented.

➢ This diversity highlights the state's potential to become a significant player in the national herbal scene, provided there is adequate conservation and utilization of these resources.

➢ In light of this, the state government took a proactive step by introducing the Medicinal Plants Policy in 2006.

The Major Objectives of this policy include:

➢ **Conserving Medicinal Plants** - The state aims to sustainably manage and promote its medicinal plants, balancing conservation with commercial and research applications.

➢ **Encouraging Organic Agriculture -** The policy promotes the use of organic farming techniques for traded species and supports the cultivation of commercially valuable species on privately owned lands

➢ **Establishing a Fair Pricing System** - The policy aims to create a pricing mechanism for wild harvested plants, balancing the need for conservation with the benefits provided to local communities.

➢ **Fostering Collaborative Efforts** - The state encourages partnerships between public bodies, private organizations, and local communities to strengthen capacity in cultivation, value addition, and processing of raw materials before they are exported.

➢ **Creating an Integrated Institutional Framework** - The policy seeks to establish a coordinated and responsive institutional structure to guide the development of the state's herbal sector, involving all relevant stakeholder groups in the management of medicinal plant resources.

➢ **Promoting Regional Cooperation** - The state aims to connect with other North-Western Himalayan states to promote community-focused reforms in the medicinal plant sector and to create alliances for better collaboration and coordination on policy, marketing, and value-addition operations.

➢ **Updating and Introducing Legislation** - The policy includes a commitment to reevaluate and modify existing laws, or to introduce new legislation, to foster a supportive environment for the growth and development of the herbal sector within the state.

Status of the Medicinal Plants in H.P.:

➢ **Diverse Medicinal Plant Population** - Himachal Pradesh is home to over 3,500 types of flowering plants, **with approximately 800 species utilized for various medicinal purposes both within and outside the State.**

❖ Of the medicinal plants identified, the majority are herbs (70%), followed by shrubs (15%), trees (10%), and climbers (5%).

➢ **Endangered Medicinal and Aromatic Plants** - The State Forest Department of Himachal Pradesh has listed 57 species of Medicinal and Aromatic Plants as being at risk due to non-sustainable harvesting practices.

➢ **Variety in Plant Families** - The medicinal flora in the state spans across more than 100 different plant families, highlighting its botanical diversity.

➢ **Medicinal Plant Trade** - Each year, approximately 2,500 tons of medicinal plants are officially transported out of the state's forests, with some also cultivated and sold by individuals.

❖ The legal medicinal plant trade generates an estimated Rs. 10 crores, contributing around Rs. 40 lac annually to the state government through export permits.

➢ **Prominent Medicinal Plant Species** - Noteworthy medicinal plants in Himachal Pradesh include "Nag Chhatri" (Trillium govanianum), "Brahmi" (Bacopa monieri), "Dhoop or Dhoop-Lakkad" (Jurinea macrocephaly), and "Amlaka or Amla" (Phyllanthus emblica), among others.

The Geography of Himachal Pradesh Significantly Influences the Region's Medicinal Plants Diversity:

➢ **Variation in Altitude** - The state's landscape ranges from the low Shivalik foothills to the high Himalayan Mountains, creating diverse microclimates that accommodate various plant species.

➢ **Temperature Diversity** - The region's varied temperature zones support diverse medicinal and aromatic plants, with some thriving in cooler conditions for optimal growth and compound production.

❖ E.g., plants like Picrorhiza kurroa (Kutki) and Woolly Pastureweed thrive in lower temperatures.

➢ **Differing Rainfall Patterns** - The western parts of Himachal Pradesh receive substantial rainfall due to monsoon winds, while the northern and eastern areas are relatively drier, providing varied habitats for plants adapted to these moisture levels.

➢ **Soil Types -** The classification of soil in the state is done in two categories: Brown Hill soil and Sub-Montane soil.

- ❖ The brown soil is found in Shiwalik and the lesser Himalayan region covering 42.16% of the state's area.
- ❖ The sub-montane soil characterizes the Middle and Greater Himalayan zone covering 46.07% of the state's area whereas eternal snow and glacial types of snow cover an area of 11.77%.
- ❖ This variation in soil type promotes the diversity in the medicinal plants.

Prospects for Medicinal Plants in Himachal Pradesh:

- ➢ **Traditional Medicine -** Many communities in Himachal Pradesh rely on traditional medicine systems like Ayurveda, Siddha, and Unani, where medicinal plants play a crucial role.
  - ❖ E.g., Tulsi, Ashwagandha, Arjunachaal, Brahmi, etc.

- ➢ **Economic Opportunities -** Cultivation and trading of medicinal plants can provide livelihood opportunities for local communities, contributing to the state's economy.
  - ❖ E.g., Medicinal herbs like Dhoop (Jurinella macrocephaly), Karu (Picrorhiza kurrooa), Chora, Patish (Aconitum heterophyllum), Laljari (Arnebia benthamii), Kuth (Saussurea costus), etc.

- ➢ **Research and Development -** The diverse medicinal plant species in the state offer ample opportunities for research in pharmacology, botany, and medicine, leading to the development of new drugs and therapies.
  - ❖ E.g., The Himalayan Forest Research Institute has created macro-proliferation methods for the large-scale propagation of Kutki and Mushakbala, significant medicinal plants from the temperate Himalayas.

- ➢ **Ecotourism -** The rich biodiversity, including medicinal plants, can attract tourists, particularly those interested in botany and natural medicine, fostering ecotourism.
- ➢ **Education and Awareness -** Medicinal plants can be used as tools for environmental education, raising awareness about biodiversity and conservation.
  - ❖ E.g., The Himalayan Forest Research Institute has set up Germplasm banks across various nurseries in Himachal Pradesh, preserving different species of temperate Himalayan medicinal plants for demonstration and

stakeholder education.

- ➢ **Affordable Healthcare -** Medicinal plants play a significant role in the healthcare systems of rural areas, providing affordable and accessible remedies.

The cultivation and utilization of medicinal plants in Himachal Pradesh face several challenges and issues, including:

- ➢ **Addressing Data Evaluation and Authenticity in Herbal Medicine -** A critical challenge lies in impartially evaluating diverse data sets such as toxicological and epidemiological information, as well as ensuring the authenticity of the herbal materials utilized.
- ➢ **Over-Extraction** - Due to the high demand for medicinal plants in national and international markets, there is a tendency for over-harvesting, which threatens the sustainability of these species in their natural habitats.
  - ❖ E.g., out of the Himalayan region's medicinal plants, 112 species are at risk, with the highest number in Jammu and Kashmir (64), closely followed by Himachal Pradesh (60).
- ➢ **Lack of Standardization** - There is a need for standardization in the cultivation and processing of medicinal plants to ensure consistent quality and efficacy of the products.
- ➢ **Inadequate Research** - There is a lack of comprehensive research on the medicinal properties of various plants, as well as on the development of high-yielding and disease-resistant varieties.
- ➢ **Limited Market Access** - Many local growers and collectors of medicinal plants face challenges in accessing broader markets, leading to economic losses.
- ➢ **Climate Change Impacts** - Changing climatic conditions in the region may have unpredictable effects on the growth and availability of certain medicinal plants.
- ➢ **Dependence on Wild Collections** - A significant portion of the medicinal plants are collected from the wild, which makes them vulnerable to over-exploitation and habitat loss.
- ➢ **Lack of Awareness** - There is a need for greater awareness among local communities, cultivators, and other stakeholders about the value of medicinal plants and the importance of conserving them.

Way Forward:

- ➢ **Drug Interaction Analysis** - Understanding how herbal medicines interact with conventional drugs is

a necessary step.

➢ **Ensuring Standardization and Safety** - Establishing standardized protocols to guarantee the safety and efficacy of herbal products.

➢ **Risk Management** - Implementing strategies to manage and mitigate potential risks associated with herbal medicine use.

➢ **Comprehensive Documentation** - Enhancing pharmacological, toxicological, and clinical documentation to support the safe use of medicinal plants.

➢ **Enhanced Research and Development** - Invest in comprehensive research to explore the medicinal properties of various plants and to develop high-yielding, disease-resistant varieties.

➢ **Market Development and Access** - Facilitate access to broader markets for local growers and collectors, and develop marketing strategies to promote the value of medicinal plants from Himachal Pradesh.

➢ **Promotion of Cultivation Over Wild Collection** - Encourage the cultivation of medicinal plants, especially those that are over-harvested from the wild, to reduce pressure on natural habitats.

➢ **Awareness and Capacity Building** - Conduct awareness programs and capacity-building workshops for local communities, cultivators, and other stakeholders to highlight the importance of medicinal plants and the need for their conservation.

By fostering collaboration, enacting informed policies, and engaging local communities, the state can balance economic growth with ecological stewardship, enhancing both human and environmental health.

AROMATIC PLANTS

Himachal Pradesh, rich in biodiversity, is home to over 1500 drug plants, including valuable aromatic and medicinal plants such as Atis, Patis, Karu, Kala Zeera, Singhi-Mingli, etc.

➢ The state government has initiated various programs and schemes to conserve and manage these aromatic plants.

The Various Initiatives are:

➢ **Mehak Scheme:**

❖ **Objective** - Promotion of aromatic plant cultivation.

❖ **Description** - The scheme provides assistance to farmers in cultivating aromatic plants like wild marigolds, lemon grass, basil, etc.

➢ **Establishment of Herbal Gardens:**

❖ **Implemented by** - Department of Ayurveda.

❖ **Location** - Four herbal gardens set up at Jogindernagar, Neri, Dhumera, and Jungal Jhalera.

❖ **Purpose** - Development of agro techniques for medicinal plant cultivation to supplement farmers' income.

➢ **State Medicinal Plant Board:**

❖ **Structure** - Established under the chairmanship of the chief minister.

❖ **Function** - Promotion of medicinal plant-related activities in Himachal Pradesh.

➢ **Charak Vatikas Initiative:**

❖ **Implemented by** - Ayush Department.

❖ **Description** - Establishment of Charak Vatikas in 1167 Ayurvedic institutions, with approximately 11526 plants planted to generate awareness about plantation drives.

➢ **Regional cum Facilitation Centre:**

❖ **Collaboration**: National Medicinal Plant Board, Ministry of Ayush.

❖ **Location**: Research institute in the Indian System of Medicine at Jogindernagar.

❖ **Coverage**: Promotes cultivation of medicinal plants across six northern states, including Himachal Pradesh.

➢ **Promotion of Specific Plants:**

❖ Seabuckthorn:

❖ **Implemented by**: Himachal Pradesh Krishi Vishvavidyalay Palampur.

❖ **Location**: Lahaul Spiti.

❖ **Community Involvement**: Women of Chandra Valley led the "Ek Kadam Hariyali Ki Aur" campaign, planting 6,588 forest nurseries of Seabuckthorn berries (locally known as Drilbu and Chharma).

❖ Saffron:

✓ **Implemented by**: Institute of Himalayan Bioresource Technology Palampur.

✓ **Location**: Cultivation successful in Kinnaur district.

These initiatives reflect the Himachal Pradesh government's commitment to the conservation and sustainable management of aromatic plants, ensuring both economic development for local communities and preservation of the state's rich biodiversity.

IT, ITES (INFORMATION TECHNOLOGY ENABLED SERVICES) AND ESDM (ELECTRONICS SYSTEM DESIGN AND MANUFACTURING) POLICY OF H.P.

In today's digital world, the influence of Information Technology is unparalleled and it acts as a force multiplier to address the day-to-day needs and challenges of all industries.

➢ The Information Technology (IT) and Information technology-enabled services (ITeS) have enabled the State to dispense quicker and more efficient services in governance practices, health care, education, research, public service delivery etc.

Competitive Advantages of IT, ITeS and ESDM Sector in Himachal Pradesh:

➢ **Congenial Industry Relations -** The State has been recognized as the most consumer-friendly State in India by the Chamber of Commerce and never witnessed any major loss of productivity/work hours due to the State Government's constant emphasis on maintaining excellent industrial relations.

➢ **Reliable and Affordable Power -** The State is known as a Power Surplus State and provides round-the-clock power at reasonable rates to the industry.

➢ **Availability of Skilled Manpower** - The state is enriched with premier educational and technical institutes, including NIT Hamirpur, IIT Mandi, CIPET Baddi, IIIT Una, JUIT, and the forthcoming Mini Tool Room in Baddi.

  ❖ These institutions, along with 238 ITIs across the state, ensure a continuous supply of highly skilled human capital, particularly benefiting the manufacturing sector.

  ❖ Himachal Pradesh takes pride in having one of the highest numbers of technical personnel per lakh of the population.

➢ **Salubrious Environment** - Himachal Pradesh is committed to maintaining a clean and pollution-free environment, supported by a diverse range of natural flora and fauna and advantageous climatic conditions.

  ❖ The state is celebrated for its tranquillity, law-abiding citizens, and efforts to ensure a peaceful living and working environment.

Hence to harness the full potential of IT and ITeS, the Department of Information Technology, Government of Himachal Pradesh, has launched the IT, ITeS and ESDM Policy in 2019.

➢ The policy enables a competitive environment for setting up IT, ITeS (Information Technology Enabled Services) and ESDM (Electronics System Design and Manufacturing) organisations and generates more employment through entrepreneurship in the state.

The primary goals of this policy include:

➢ **Establishing a Center of Excellence in IT, ITeS, and ESDM** - Transform Himachal Pradesh into a prominent hub for Information Technology, IT-enabled Services, and Electronics System Design and Manufacturing.

➢ **Building the Necessary Tech Infrastructure** - Develop all the essential infrastructure required for the growth and establishment of IT, ITeS, and ESDM companies within the state.

➢ **Enhancing the Skilled Labor Force** - Create a structure that boosts the availability of skilled professionals, ensuring that the state's workforce is adequately prepared for industries driven by technology.

➢ **Supporting Small and Medium-Sized Enterprises (SMEs)** - Promote and assist Micro, Small, and Medium Enterprises in the state to engage in the IT, ITeS, and ESDM sectors.

➢ **Implementing Automation** - Create a system that incorporates back-end automation to enhance business processes.

➢ **Ensuring Timely Service Delivery** - Create a supportive environment that ensures digital services are provided within a predetermined time frame.

➢ **Promoting Socio-Economic Development** - Drive holistic growth throughout the state while simultaneously enhancing the socio-economic landscape through the development of technology-driven industries.

➢ **Boosting Employment and Entrepreneurship** - Create additional employment opportunities and encourage entrepreneurial ventures within the state.

In conclusion, Himachal Pradesh is strategically positioning itself as a frontrunner in the IT, ITeS, and ESDM sectors, capitalizing on its unique strengths and the comprehensive policy framework.

HIMACHAL PRADESH PIONEERED IN THE ESTABLISHMENT OF A STATE WIDE AREA NETWORK (HIMSWAN)

Himachal Pradesh pioneered in establishment of a State Wide Area Network (HIMSWAN) to facilitate e-governance and enhance citizen-government interaction.

➢ Connecting over 2,000 sites including sub-divisions, tehsils, and panchayats through a high-speed line, the network ensures efficient and transparent governance by providing interactive information from various departments.

➢ This innovation in governance was recognized at the Infocomm India 2019 summit, where Himachal Pradesh was honoured with the Express Computer IT Excellence Award.

HIMSWAN as a Tool to Strengthen e-Governance:

➢ To bring government departments closer to the masses by offering efficacious and speedy online services.

➢ Better dissemination of information through a web portal and online status of applications submitted online or through post or by hand.

➢ Reduction in response time in addressing grievances by the concerned departments.

➢ Facilities to the farmers and villagers who make queries about the latest techniques, advice for their problems, new technologies etc. from a group of experts pertaining to fields of agriculture, horticulture, animal husbandry, health, fisheries etc.

➢ Updated the latest information regarding the public distribution system, list of beneficiaries under different programmes, and information regarding government grants given to PRIs and urban local bodies.

➢ To provide Internet/E-mail facilities and links to various departmental websites using SWAN.

➢ The network aims to streamline operations across various applications including email, file transfer, and data communication, as well as support intranets, EDI services, value-added networks, and government communication.

Lok Mitra Kendra and HIMSWAN:

Title	LOK MITRA KENDRA	HIMSWAN
Parent Idea	➢ National e-Governance Plan	➢ National e-Governance Plan

	LOK MITRA KENDRA	HIMSWAN
Establ-ishment	➢ Started in 2001 with the help of NABARD in District Hamirpur.	➢ Started in 2008 and Himachal became the first state to implement it in the country. H I M S W A N is a Himachal variant of S W A N (State Wide Area Network)
Concept	➢ A step towards making people aware of the government schemes and a platform to interact with various government functionaries and contribute accordingly to the e-governance process ➢ The necessary software will be developed by the NIC state unit ➢ Services of Lokmitra include Classified complaints, Download Govt forms, vacancies, tender, developmental work notice board village email etc.	➢ By setting HIMSWAN the state government **tries to create state-of-the-art communication infrastructure for G2C, G2E, G2B and G2G.** ➢ The Project is aimed at providing HIMSWAN link to government offices and integrated community service centres at state, districts, Subdivision, Tehsil and Block headquarters ➢ The first phase has been completed and is in the second phase
Relevance	➢ Better dissemination of service to the remotest corner of the state resulting in better awareness of people.	➢ In today's world of accuracy and speed there is an urgent need for fast communication among the departments.

| | | | and GIS based on specific user needs. |

Left column table content:

➢ Saving time and cost of people visiting district headquarters.	➢ Better dissemination of information through web portal and online status of application than by regular posts.
➢ Reduction in response time.	➢ Reduction in response time.
➢ Additional income source.	➢ Updated latest information.
➢ Employment generation by opening up of citizen information Centre.	➢ It provides internet /E-mail facilities to various departmental websites SWAN.
➢ Transparency in the system.	➢ Relevant in the areas where there is communication blocked due to weather.

The synergy of these two initiatives sets a commendable example for other states to follow, driving India towards a more inclusive and transparent future.

ARYABHATTA GEO-INFORMATICS AND SPACE APPLICATIONS CENTRE (AGISAC)

Aryabhatta Geo-Informatics and Space Applications Centre (AGiSAC) is an initiative by the Himachal Pradesh government to advance digital planning in the state.

➢ It operates under the Department of Science, Technology, and Environment, drawing inspiration from the Bhaskaracharya Institute of Space Applications and Geo-Informatics (BIGSAC).

➢ AGiSAC was established with technical assistance from BISAG, Gujarat, showcasing a successful model of inter-state technical collaboration.

Objectives of AGiSAC:

➢ Facilitate decentralized planning and decision-making.

➢ Monitor and evaluate government schemes and programs.

➢ Establish an integrated natural resources data management system.

➢ Provide services and consultancy in Remote Sensing

➢ Promote wider usage of geo-spatial applications and support systems/software.

➢ Utilize SATCOM networks for distant interactive training and education within the state.

Services Provided by AGiSAC:

➢ **Geo-Informatics** - Development of a multi-purpose digital database for decision support systems.

➢ **Remote Sensing** - Inventorization, mapping, developmental planning, and monitoring of resources.

➢ **Global Navigation Satellite System (GNSS)-** Location-based services, geo-referencing, engineering applications, and research.

➢ **Cartography** - Thematic mapping and creation of value-added maps.

➢ **Photogrammetry -** Development of Digital Elevation Models, terrain analysis, and resource planning.

➢ **Software Development** - Geospatial application development for decision support systems, both desktop and web-based.

➢ **Mapping Services** - Providing mapping services to government and non-government organizations for various purposes.

Benefits for Himachal Pradesh:

➢ Enhanced planning and implementation of developmental activities through the use of spatial information.

➢ Improved transparency and accessibility of government records via digitization and online availability.

➢ Strengthened decision-making at all levels of governance, facilitated by decentralized planning.

➢ Advanced monitoring and evaluation of government schemes and programs.

➢ Development of an integrated natural resources data management system.

➢ Direct engagement with various departments, including Revenue, Forest, Education, Health, Agriculture, Horticulture, Panchayati Raj, and Rural Development, particularly in the initial stages of the project.

In summary, AGiSAC is a significant initiative that leverages geo-informatics and space applications to enhance governance, transparency, and development in Himachal Pradesh, ultimately contributing to the state's sustainable development and benefiting its citizens.

STATE BIODIVERSITY STRATEGY AND ACTION PLAN

➤ Biodiversity Management Committee and People's Biodiversity Register:

- ❖ **Establishment:** Initiated under the Biological Diversity Act of 2002.
- ❖ Levels:

  - ✓ **National:** National Biodiversity Authority;
  - ✓ **State:** State Biodiversity Board;
  - ✓ **Local:** Biodiversity Management Committee at the Panchayat level`

- ❖ **Functions:**

  - ✓ Prepare and maintain the People's Biodiversity Register with local biodiversity and ecological knowledge.
  - ✓ Provide advice and recommendations to the State Biodiversity Board for approval.

➤ **Measures Against Illegal Mining:**

- ❖ **Check Posts**: Establishment of 10 check posts/ weighbridges in border districts.
- ❖ **Penalties:** Increase in fines from INR 25,000 to INR 50,000 for violations.

➤ **Sustainable Development Goals (SDGs) Actions:**

- ❖ SDG 12 (Responsible Consumption and Production) by 2022:

  - ✓ Decrease CO2 emissions by 10% from 2012 levels.
  - ✓ Increase LPG usage by 10% from 2012 levels.
  - ✓ Boost Solar and Wind energy production and consumption by 10% from current levels.
  - ✓ Grow hydroelectric power capacity by 10% from current levels.
  - ✓ Establish soil testing labs at the district level to support organic farming.
  - ✓ Reduce pesticide usage in agriculture/ horticulture by 10%.
  - ✓ Enhance covered storage for food grains by 10% at the micro level.
  - ✓ Construct model green roads spanning 10 kilometers.
  - ✓ Create training modules for green jobs and traditional knowledge preservation.

➤ **SDG 13 (Climate Action):**

- ❖ Conduct Climate Change Vulnerability Assessments (CCVA) with hydrological modelling in six districts.
- ❖ Implement climate-smart eco-village guidelines in five villages.
- ❖ Restore 1000 water harvesting structures and 500 springs.
- ❖ Cover 100,000 farmers under climate-resilient livelihood technology.
- ❖ Equip flood-prone villages in Kullu District with an early warning system.
- ❖ Integrate recommendations of SAPCC in state and central development schemes.
- ❖ Run gender-focused adaptation training programs in 78 camps.

➤ **SDG 15 (Life on Land):**

- ❖ Afforest over 48,000 hectares of land.
- ❖ Set up central and model nurseries in each circle.
- ❖ Reduce siltation in rivers and streams by increasing vegetation in catchment areas.
- ❖ Improve 1000 hectares of alpine pasture and grazing lands.
- ❖ Restore three wetlands and 10 traditional water bodies in 41 mountain areas.
- ❖ Develop two national parks and five wildlife sanctuaries to bolster species populations.
- ❖ Rehabilitate 16,000 hectares infested with invasive alien species.
- ❖ Aim for a 25% reduction in wildlife poaching and related offences.

➤ **Forest Fire Management Scheme:**

- ❖ **Activities:**

  - ✓ Maintain and establish new fire lines over 2,500 km.
  - ✓ Hire Fire Watchers and conduct controlled burns.
  - ✓ Procure firefighting equipment.
  - ✓ Implement soil and moisture conservation in high-risk areas.

➤ **Education Initiative:**

- ❖ **Vidyarthi Van Mittar Yojna –** Under the 'Vidyarthi Van Mitra Yojana', plots in forest areas will be allotted to schools for plantation.
- ❖ **Samudayik Van Samvardhan Yojana -** The 'Samudayik Van Samvardhan Yojana' has been launched to ensure the participation of youngsters and mahila mandals in forest conservation.

Overall, the State Biodiversity Strategy and Action Plan represents a robust framework for biodiversity conservation, with a clear focus on sustainability, community engagement, and resilience against climate change, setting a precedent for other regions to emulate.

BIODIVERSITY

Biodiversity can be defined as a community of all the living organisms on the earth and the diversity among them from all the ecosystems. Biodiversity is thus the variability between the species, within the species, and between the ecosystems.

Status of the Biodiversity in Himachal Pradesh:

Due to varied geological formations, topography, climatic conditions and altitudinal changes, Himachal Pradesh has a vast repository of floral and faunal species.

➢ The range of biodiversity in the state is extensive, as it ranges from Sub-tropical, temperate, and dry temperate to the alpine region, where 95 per cent of species are endemic and the rest 5% are exotic species.

➢ **Floral Diversity:**

❖ Floral biodiversity in the state consists of Medicinal and Aromatic Plants (MAPs), forest vegetation, agricultural crops as well as wild fruits and wild ornamental plants.

❖ As many as 3,256 floral species are found in Himachal Pradesh, consisting of ferns, higher plants, fungi, mosses and lichens (out of the total of 47,000 species found in India).

✓ The vegetation consists of Moist Temperate Deciduous Forest, Ban Oak Forest, Rhododendron Scrub Forest and Himalayan Alpine Pastures.

➢ The mid and high hills are dominated by coniferous forests with Sal and Chir Pine as predominant species in dry deciduous.

➢ The state is endowed with a variety of medicinal and aromatic plants (MAPs) which are used by local communities in many ways.

❖ There are approximately 187 species of MAPs in Himachal Pradesh. According to the Himachal Pradesh Forest Department, 57 species of MAPs have gone threatened due to unscientific extraction.

➢ **Faunal Diversity:**

❖ The state harbours rich and unique fauna with 5,721 species of fauna (out of a total of 89,451 species found in India). The state has the largest population of Chir pheasants in the world.

❖ Mammals mostly include long-tailed Himalayan Marmots, Himalayan voles and squirrels whereas herbivores include blue sheep, ibex, serow, musk deer, tahr, the barking deer, and ghoral.

❖ Carnivores are rare and include brown bear, black bear, yellow-throated martin, Himalayan weasel, wolf and stone martin whereas the snow leopard and common leopard are representative of larger cats in the state.

Threatened Species in the Himachal Pradesh:

➢ **Fauna:**

❖ **Butterflies** – Freak, Scarce Siren, Golden Emperor, etc.

❖ **Reptiles** – Common Indian Monitor, Yellow Monitor, Indian Rock Python.

❖ **Birds** – Cheer Pheasants, Monal Pheasant, Moutain Quail, Snow Cock, etc.

❖ **Animals** – Himalayan Brown Bear, Snow Leopard, Himalayan Lynx, Himalyan Ibex, etc.

➢ **Flora:**

❖ Indian Gentian (Gentiana kurroo Royle), Spikenard (Nardostachys jatamansi (D. Don) DC, Costus/Kuth (Saussurea costus (Falc.) Lipsch), Indian Napellus/ Mori (Aconitum chasmanthum Stapf ex Holmes), White Himalayan lily (Lilium polyphyllum D.Don) are critically endangered species in Himachal Pradesh.

Reasons for the Biodiversity Loss in Himachal Pradesh:

➢ **Lack Of Knowledge** - In Himachal with the advancement of the state the traditional knowledge of and importance of the flora is not being transferred to the young generation therefore due to lack of knowledge these important plants get destroyed.

➢ **Division of Family** - With the division of family the resource pool gets divided into smaller parts in terms of knowledge and land.

➢ **Development -** For the economic prosperity of the Himachal dams, roads etc. are being built this is a major loss to biodiversity as these require the destruction of habitat.

➢ **Hunting** - Himachal is home to many vulnerable and endangered species. Hunting is banned, but there are many instances where illegal hunting takes place.

➢ **Climatic conditions:**

❖ **Global warming** - The global increase in the temperature also plays a role in threatening wildlife it is evident in the death of many fish in Pong Dam.

❖ **Prolonged winters** - The long winter season and increasing population create new demand for wood which is a threat to biodiversity.

❖ Variation in the season: Due to the varying season there is a big threat to the life cycle of plants and animals.

❖ **Industrialization -** Due to the development of new industrial belts in Himachal the surrounding biodiversity is threatened

❖ Pollution:

✓ **Air Pollution -** As Himachal is a hilly terrain major dependence is on roads which causes air pollution and its threat to the bird species as well as plants it is even caused by industry set up at pockets of Himachal.

✓ **Water Pollution -** Due discharge of industrial water into open streams causes the death of many species.

➢ **In Agriculture:**

❖ **Use of Fertilizer** - With the use of extensive fertilizer without proper testing of the soil leads to the mixing of chemicals in the environment which causes a threat to the bio diversity.

❖ **Soil erosion** - It happens due to ill practices of agriculture, mostly Himachal is a hilly terrain so tilling of soil has to be done traditionally as well as scientific measures but the absence of it leads to loss of soil and habitat.

➢ **Invasion of Exotic weeds** - Weeds like Lantana camera, Ageratum, Eupatorium and Parthenium are spreading rapidly in agricultural and govt lands.

➢ **Lack of documentation** - In Himachal, there is no documentation of traditional knowledge which plays an important role in the development and protection of biodiversity.

➢ **Loss of local animal genetic species -** Due to low productivity of local breeds leading to replacements of local strains.

➢ **Unregulated Tourism** - No doubt tourism plays an important role in the development of the Himachal economy but at the same time it takes its toll on the environment as the tourists do not care about loitering around tourist places.

➢ **Forest Fire -** It's a major cause of loss of habitat as it ends vegetation

➢ **Illegal activities -** Like mining at the river beds which cause a major erosion in the resources.

➢ **Monocultivation -** For the sake of profit generation people seek to develop fields with single crops like apples etc. for years. It the soil nutrients and causes loss to the environment.

Way forward:

To ensure the safety and management of the biodiversity of the state, along with the development of the state, various steps should be taken to ensure inclusive and sustainable development.

➢ **Wild Flora and Fauna:**

❖ **Human-wildlife conflict -** Developing a comprehensive database for HWC along with the nature and extent of conflicts in the State is crucial. This will involve conducting a district-wise scientific investigation on the richness of wild animals in relation to habitat characteristics, land-use patterns and availability of prey species.

❖ **Forest Fires -** There is a need to improve data on forest fires and assess the current capacity of forest fire management. This includes exploring a Fire Danger Rating System and providing training to local communities on early intervention during a forest fire.

❖ **Preparation of PBRs -** Preparation of PBRs should be expedited as per the mandate of the Biological Diversity Act, 2002 and supplement PBRs with regular scientific surveys to timely update key threatened, critical, endangered, vulnerable and rare species.

❖ **Invasive Alien Species -** There is a need to involve cottage industries and incentivize them to utilize invasive species. For example, Lantana Camara can be used as bioethanol fuel, and fresh roots of Ageratina Adenophora have antibacterial qualities.

➢ **Agriculture and Biodiversity:**

❖ **Organic Farming -** There is a need to introduce a program to provide support to identified niche organic products such as peas, kala jeera, wild garlic, kuth, kutki in terms of branding, labelling and marketing.

❖ **Fodder Management -** There is a need to revive degraded pasturelands on a regular basis with native species. It is recommended that the State establish fodder banks in alpine areas to help local communities in winter months and reduce pressure on grazing lands.

❖ **Agro-forestry -** The State can explore rehabilitation of degraded land via an agro-

forestry system in line with existing crops and livestock needs. For this, the State will need to set up high-tech nurseries in higher altitude regions to provide viable varieties of planting material for agro-forestry.

❖ **Adaptation towards climate change -** The State should explore the option of mapping fragile ecosystems and demarcating them as "No-go zones".

✓ Provisions should also be made for ensuring availability of drought-resilient seeds, public health measures for heatwaves, cold waves, vector-borne diseases, disaster risk reduction, water management as well as climate-smart agriculture.

➢ **Tourism:**

❖ **Ecotourism -** The State should undertake capacity building programme for local communities for "high-value-low impact" tourism. There is also a need to converge the "Ecotourism Policy" of the Forest Department.

❖ **Payment for ecosystem services -** The state can also explore the PES model of tourism which provides a fair and equitable mechanism to incentivize communities for biodiversity conservation.

❖ **Impact Assessment -** There should be a study regarding the impact of activities like trekking and camping on habitat disturbances, solid waste accumulation, water pollution and air pollution.

➢ **Education, Awareness and Training:**

❖ **Environmental Education -** The State should mainstream environmental studies in education to increase awareness about biodiversity conservation.

❖ **Awareness through communication media -** The State should promote awareness regarding topics related to biodiversity using short films, documentaries, besides stories in print media.

❖ **Community-Based Natural Resource Management -** There is a need to promote collaboration between institutions such as self-governing bodies such as Panchayat, State Forest Department, local administration, research institutes and NGOs to ensure efficient biodiversity conservation.

➢ **Policies, Laws and Institutions:**

❖ **Procurement of green products -** The State should develop sustainable public procurement manuals for line departments to encourage procurement of green products based upon life-cycle costing.

❖ **Community Participation:** The State should explore the suitability of the Adaptation Coalition Framework (ACF) to create community institutions with the mandate of increasing resilience to climate change over the long term.

✓ This can be done by facilitating coalitions/ alliances of local communities and mobilising local assets including human, social and financial.

❖ **Investment in Agricultural Research -** There is a need to increase investment in agricultural research, infrastructure and technology development as well as plant gene banks.

❖ **Regional Cooperation -** There is a need to promote regional cooperation between Himalayan States by strengthening existing mechanisms and exploring the possibility of new agreements.

The preservation of Himachal Pradesh's biodiversity is not only a local or national concern but a global necessity, reinforcing the interconnectedness of our planet's ecosystems and the shared responsibility we have in safeguarding them for future generations.

GEOGRAPHICAL INDICATIONS (GI) TAG

A Geographical Indication (GI) tag is a signifier used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.

➢ It serves as a certification that the product possesses certain unique qualities, is made according to traditional methods, and enjoys a certain reputation due to its geographical origin.

Regulation of GI Tags:

In India, GI tags are governed by the Geographical Indications of Goods (Registration & Protection) Act, 1999, and are issued by the Geographical Indications Registry based in Chennai.

➢ Himachal Pradesh (HP) became the first Indian state to establish a policy for the registration and protection of Geographical Indications under this act.

Geographical Indications of Himachal Pradesh:

➢ **Handicrafts:**

❖ **Chamba Rumal** - A unique handkerchief distinguished by embroidered work on hand-spun 'khaddar' or fine muslin cloth, often

featuring deity figures, particularly Vishnu.

❖ **Kangra Painting** - Emerged from the Kangra Valley, these paintings are deeply influenced by the Bhakti cult and often depict the stories of Radha and Krishna with a naturalistic style using cool, fresh colours.

❖ **Kinnauri Shawl** - Known locally as 'Chhali', these shawls display intricate Buddhist symbols and geometric patterns and come in a variety of pleasing pastel shades. Registered on December 4, 2008.

❖ **Kullu Shawl** - Originating from the Kullu Valley, these shawls are famous for their unique texture and traditional design patterns, often featuring horizontal stripes with vibrant patterns. Registered on December 10, 2004.

➢ **Agricultural Products:**

❖ **Kangra Tea**: Noted for its blend of flavour and health benefits, it contains high levels of catechins and antioxidants.

  ✓ It is produced in the southern slopes of the Dhauladhar ranges in the western Himalayas.

❖ **Basmati Rice** - Recognized for its unique aroma and flavour, basmati rice from Himachal Pradesh is included in the GI tag granted for basmati grown in several Indian states along the Indo-Gangetic Plains.

❖ **Himachali Kala Zeera** - A small perennial plant used both as a spice and for its medicinal properties, grown especially in the Kinnaur district, it is known for its distinct aroma and taste.

➢ **Manufactured Product:**

❖ **Himachali Chulli Oil** - Made from the wild apricot (Chulli) grown in various parts of Himachal Pradesh, it's used in local liquors and handcrafted products.

❖ **Products Proposed for GI Tag:**

  ✓ **Karsog Kulth** - A legume known for being rich in amino acids.

  ✓ **Pangi ki Thangi** - A unique type of hazelnut known for its flavour and sweetness.

  ✓ **Chamba Metal Crafts** - Includes metal idols and brass utensils traditionally crafted in Chamba.

  ✓ **Chamba Chukh** - A chutney made from local chillies, noted for its traditional preparation methods.

  ✓ **Bharmouri Rajmah** - A protein-rich bean with a distinctive flavour, grown near the Kugti Pass in the Bharmour region.

Role and Relevance of GI Tag:

➢ **Market Protection** - A GI tag protects the reputation of regional products, prevents unauthorized use of a registered name, and ensures that only producers from the geographic area are allowed to use the product name.

➢ **Trademark for Region** - Unlike trademarks for businesses, a GI is a sign used for products that have a specific geographical origin and possess the given quality or reputation of that place.

➢ **Cultural Preservation** - GI tags aid in preserving the cultural heritage and traditional knowledge of a region.

➢ **Economic Benefits** - They help generate employment and potentially lead to better incomes for artisans and farmers due to increased demand for authentic products.

➢ **Quality Assurance** - GI tags help consumers to receive quality products that are assured of their authenticity, and are made in traditional ways that contribute to their uniqueness.

➢ **Cultural and Biological Diversity** - They encapsulate the climatic, biological, and socio-cultural attributes of a product's place of origin, thereby contributing to the preservation of biodiversity and cultural diversity.

By conferring a GI tag, a region not only asserts its identity on the global map but also ensures that its traditional practices and the livelihood of its people are protected and promoted.

UTILIZING TRADITIONAL WISDOM FOR SUSTAINABLE DEVELOPMENT IN HIMACHAL PRADESH

Traditional knowledge encompasses the wisdom, innovations, and practices handed down through generations within indigenous and local communities, often conveyed orally via songs, stories, proverbs, rituals, and laws.

➢ This knowledge is crucial in practical domains such as agriculture, horticulture, and cultural practices.

Strategies for Leveraging Traditional Knowledge:

➢ **Establishing a People Diversity Register** - To address the lack of documentation, a comprehensive register recording traditional knowledge can be created.

➢ **Integrating Traditional Practices with Modern**

Industries - Himachal Pradesh, rich in medicinal plants, can bridge traditional herbal remedies with the pharmaceutical industry.

➤ **Promoting Traditionally-Made Products** - Through campaigns, products incorporating traditional wisdom can gain popularity and support among consumers.

➤ **Incentivizing Youth Engagement** - By providing financial incentives for innovations in traditional practices, the youth can be motivated to preserve and enhance ancestral knowledge.

➤ **Supporting Traditional Crafts** - Initiatives like the National Bamboo Mission can revive declining crafts, such as bamboo basketry, by providing sustainable livelihoods for artisans.

➤ **Leveraging Social Media** - Utilizing social media platforms can help in popularizing traditional knowledge and increase revenue for knowledge bearers.

➤ **Sharing Agricultural Wisdom** - Traditional Himachal agricultural practices, such as the Kuhl irrigation system, can be shared and adapted in regions with similar terrains.

➤ **Securing More GI Tags** - Acquiring GI tags for traditional products can affirm their uniqueness and enhance economic returns.

Himachal Pradesh Government Initiatives for Traditional Knowledge Conservation:

➤ **GI Registration** - Products such as Chamba Rumal, Kangra Painting, Kinnauri Shawl, and Chulli Oil have been recognized with GI tags, highlighting Himachal Pradesh's rich traditional heritage.

➤ **Establishment of the Department of Ayurveda** - Separating from the Department of Health & Family Welfare on November 7, 1984, this department underscores the importance of Ayurveda in the state, reflecting a commitment to ancient wisdom.

➤ **Himachal Pradesh Patent Information Centre (HPPIC)** - As a nodal agency under HIMCOSTE, HPPIC works to identify and register GIs in the state, protecting the interests of local manufacturers, producers, and artisans.

➤ **Traditional Agricultural Techniques** - Practices like osmo conditioning of pea seeds, animal-aided crop threshing, crop rotation, double cropping, and organic manuring are being preserved and promoted.

➤ **Prakritik Kheti Khushal Kisan Yojna** - This initiative advocates for Zero Budget Natural Farming, encouraging farmers to embrace traditional farming methods.

➤ **Bio-diversity Protection** - Policies and programs have been implemented to safeguard the state's rich biodiversity, which serves as a repository of traditional knowledge.

By these means, the Himachal Pradesh government is actively conserving and nurturing the traditional knowledge and wisdom that form the foundation of the state's cultural and environmental legacy.