

Uttarakhand Biotech Policy

Prologue:It is strongly felt that the newly established State of Uttarakhand would benefit greatly from the direct intervention of biotechnological research, know how and associated tools for the sustainable development of the State and its economic upliftment in tandem with the preservation of its fragile but unique ecosystems, environment and the rich biodiversity. The areas which may be greatly (and positively) impacted by such applications/innovations and research are very wide ranging and may include diverse fields such as agriculture, floriculture and horticulture, medicinal & aromatic plants and forestry sector, soil fertility management, microbial products, traditional fermented foods and beverages, vaccine production, animal health including reproduction & nutrition, aquaculture, human health and welfare including balanced nutrition, as well as gene pool conservation and utilization, IPR related issues and the cleaner environment, to name a few. Biotechnology or BT is, therefore, appropriately called "Bharat's Tomorrow" in view of its likely impact on various facets of everyday life in times ahead, along the lines of IT Sector which is also referred as "India's To-day" because of its already felt impact.

Realizing the importance of BT sector in general, the vision of Uttaranchal, thus, is to deploy, use, exploit and leverage the biotechnology as an effective tool for catalyzing accelerated economic growth by sustainably harnessing and converting its biowealth into economic wealth on one hand and preserving the same on the other.

The rationale of nucleating this programme at Pantnagar has been based on: close proximity to the acknowledgedly by far the finest and country's first Agricultural University at Pantnagar with campuses at Ranichauri and Bharsar, which already has post graduate programme of teaching & research in Biotechnology with a focus on Agricultural BT; Kumaun and Garhwal Universities and IIT Roorkee with postgraduate teaching in the general areas of BT are close by, as are also the newly established Medical College and the Uttarakhand Forest Academy(erstwhile Forest Training Institute) at Haldwani, State Vaccine Institute at Patwadangar, VPKAS-ICAR's premier lab devoted to hill agriculture at Almora, GB Pant Institute of Himalayan Environment and Development at Katarmal, Almora along with an associated Rural Biotechnology Complex at Kosi, Defence Agriculture Research Laboratory of DRDO at Pithoragarh

(with sub center at Haldwani), the mother campus of IVRI at Mukteshwar, Regional Centres of Central Institute of Medicinal & Aromatic Plants at Nagla & Garur-Bajjnath, Cooperative Drug Factory and CCRS Ayurvedic Institute at Ranikhet, Regional Station

of NBPGR at Bhowali, Tarai Seed Development Corporation at Haldi, The State Horticulture Farm at Chaubatia, Herbal Research & Development Institute at Gopeshwar and one of the oldest medicinal plant mandi at Tanakpur, to list a few. The area falls within the declared export zones and is also covered by the Concessional Industrial Package announced, in January, 2003, by the Central Government for the States of Uttarakhand & Himachal Pradesh. It has excellent connectivity through rail, road and air; upgradation of Pantnagar Airport to a perishable cargo airport is being dealt with separately. It is, however, clear that the State Biotechnology Programme would cover the entire State of Uttaranchal with its natural endowment of a wide range of agro climatic zones and land forms ranging from the fertile subtropical Gangetic plains to the temperate alpine meadows.

Uttarakhand -India's emerging Biotech Hub, a recently published advertisement (Current Science, dt. 25.03.03), outlines the basic strengths and the reasons for this area being imminently suitable for bioindustrial investment. Towards accomplishing the overall gains through BT, as outlined in the very first paragraph, it is proposed to urgently establish a Biotechnology Park and a state-of-the-art Research & Development Institute at Halide, Pantnagar. The research center would not only have the finest equipment and faculty but also very strong industrial linkages. The research institute would have cross sectoral & multi-disciplinary facilities including units on genomics and proteomics, advanced microscopy, bio-informatics, r-DNA technology, analysis and bioseparation, plant tissue culture, cell and molecular biology, nanotechnology, DNA fingerprinting, industrial microbiology, food processing & product diversification, hybrid seed production and an IPR cell. As a corollary to this a Biotech Park is proposed to be established, which would be primarily driven by the industry. It may be mentioned that the Five Year Plan Document of Uttarakhand places considerable importance on the growth of Biotechnology Sector in the State.

To undertake this ambitious project and to put this vision on a practical platform it is proposed to establish the Uttarakhand Biotechnology Board (UBB), an autonomous body to steer the State Biotechnology Programme of the Govt. of Uttaranchal, and to put in place the Biotechnology Policy of the State.

Mission Statement

- To conserve the rich Biodiversity of Uttarakhand which is under threat from reckless exploitation.
- To leverage the existing knowledge base regarding Plant Biotechnology, within Uttarakhand , to enable the Indian farmers' access to competitive strains whether in the ambit of crops, fruits, flowers, herbs or vegetables, etc.
- To that end promote and build the teaching, research and development institutions enabling them to act as a nursery for ideas as well as actions; and a vehicle for human resource development.
- To promote industries based on the above, taking full care of environmental and such other concerns.
- To scientifically use the enormous herbal and medicinal plant wealth within the state for promotion of pharmaceutical and nutraceutical industries, integrating various medicinal knowledge streams. Endeavour would also be made to ensure taking full advantage of the IPR regime thus ensuring the future.

Objectives

Uttarakhand is a new State and has inherent strength in various fields of Biotechnology and the objectives of the policy are to make Uttarakhand a front ranking State in the field of Biotechnology. To attain this overall goal, the objectives of the policy would be –

1. To map the rich Biodiversity of the State, including landraces and lesser known crops and create exhaustive/extensive data base to enable ex situ & in situ conservation, scientific management and prevent reckless exploitation.

2. To intensify the R & D work in potential areas of Biotechnology and upgrade the infrastructure of R & D institutions to generate quality research and to foster industry linkages.
3. To promote the human resource development in this field through upgradation of the existing as well as setting up of new educational institutions.
4. In the realm of Plant Biotechnology, leverage on the existing knowledge base to promote research, which meets the needs of Indian farmers becoming competitive and enable them to take advantage of what are today closely held technologies.
5. To promote medicinal and aromatic plants/herbs, of which abundance is found in Uttarakhand , to enable their natural growth as well as scientific promotion of the pharmaceuticals, nutraceuticals and such other industries. To encourage the entire spectrum from low-end industries which are capable of going to the farmers field to the highest end.
6. To spread awareness about the investment opportunities, in Biotechnology and allied sectors, in the state of Uttarakhand .
7. To this end proactively promote setting up of Biotechnology industries in the State whether in a Industrial Estate mode or dispersed in smaller pockets throughout the State, and to outline a set of incentives and concessions for the BT industry to attract investment..
8. To provide a suitable institutional framework which is a mix of the best available talents, with proactive Governmental support and facilitation.

The detailed road map for attaining these objectives would be as follows;

A) Mapping the rich Bio-diversity and creating exhaustive/extensive transparent data bases, to ensure their long-term sustainable management.

Uttarakhand State, with diversity of fragile ecosystems, harbours a rich flora, including a large number of rare medicinal and aromatic plants, and a plethora of landraces and wild relatives of cultivated crops. Documentation of diversity of such resources including agro-biodiversity is urgently required. Electronic data-basing of these resources and their uses (traditional or otherwise) is not only a national obligation under the CBD provisions but is also a necessity in the present context when even the developed countries are turning to plant-based medicines in addition to those of microbial origin. This would entail building up of exhaustive/extensive and transparent physical databases and systematic genetic fingerprinting and other biochemical profiling of selected bio resources, their registration and patenting. This would also involve creation of a knowledge database which includes the traditional system and knowledge of medicines as well as local practices.

In the current context of diversification of agriculture and the immense wealth of medicinal and aromatic plants is very important. Commercial cultivation of these rare plants will not only uplift the socio-economic status of the farmers but also serve as a source of raw material to the pharmaceutical industries. This will give impetus to conservation of rare biodiversity of Uttaranchal and at the same time exploiting the bioresources efficiently and sustainably; the new Policy of Forest, of Horticulture and setting up of a Medicinal Plan Board in the State are aimed at promoting the conservation, cultivation and commercial exploitation of medicinal and aromatic plants in forest as well community land. Since livestock farming is an integral part of agriculture production system in this largely mountain state, due emphasis would be given to scientifically support the animal husbandry sector as well as fisheries.

Potential Bioresources of Uttarakhand State

- Rare herbal wealth
- Temperate fruits
- Off-season vegetables & flowers
- High value cash crops, land races and the lesser known crops
- Microbial wealth
- Animal wealth
- Traditional fermented foods and beverages

B) Intensify R&D Work in Potential Areas of Biotechnology, upgrade

Infrastructure support to R&D Institutions and promote HRD.

Biotechnological tools have a wide range of applicability in different spheres. The areas, in which R&D work in the Universities/Institutions in the State is being carried out, are listed in the "Directory of Experts and Institutions" related to Biotechnology and allied sectors in Uttarakhand .

There is urgent need to intensify R&D work in the potential areas of biotechnology for commercial exploitation. For this, besides improving infrastructure facilities in the R&D institutes, international collaboration with advanced laboratories be encouraged to further train the scientists in the modern areas of biotechnology, keeping specific needs of Uttarakhand in mind. Besides the ongoing research, the R&D Institutions are competent to take-up specific work depending upon the requirement of the State, especially for setting-up biotechnology-based Industries. To achieve this, national and international funding will be sought.

In order to have access to huge information generated in genomics and proteomics projects and related databases, Bioinformatics will play a major role. Information Technology Park which may also be setup subsequently by the State Government will be helpful to harness the benefits of Bioinformatics.

Promotion of the HRD will have the following components:-

1. Upscaling and upgrading of the existing teaching facilities within the State.
2. Collaborative and co-operative research facilities as well as academic activities with other institutions within and outside the country.
3. Promotion of private sector based academic institutions which are imparting educational skills as related to various fields of Biotechnology.
4. HRD institutions working in close cooperation with the industry and research facilities.

Biotechnology is a fast developing field of science with its activities and uses covering the entire spectrum of human life. Biotechnology industry, including bioinformatics, pharmaceuticals, nutraceuticals, agriculture, health care, is poised for

tremendous expansion on global basis. Therefore, human resource development in the frontier areas of Science & Technology including biotechnology, is a priority all over the world. Development of human resource in biotechnology in India in general and Uttarakhand State in particular is inevitable to meet the ever increasing requirements of industries, Research Institutions and Universities involved in biotechnological research and development. To achieve this, collaborative programmes will be started with state-of-the-art laboratories around the globe. Besides, the teaching programmes in biotechnology will be strengthened with respect to infrastructural requirements vis-à-vis upgradation of the faculty by providing them training in the emerging areas of biotechnology.

The Uttarakhand Board of Biotechnology (UBB) will help the R&D Institutions of the State to seek funds from the national and international funding agencies / donors to upgrade the infrastructure facilities. Depending upon the need, UBB and the State Government will also try to fund R&D facilities through its own resources.

C) Biotechnology Industry in the State

Uttarakhand is an ideal destination to invest in biotechnology-based industries because of several inherent advantages. Investors should feel comfortable; that is a simple mission statement for biotechnology based industries. The natural advantages are a rich biodiversity with the State being endowed with rich plant, animal and microbial biodiversity. There are many rare plants, particularly in the upper reaches of Himalayas, which have immense potential for use in the pharmaceutical & fragrance industry. The State also offers unique opportunity to explore its natural endowment of a wide range of agro climatic zones and landforms from the fertile subtropical Gangetic plains to temperate and alpine meadows. Also, due to low population density and thick vegetative cover, the State offers a pollution free environment. The climate of the State remains mild for most part of the year. This is also particularly advantageous for those industries, which require controlled environment, especially during summer months. Uttarakhand State is also one of the more peaceful States in the country. The State has several well established Universities and national level institutions working in biotechnology and allied sectors. A Directory of Institutions and Experts working in the area of Biotechnology and allied sectors has been published.

The recent developments in biotechnology infrastructure and sound industrial base offer vast market development opportunities for biotech products and business in biopharmaceuticals, agriculture, food and nutrition sector. In the last few years, a number of biotechnology industries have come up in the private sector in India. These have considerable in-house R&D bases active in the application of new technology to agribusiness, enzyme technology for high-value chemicals and quality edible oils by using modern tools of BT; tissue culture of plantation and ornamental crops, forest species and medicinal & aromatic plants; bio-insecticides; plant growth promoters; biomass processing for animal feeds; and hybrid seed.

The existence of strong R&D institutions in the State has added advantage to develop technologies for the industries depending upon their requirement. However, the industry has to provide funds for this purpose. The R&D institutions also have adequate extension network, which will help in the dissemination and commercialization of biotechnologies.

Potential Biotechnology-based industries

- Commercial micro propagation & Fermentation
- Biofuels
- Biopesticides and biofertilizers
- Bioprocessing of food, fragrance and medicines
- Phytochemicals
- Biotech based productions of seeds and quality planting material.
- Pharmaceuticals & nutraceutical industries
- Bioinformatics
- Diagnostics based industries
- Aids to animal reproduction (ETT/AI) and health, etc.

⇒ The list is only indicative

Government facilitation:

The Government of India and the State Government have laid considerable emphasis on the Biotech Industry. Indeed, this has been declared as one of the thrust sectors, indicating thereby that it enjoys all the benefits of the announced industrial packages, without locational and such other restrictions.

The Department of Biotechnology (DBT), Government of India, has made efforts in promoting entrepreneurial initiatives in biotechnology in India. It has been playing a significant role in bringing about interaction between academics, research institutes, companies, and international authorities. Biotech Consortium India Limited is a company set up by the Department of Biotechnology, Government of India and All India Financial Institutions with an objective to accelerate commercialization of biotechnology in India.

For the actual benefits in financial terms and in terms of taxation, please refer to Concessional Industrial Policy Package announced by the Government of India.

The additional benefits offered by the State Government are contained in the Industrial Policy for Uttarakhand . Both the policies together, include, inter alia, Exise Exemptions, Income-Tax Exemptions, Subsidy regime as well as facilitation regimes. They are also available at www.ua.nic.in.

The State Government undertakes to provide the following facilities/terms to the companies desirous of establishing BT units in the State:

- BT Units including related R&D Units will enjoy the status of industry and will be eligible for incentives and concessions as provided for the relevant category/class of industry in the Industrial Policy of the State. For this purpose they shall be treated as Priority Sector Industry. Department of Biotechnology will provide The State Government undertakes to provide the following facilities/terms to the companies “single-window clearance” and shall issue only one application form to set up BT Units in the State.
- The Government proposes to establish in association with private sector a BT Park initially at Halide, Pantnagar where land/plots would be made available to prospective entrepreneurs on favourable terms. The latter, however, are also free to choose their own sites or locate the same in the other established Industrial Areas in the State.
- Govt. of Uttarakhand is also leasing orchards for development to NGOs, Research Institutions & Entrepreneurs (list of 77 orchards may be obtained from Joint Secretary, Horticulture).
- For registered BT Units within declared BT Park Industrial Area, relaxation of FAR on prevailing norms shall be given. In other areas (not including core, green, banned, restricted, heritage areas) suitable relaxation could be considered in individual

cases, subject to considerations of population densities, infrastructure availability, local geology, etc.

Indian incentives for investments in biotechnology industry and R&D

- 100% foreign equity investment is possible in almost all sectors
- 100% foreign equity investment is automatic in drugs and pharmaceuticals sector, and over 74% is on case by case basis
- Fast track clearance route for FDI
- Depreciation allowance on plant and machinery set up based on indigenous technology
- Customs duty exemption on goods imported for use in Government funded R & D projects
- Customs and excise duty exemption to recognized Scientific and Industrial Research Organisations (SIROs)
- 125% weighed tax deduction on R&D expenditure
- 3 years excise duty waiver on patented products
- 100% rebate on own R&D expenditure
- 125% rebate if research is contracted in public funded R&D institutions
- Joint R&D projects are provided with special fiscal benefits.

[For details: www.techno-preneur.net & www.dbtindia.org]

- To promote commercial cultivation with end to end approach, four Agri Export Zones, namely (i) for litchi, (ii) for medicinal & aromatic plants, (iii) for basmati rice, and (iv) for floriculture have already been set up in Uttaranchal .
- Power shall be supplied at the Industrial rate.
- BT units shall be exempted from routine power cuts or load shedding, and shall also be exempted from peak time restrictions.
- In order to bring the labour laws in line with the needs of the industry, Government proposes to suitably amend the following Sections of the Shops and Commercial

Establishments Act dealing with restrictions on opening and closing times, weekly closure, and prohibition of employment of women at night.

- In addition to the incentives enumerated above, incentives accorded to IT sector would also be available to BT units set up in the State. Further, State Government would consider formulating a special package of incentives, on case to case basis, for Mega projects. Mega projects would be those projects with an investment of more than fifty crore rupees in a new company or expansion of an existing company.

Establishment of Biotechnology Park(s)

The State has proposed to set up a Biotechnology Park in Uttarakhand initially at Haldi, Pantnagar (for this purpose 1000 Acres of land centered around G-Block has been earmarked in Pantnagar University) in association with the private sector to boost Biotechnology based ventures. Biotechnology-based and other auxiliary industries will be located in this Park. Other facilities in Biotechnology Park would include.

- Auction/Procurement Centre for raw material of medicinal and aromatic plants, horticultural produce and biotechnology based products
- Availability of genetically improved planting material
- Facility for on-line trading
- Cold storage facility for perishable products
- Information Technology Cell including that on IPR related issues
- Consultancy for biotechnology-based industries
- Business and conference centers
- Exhibition Hall
- Demonstration plots
- Incubator facility for technology assessment and refinement

Subsequently additional BT Parks or sub-centres of the Halide, Pantnagar BT Park may be setup at other locations within the State to take advantage of its various agroclimatic zones.

The resulting benefits from the BT Parks would, among other things, include the following.

- Employment opportunities
- Conservation of biodiversity as only the produce of cultivated medicinal and aromatic plants will be purchased and utilized in industry
- Boost to economy of the State
- Optimal increase in land utilization due to diversification of farming
- Meeting the challenges of WTO

- Direct buyer seller contact
- Good buyer and grower base

Besides, the Biotechnology Parks, which will be the main centre for procurement of raw material for biotechnology-based industries, sub-centres may be established at other parts of the State, having potential of supplying raw material to biotechnology based industries. The produce from the sub-centre can either be supplied directly to the Industry or to Biotechnology Parks.

D) Institutional Framework to Achieve the Objectives

To attain these objectives Uttarakhand Board of Biotechnology (UBB) is being setup, which will act as a nodal agency for interacting amongst various stakeholders such as R & D institutions, Industries, Departments, Farmers, Growers, NGOs and other important users and funding agencies.

The functions of the Board will include formulation of policies, plans and strategies for the overall development of Biotechnology in Uttarakhand , including strengthening of related infrastructure, setting up of standards, norms and policy guidelines and mobilizing of private sector participation and investment in BT and allied areas. It will set quality, safety and other standards for BT activities in the State. The Board shall also function as a Regulatory and facilitating Authority. It would be responsible for establishing Biotechnology Parks, research institute(s), training centers and reference/accreditation centers in relation to BT based activities, and may define the procedure for their governance as well as functioning with maximum autonomy. The Board may enter into contracts or agreements for carrying out the purposes assigned to it, and receive funds/fees for services rendered.

State Department of Biotechnology/Uttarakhand Board of Biotechnology (UBB)

These will be the nodal agencies to deal with matters concerning Biotechnology in the State, and will be responsible for implementing the Biotechnology Policy. The UBB will in particular ensure the following:-

- Support to R&D Institutions by facilitating flow of funds through national and international agencies
- Execute and monitor commercial exploitation of biotechnological tools
- Establish liaison among R&D Institutions, industry, farming community and NGOs.
- Establish 'Biotechnology Park(s)' for promoting biotechnology-based endeavours in the State.
- Help in managing biosafety, intellectual property rights and patenting issues