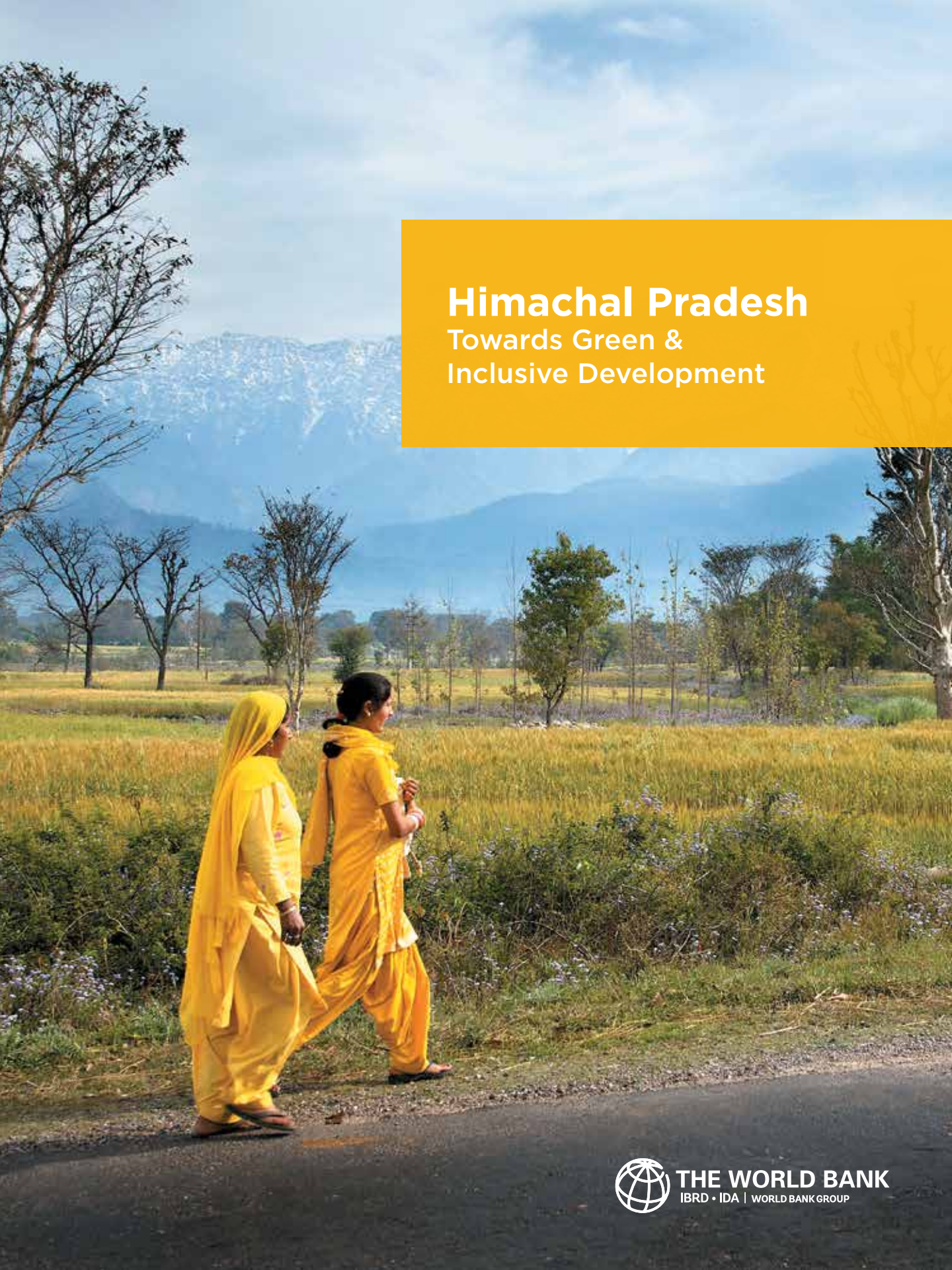

Himachal Pradesh

Towards Green & Inclusive Development

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A Green and Inclusive Road to Development

India's mountain state of Himachal Pradesh (HP) is richly endowed by nature. The towering Himalayas rise up to the north, their soaring heights adorned by a crown of snow. These vast 'Water Towers of Asia' give rise to five perennial rivers that sustain the lives and livelihoods of millions of people in the densely populated plains below.

Forests cover more than a quarter of the state's territory. They help define the weather over much of northern India and act as a carbon-sink for greenhouse gases. The state's wide range of altitudes host a number of unique plant and animal species, and parts of the state have been declared as hotspots of biodiversity. Yet, the Himalayan region remains amongst the most fragile in the world. Today, a fast-growing population and rapid urbanization can jeopardize the very assets that bestow unique advantages upon the region.

Now, responding to people's concerns about preserving their unique social cohesion and pristine environmental heritage, HP is seeking to develop in an environmentally and socially sustainable manner. Towards this end, it is devising suitable policies for its key revenue earning sectors - hydropower, tourism, and industry- as well as for rural development, as the vast majority of the state's people live in rural areas and depend on natural resources for their livelihoods.

A key feature of HP's development strategy is that citizens are being made an integral part of the change process. Inputs from stakeholders have been sought on a broad range of development issues, and policies are now being tailored to ensure that future growth is both environment-friendly and responsive to people's needs.

World Bank Support

Over a seven-year period, the World Bank has helped Himachal Pradesh move forward on its green and inclusive development agenda. In 2009, the World Bank's first Development Policy Loan (DPL) provided the state with $200 million in budgetary support to implement much-needed fiscal reforms. In the wake of this, HP embarked on a path of green and inclusive development that is the most sustainable way forward for a state with unique environmental and cultural assets.

The two DPLs that followed – for $ 100 million each, between 2011 and 2014 - helped the state promote environmentally and socially sustainable development in hydropower, tourism, and industry, as well as in the development of watersheds. This is the first time that the World Bank has provided support of this nature to a state in India. It is also the first time that India has accessed a loan from the Clean Technology Fund - a global fund that finances clean technologies to reduce greenhouse gas emissions.

The two loans have helped the state establish the institutions and policies needed to bring long-lasting change in the manner in which these key sectors grow and develop. Nevertheless, going forward, it will require strong political will and a committed bureaucracy to implement the state's bold new vision on the ground.

Department of Environment, Science & Technology

In 2009, the World Bank's first Development Policy Loan (DPL) helped Himachal Pradesh establish the **Department of Environment, Science & Technology** (DEST). DEST has now become a strong advocate of environmental issues and coordinates the efforts of various government departments, enabling them to plan their development activities in an integrated and environment-friendly manner.

In 2013, DEST developed an **Environmental Master Plan** (EMP) that established baseline data for the state's natural and physical resources. The plan identifies ecologically sensitive zones and the critical issues that impact them, while outlining corrective measures as well as the manpower and regulations needed to implement them.

An important step was the establishment of the **Aryabhatta Geo-informatics and Space Application Centre** (AGiSAC) in 2011. The centre is a technical hub that serves as a repository for all data on the state's environment, as well as its natural and man-made resources, and climate change. It helps government departments make evidence-based development decisions and to monitor results.

Environmentally and Socially **Sustainable Hydropower**

Hydropower is Himachal Pradesh's largest source of revenue and the state holds a quarter of India's total potential. The adoption of environmentally and socially responsible hydropower policies will help the state develop its hydropower resources in a sustainable manner well into the future.

Over the years, the development of hydropower has brought power, roads and much-needed development to Himachal Pradesh, especially to remote mountain communities. Today, with all its villages fully electrified, HP has become a power surplus state and the sale of electricity has become its largest source of revenue.

Aware of the possible impacts of hydropower development on its fragile environment, and keeping in mind the needs of communities living in project vicinities, the state's 2006 Hydropower Policy has sought to ensure that it develops its hydropower resources in an environmentally and socially sustainable manner. Accordingly, a number of pioneering measures have been adopted to mitigate possible impacts and ensure that local people receive a share of project revenues.

Since most of the state's hydropower developers are active in other parts of India too, in addition to some neighboring countries, their socially and environmentally conscious practices can provide a good example for others working in fragile mountain regions to follow.

Reducing environmental impacts

Cumulative Environmental Impact Assessment of river basins

Responding to several concerns about the combined effects of hydropower projects on a river basin, HP has moved away from the conventional method of assessing impacts on a project-by-project basis and adopted a river basin approach to impact assessment. These Cumulative Environmental Impact Assessments (CEIA) are a big step forward in managing the combined impacts of a number of hydropower projects on a river basin.

As part of the process to assess cumulative impacts, the state government conducted extensive consultations with stakeholders to understand their concerns. In the Satluj basin alone, over 20 stakeholder

meetings were held all along the river valley. Draft findings were shared with local people and civil society organizations, and their feedback was incorporated. The CEIA were also peer reviewed by a multidisciplinary panel of experts from various government departments including those with expertize in forestry, hydrology, fisheries, agriculture, floral and faunal biodiversity, pollution control, hydropower development, and social development.

Independent panel of experts

Himachal Pradesh has also appointed an independent panel of two experts from the environment and social sectors to advise the state on all aspects of hydropower development to ensure that future growth in the sector takes place sustainably.

Basin Wide Catchment Area Treatment (CAT) Plans

Since a river basin is one natural, ecological unit, any degradation in the upper reaches can have major impacts downstream. The state is therefore formulating Integrated Catchment Area Treatment (CAT) plans to enable planners to stabilize entire catchments and avoid fragmented prescriptions. Integrated CAT plans for an entire river basin are deemed global best-practice for managing impacts. They are based on high quality disaggregated baseline data on forest cover and quality, erosion intensity, and silt load.

The plans take a ridge-to-valley approach so that treatment can begin with the upstream areas where the need for stabilization is often the greatest. The CAT plans also benefit rural communities by helping recharge groundwater, reducing soil erosion, and curtailing the amount of silt that washes into the rivers.

Himachal Pradesh has therefore mandated that all hydropower projects of 10 MW and above set aside 2.5 percent of project costs to implement

Cumulative Environmental Impact Assessments are a big step forward in managing the combined impacts of hydropower projects on a river basin

Himachal Pradesh has mandated that all hydropower projects leave a minimum flow of water in their rivers at all times - 15 percent of the river's lean season flow

CAT plans in the river basins in which they operate.

By mid-2015, the state had prepared and finalized integrated CAT plans for the Sutlej and Chenab river basins; erosion levels are high in the Satluj basin and the river carries one of the largest silt loads in the country. Work on the three other river basins was in progress.

People can now monitor minimum environmental flows in real time

To address one of the people's major concerns that hydropower projects reduce the flow of water in the rivers on which they operate, HP has mandated that all projects leave a minimum amount of water in the rivers at all times - 15 percent of their lean season flow - becoming the first state in the country to do so. These environmental flows – or e flows – help maintain the river's delicate aquatic balance and protect the rights of downstream communities. E-flows from individual hydropower projects are monitored by the state's Pollution Control Board and can be publicly seen on the web on a real-time basis, enabling the people to monitor compliance.

Hydropower Producers' Forum

Since it is usual for multiple project developers to work along a river basin, the state has constituted a Hydropower Producers' Forum to coordinate their activities, especially with regard to maintaining the minimum environmental flows of water in the rivers and protecting common catchment areas.

Responsible disposal of debris

Since large infrastructure projects generate sizeable quantities of debris, hydropower projects in HP are required to ensure that all debris is disposed of

More than 20 stakeholder meetings were held in the Satluj basin alone

in a manner that does not deface the mountainside or obstruct the river's natural flow, and has a minimum impact on the people. Safe disposal sites are therefore required to be chosen, strong retaining walls built, and the sites to be planted over with native vegetation to enable them to merge seamlessly with their surroundings.

Mandating outreach for all hydropower projects

Based on its consultations with local people, the state government has mandated that all hydropower developers listen to and address people's concerns about projects in their vicinity.

Hydropower developers are required to follow a structured communications protocol that lays down what the developer needs to do at each stage of project development such as consulting with local people, making information publicly available, addressing grievances etc.

GIS based mapping of the hydropower potential of all river basins

To ensure that future sites for hydropower development are chosen on the basis of solid scientific evidence, the state has now mapped the hydropower potential of all its river basins using GIS technology.

Web based monitoring of project implementation

To ensure transparency at all stages of project development, HP has designed and implemented a web-based monitoring system to monitor the progress of hydropower projects before, during and after construction. Authorities can now monitor the milestones reached by a project and ascertain its implementation status, including the key environmental and social activities carried out, such as the implementation of CAT plans, benefit sharing with the people, and the progress of local area development works. The system also helps decision makers understand the challenges a project is facing, enabling them to take corrective action in a timely manner.

Public consultations for Cumulative Environmental Impact Assessment (CEIA) of the Satluj basin being held at Udaipur, Himachal Pradesh

Green Accounting

Usually, the value of forests is determined by the revenue they generate through the sale of timber. However, since forests make a vital contribution to the larger wellbeing of the people and the planet – such as stabilizing weather patterns, binding precious topsoil, giving rise to springs and rivers, providing fodder and fuelwood to local communities, and sequestering carbon – HP made a commitment in 2014 to draw up forest accounts to better understand their vital contribution.

The state is now seeking to place a monetary value on its forests and is piloting green accounting in Mandi district. These accounts will enable policy makers to measure how forest goods are being used, who is benefitting from them, how the forest wealth is changing and so on, enabling planners to take more evidence-based decisions. Given the pioneering nature of this exercise, it is bound to be a work-in-progress that will undoubtedly evolve over time.

Payment for ecosystem services

HP has become the first state in the country to adopt a policy that will compensate people for maintaining vital natural resources. Until now, communities had little incentive to protect natural resources such as forests, biodiversity and the catchment areas of river basins, where the land was mostly government owned. Under its Payment for Ecosystem Services policy, the state now seeks to provide economic incentives to communities to conserve natural resources.

Himachal Pradesh is piloting forest accounts to inform better decision making

Benefitting local people

Himachal Pradesh is the first state in India to commence a unique benefit-sharing practice that gives an annual share of project revenues to the long term residents of a project affected area throughout a project's life.

Sharing project revenues

HP is the first state in India to adopt a unique benefit-sharing practice that shares project earnings with local people. Revenues generated from the sale of 1 percent of additional free power provided by the developers to the state are to be distributed annually among the long-term residents of a project affected area throughout a project's life. The residents, including those who lost their land as well as those in the larger community living in the project affected area, are to receive these amounts through direct cash transfers into their bank accounts every year. Half the total amount is divided equally among all families in the project affected area with BPL families getting 15 percent more. The rest is divided among families in the ratio of land acquired from them - again with BPL families getting 15 percent more.

Financing local area development

Another innovation is that during the project's construction phase, hydropower developers are required to contribute 1.5 percent of project costs to the Local Area Development Fund, 2009 (LADF) to finance infrastructure development in the project area. Under this provision, project-affected communities get to choose the infrastructure projects they want - be it a new schoolroom, an irrigation channel, a playground or a concrete mountain path.

Clear guidelines have been laid down to enhance transparency in the operation of these funds and facilitate rigorous monitoring and oversight. Such a policy does not exist in any other state in India.

Every year, the long-term residents of a project-affected area will now receive a share of project revenues

Himachal Pradesh has adopted a policy to compensate farmers for crop damage during project construction

Compensating farmers for crop damage

One of the common complaints of communities living in the vicinity of hydropower projects is that dust from construction activities damages their standing crops. Therefore, in addition to the standard compensation provided to project affected people for the loss of house, land and property, the state has adopted a policy to compensate farmers for the loss of produce or income due to incidental damage to their crops during project construction. Clear norms have been laid down for the provision of such compensation.

Sharing Project Revenues with the People

The Chamera-III hydropower project in Chamba district began to share project revenues with the people soon after it was commissioned in July 2012. In the first year (2012-13) Rs. 18.00 million was distributed among project affected people, with the sum rising to Rs. 24.02 million the following year. More than half the 5,482 families deemed eligible for the cash transfer program were below the poverty line. In the first year, families who were above the poverty line received between Rs. 1,500 and Rs. 7,000, while BPL families received between Rs. 2,000 and Rs. 10,000 each. These amounts will be higher in subsequent years.

A Road Map for **Sustainable Tourism**

Himachal Pradesh seeks to develop its tourism potential in a manner that protects its environmental and cultural heritage, ensures that a larger number of local people benefit from tourist arrivals, and tourists too have a better overall experience.

Given HP's unique natural and cultural assets, tourism is a key source of jobs and revenues in the state. Despite overcrowding in many areas, tourist arrivals in HP have grown faster than the national average. But while the state is a getaway for people seeking to flee the searing heat of the plains, unregulated construction, overcrowded roads, and poor waste disposal are degrading the very environment that is often the primary attraction for tourists to the state.

The World Bank has helped the state shift its focus from merely increasing the number of visitors to ensuring that tourism does not damage the state's environmental and cultural heritage, that the benefits of tourism are more widely shared, and tourists themselves have a better experience.

The state's new Sustainable Tourism Development Policy 2013 has been framed after taking into account global and national good practices, analyses of key destinations, and participatory planning exercises. For the first time, various stakeholders have been brought together under a multi-sectoral task force to prepare an Integrated Master Plan for Sustainable Tourism in the state.

The new plan is being piloted in the greater Dharamshala region. Under the plan, local people, the private sector, and civil society share responsibility with the government in planning tourist enterprises and monitoring impacts. The World Bank has also supported tourism planning in the Kinnaur and Lahaul-Spiti districts with a view to integrating well-known tourist hubs with less well-known destinations, and ensuring that local people play a prominent role in decision-making.

Promoting Environment Friendly **Industry**

Himachal Pradesh now provides incentives to industries to adopt cleaner technologies. Importantly, industrial units have been mandated to publicly disclose their pollution status.

Adoption of sound environmental practices

Following the development model of the rest of the country, the hill states too have attempted to attract industry to fuel economic growth. Since the mid-nineties, incentives provided by the central and state government have led to the exponential growth of industries in HP, mostly in the lower reaches, where there is good connectivity with the plains of Punjab and Haryana and flatter land is available.

Industrialization received a further boost when the state's 2004 Industrial Policy and its 2006 amendments introduced a host of new subsidies for those wishing to set up an industry in the state. These included the provision of land, cheap commercial power, labor, roads, and access to information technology.

As a result, a number of industrial clusters have sprung up where the air and water quality is rapidly deteriorating. It is estimated that direct economic losses due to air pollution cost the state Rs. 315 million ($5.2 million) each year, with an additional Rs. 175 million ($2.9 million) being lost due to water pollution in urban areas. If indirect impacts on the state's tourism potential are taken into account, these figures would rise significantly. Moreover, industry generates a quarter of the state's GHG emissions, and if proactive measures are not taken, this share could rise further.

In contrast, successful mountain economies such as Costa Rica, Switzerland, Bhutan and Austria have used their natural assets to sustain robust economic growth by focusing on high-end tourism, horticulture, and niche value-added manufacturing and services.

As industrial pollution takes a toll on people and the environment, the World Bank helped the state review its industrial scenario. A study – the Strategic Environmental Assessment

Himachal Pradesh is now incentivizing its industries to adopt cleaner technologies

(SEA) of the industries sector – identified the major polluting industries, the key hotspots of pollution, as well as their impact on people's health and the environment. In the wake of this study, a joint government-industry body was created to review and update the state's industrial policy.

HP has since amended its 2004 Industrial Policy and drawn up a list of priority or 'thrust' industries which it seeks to promote. These industries - for example, information technology, fruit processing, sericulture, wool and wool products - have high economic potential and are deemed 'clean' and non-polluting.

At the same time, the state has drawn up a list of 'negative' industries – consisting mainly of polluting industries such as tanning and dyeing, fertilizers, cement and asbestos, the production of inorganic chemicals etc. - which it seeks to deter.

HP is now incentivizing its industries to adopt cleaner technologies and, since public pressure is often the most effective means of ensuring compliance, has made it mandatory for all industrial units and clusters to disclose their pollution status.

The state's Pollution Control Board now monitors air and water quality for 17 categories of industries, and the results are placed online. Starting with the pharmaceuticals industry, Himachal Pradesh has also made it mandatory to publicly disclose industrial data, and proposes to make all its industrial data web based and publicly available.

Aryabhatta Geo-informatics & Space Application Centre

The Aryabhatta Geo-informatics & Space Application Centre (AGiSAC) is the state's central repository for all digital data on the environment, natural resources, climate change etc. It was set up by the Government of Himachal Pradesh in 2011.

AGiSAC's multidisciplinary team of scientists, planners and software developers offers government departments a wide variety of consultancy services. Remote sensing, global navigation satellite systems and more can help departments plan, monitor and evaluate their activities on a scientific basis. GIS solutions can also be tailor-made to suit a department's specific needs.

Given the difficulty of access in remote mountain terrain, satellite maps can, for instance, help departments analyze topography, demography, infrastructure and so on, enabling them to determine where facilities such as schools, health facilities, veterinary centres etc. exist, where the gaps are, and where it will be best to open new facilities, add staff, or upgrade infrastructure.

Satellite maps can also determine how much of the land is under forest cover, under cultivation, or built up, enabling departments to identify sites suitable for plantation, determine the best road alignments for improving rural connectivity, or plan future expansion. For instance, the Department of Town and Country Planning has asked AGiSAC to generate base maps for 32 towns in the state to help them draw up development plans. Moreover, orchards, polyhouses, water storage tanks and so on can also be geo-mapped, and work done under MGNREGS can be charted.

AGiSAC has already developed applications for numerous government departments and, as more agencies see the benefits, the demand for their services is rising.

Integrated Development of **Watersheds**

To better manage land and water resources, communities are being directly involved in drawing up micro-watershed plans for their regions.

More than 90 percent of the state's people live in rural areas with agriculture as their single largest occupation. This makes them heavily dependent on natural resources – water, soil, forests, etc.

However, farming in the state's rugged and hilly terrain is not easy. Land for cultivation is scarce and the state's net sown area is just 15 percent. Most cultivable land is rain-fed, soils are thin and fragile, and steep hill slopes are extremely prone to erosion. Although apple cultivation was rapidly promoted in the 1970s, followed by the expansion of horticulture and floriculture, the people's farming practices continue to be largely unsustainable. This, together with the overstocking of cattle is leading to the degradation of the state's fragile natural resource base.

Since the 1990s, HP has implemented a number of integrated watershed management programs. However, most programs focused on conserving soil, water, and forest resources through traditional top-down approaches that had little ownership by the people. In 2008, the Government of India sought to change this approach and issued new guidelines for adopting an integrated approach to watershed management.

In 2011, the World Bank helped the state bring in the strong involvement of the local people. Multi-disciplinary teams from various government departments, together with local communities, drew up micro watershed plans for one micro-watershed in each of the state's 77 development blocks. Community ownership is all the more important in fragile mountain regions where the land is generally remote and isolated. Since HP has four major agro-climatic zones, each of these zones was covered. (A watershed is a geo-hydrological unit that has a common drainage system.)

The plans seek to raise farmers' incomes from agriculture and allied activities by increasing the availability of water, using

water more efficiently, cultivating higher value crops, using high yielding seeds and improving soil health. Being holistic in nature, the plans provide environmental benefits far beyond the catchment areas, including to states and communities further downstream.

Although watershed activities tend to have long gestation periods, the results are already beginning to show. Efforts to restore the health of the land have increased the availability of water and reduced the amount of silt that washes into the rivers. Communities have seen the benefits of restoring degraded lands and protecting the forests, trees, grasses and natural habitats. As a result, they are now coming together to prevent further degradation.

Farmers have begun to grow high-value vegetables in greenhouses. And, given the state's good network of roads, they are getting together in agri-business groups to take their produce to towns and cities further away where they fetch a good income. Gram Panchayats too have seen the benefits of sowing community lands with fodder, fuel-wood and improved species of grasses.

To ensure transparency, the micro-watershed plans are publicly disclosed, allowing them to be monitored on a regular basis. Field agencies are now able to track results on the ground through GPS coordinates. Later, it will be possible to monitor the implementation of these plans through remote sensing.

Building **Climate Resilience**

With its economy closely tied to climate-sensitive sectors such as agriculture, horticulture, hydropower, forestry etc. Himachal Pradesh has adopted an Action Plan on Climate Change. It is also among the first states in India to have conducted an inventory of greenhouse gas emissions and to publicly disclose its findings.

In 2010, HP announced its intention to develop a climate change strategy for the state. This was in line with a number of sub-national efforts in this regard. It was decided that the state will strive to reduce the intensity of GHG emissions in key sectors by promoting cleaner industrial practices and developing hydropower in an environmentally benign and socially beneficial way.

The state also established a broader institutional framework to tackle other elements of climate change. It constituted a high level governing and executive council that is charged with overseeing and coordinating work in this area.

As part of the DPL program, the government is committed to the preparation of the State Climate Change Strategy and Action Plan, and to its public disclosure. This plan, now prepared, is comprehensive in its coverage and has been tailored to the state's specific circumstances, delineating the benefits of mitigation and adaptation. As part of this plan, Himachal Pradesh has conducted an inventory of GHG emissions and publicly disclosed its findings, becoming one of the first states in India to do so.

The state has also committed to mainstreaming climate change considerations into the work of various line departments. While this is to begin in four key climate-sensitive departments, the state is committed to progressively integrating the plan into the policies, programs and plans of every sector.

Social Inclusion and Sustainable Development in Himachal Pradesh

Himachal Pradesh has achieved rapid economic growth, especially in the last two decades. Today the state has some of the best human development indicators in the country. A World Bank report, 'Scaling the Heights: Social Inclusion and Sustainable Development in Himachal Pradesh', has analyzed the key factors that contributed to this success. The report finds that the state's egalitarian social structure and committed leadership, together with strong community involvement and high levels of local accountability have played a decisive role in driving this success.

The report also highlights concerns. Almost a third of the state's work-force is employed in the public sector, compared to 10 percent nationally. The large cohort of the state's educated young people will need to move away from this unsustainable dependence and be equipped with the skills to work in future growth sectors. Moreover, as the state rapidly urbanizes, it will be important to ensure that this development is sustainable and well-planned.

Human Development Indicators

- Second highest per capita income among special category states
- Educational attainment among India's highest
- Women's share in workforce higher than most other states
- Strong women's participation in development programs
- High levels of sanitation, immunization and school attendance
- All villages have electricity

Natural Resources

- Altitudes between 350 - 7,000 metres
- Forest cover over 25 percent
- Thirty two wild life sanctuaries
- Unique species - snow leopard, musk deer, pheasant and Himalayan yew
- Five perennial rivers – Beas, Ravi, Satluj, Chenab and Yamuna

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