



November, 2006

Opportunity Note:

*Institute of Biotechnology*

<b>Contents</b>		<b>Page No.</b>
1	Concept	2
2	Concept Rationale	4
	2.1 Biotechnology presents lucrative opportunities across the globe.	4
	2.2 Indian Biotech industry poised for an exponential leap	6
	2.3 Availability of highly skilled talent pool is the key industry driver	8
	2.4 MP could harness industry potential towards socio-economic development	9
	2.5 Investment in education is the key towards economic development	10
	2.6 Indore and Bhopal can emerge as potential biotechnology hub	12
3	Business Model	13
4	Role of Government	19
	4.1 Role of State Government	19
	4.2 Role of Central Government	20
5	Role of Private Investor	21
6	Financial Feasibility	23
7	Conclusion	29

## 1. Concept

The latter part of 21st century has witnessed changing economic landscape across the globe where knowledge intensive sectors such as Information Technology (IT) and biotechnology has replaced labour dependent manufacturing sector as key economic growth drivers. IT revolution in India has demonstrated how knowledge can fuel a nation's growth engine. It is believed that other knowledge based industries such as life sciences, biotechnology, engineering etc would bring the next revolution in the Country.



Having realized the tremendous growth potential of knowledge sectors, Countries such as China is vigorously expanding the technical education base in the Country for rapid capacity development. Though India has dominated the world IT market, the Country requires specific initiatives to create its mark in the life science industry.

Analysis of India's inherent strength reveals that the Country has all the essential ingredients to support a thriving biotech cluster but the deficit of sector specific skilled manpower is likely to restrict the domestic biotech industry growth. India needs to vigorously scale up its capacity building initiatives for manpower development especially for the life science and biotech industry.

Sensing the tremendous potential of biotechnology towards socio-economic development of the region, the Government of Madhya Pradesh wishes to establish a vibrant biotech cluster in the State. It is keen to assist in creating the requisite education, research and training infrastructure that would enable in the development of scientific human resource base in the state.

Towards this end, the Government wishes to establish an Institute of biotechnology in Madhya Pradesh. Through a Public Private Partnership (PPP) module, the Government is keen to partner with the private sector in the envisaged project. The private partner would be responsible for the development and operations of the institute while the Government would act as a key funding and facilitating agency.

The Institutes of Biotechnology would assist in:

- Creating a sizable workforce specifically qualified to understand and act upon the operational and management complexity of biotechnology industry.

- Providing thrust towards establishing a vibrant biotech education base in the State
- Establishing MP as an upcoming education center for advance training and research in biotechnology
- Providing impetus to the nascent biotechnology sector in the State by creating a geographic cluster of biotech institutes, which would create a valuable investment proposition for biotech companies to invest in the State.

The Institute of Biotechnology would be an integrated center offering a comprehensive biotechnology curriculum employing a balanced pedagogy of theory and practical. The Institute would offer general and advance level academic programmes at the graduate and post-graduate level in biotechnology.

The project has been conceptualized as a unique venture of Public Private Partnership. The private participation would ensure the prompt and timely implementation of the concept while the State participation would ensure the profitability of the private investor by way of grants and funding of capital intensive expenditures such as Land, R&D facility, equipments etc.

## 2. Concept Rationale

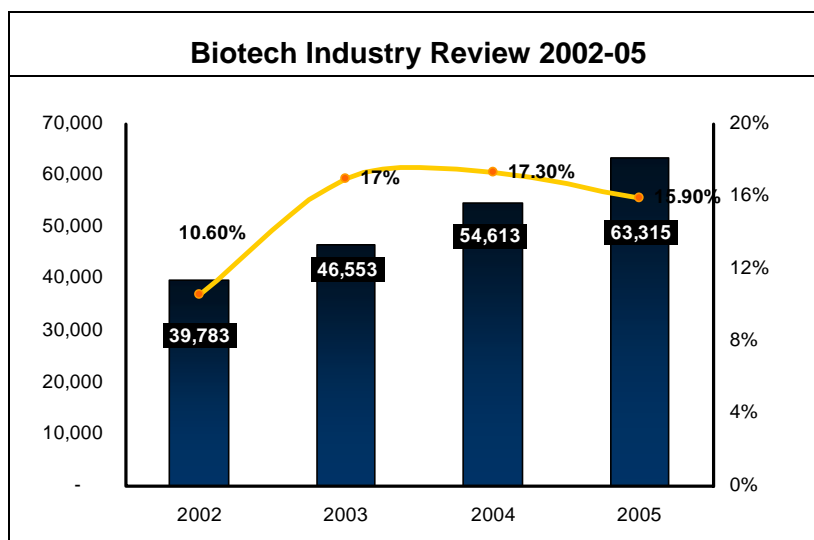
Rapidly flourishing biotech industry across the globe presents significant growth opportunities for domestic biotech companies. With a rich biodiversity base and a large number of english speaking workforce, India has significant inherent advantages to support a thriving biotech cluster. However the deficit of sector specific skilled manpower would be the key growth impediment for the domestic industry.

The key factors necessitating the development of Institute of Biotechnology have been discussed in the following section:

### 2.1 Biotechnology presents lucrative opportunities across the Globe.

The global market for biotechnology in 2005 was estimated around USD 63.3 bn, registering a growth rate of around 15.9% over the previous year. The industry is expected to continue its impressive growth rate for the next five years and is expected to become USD 128.5 bn opportunity by 2010.

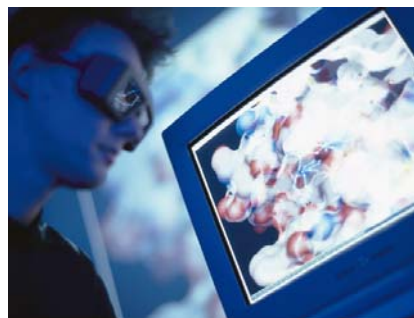
North America and European Union are the key markets. Together they accounts for more than 90% of the global revenues. The industry is highly-concentrated, only US and Canada together holds 83.7% share of the industry's revenue



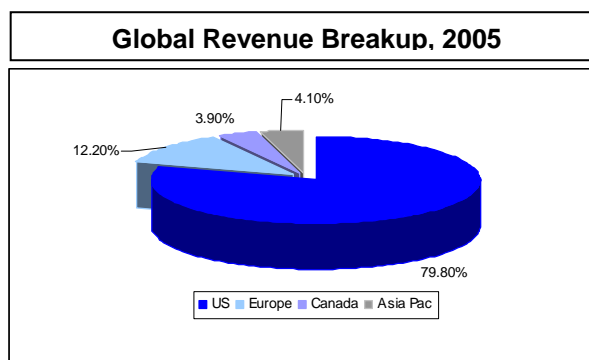
while with an estimated 80% share of global market in 2005, US is the most lucrative market for biotech companies across the globe. Asia pacific region though currently accounts for only 4.1% share of the market but with revenues worth USD 2.6 bn in 2005 it is an emerging market for biotech products and services.

The key growth driver for the industry are increasing clientele, aging human population, availability of finance, enhanced entrepreneurial culture and positive growth of complementary industry such as pharmaceuticals. Biotechnology tools and techniques are increasingly being utilized to design breakthrough solutions for various problems spanning across a wide spectrum of industries.

Newly emerging technologies such as bio-nanotechnology and bio-informatics are finding increasing application in design and development of new therapeutics and drug delivery systems. In 2005 the global market for bioinformatics was estimated around USD 840 mn. The market for bio-nanotechnology is expected to be USD 3.4 bn by 2010.



The industry has major application potential in the agriculture sector. In 2005 the genetically modified seeds are estimated to be planted in around 100 mn hectares across the globe. By 2010, 15 mn farmers are expected to grow genetically modified crops in 375 mn acres across 30 Countries.



Environmental biotechnology is another upcoming segment. Staggering increase in the number of motor vehicle, deforestation, increasing use of plastics, pesticides and fertilizers, burning of fossils fuels etc. are some of the key activities that are rapidly degrading the global environment and severely disrupting the delicate ecological balance. Global warming, increasing floods, landsliding and other natural calamities are the result of men's unchecked exploitation and interference with the nature. The application of environmental biotechnology especially in waste recycling, forest conservation, organic farming etc. can be successfully utilized towards environment conservation.

Realizing the tremendous potential of the sector, Governments all across the globe are encouraging the development of biotech industry in their respective Countries. Apart from various fiscal and non fiscal supports, Countries are re-defining the regulations to facilitate growth of the biotech industry. Singapore has appropriated USD 7.5 bn in 2005 to be dedicated for biotechnology sector for the next 5 year. UK is planning to invest USD 1.7 bn on the sector by 2008.



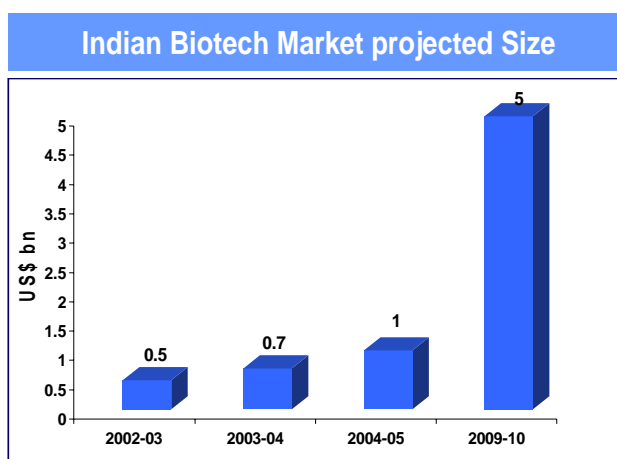
Further, key regulatory changes were witnessed across the world in 2005. India announced the draft Biotechnology policy; Croatia introduces a new law on genetically modified organism. New legislations were introduced in 2004 in UK to facilitate animal experimentation by biotech companies without enraging animal right activists.



With emerging concept such as personalized medicine, nano-medicine, antibody based medicine etc., biotech is becoming an essential part of human life. With increasing application of biotechnology in medical science to pharmaceuticals, forests to environment, solid waste management to environment friendly biodiesel, the industry is poised for an encouraging future.

## 2.2 Indian Biotech industry poised for an exponential Leap

After proving its might in the IT industry, India has the potential to repeat the success story in biotechnology also. With a large base of english speaking graduate workforce and proven skills in the complementary IT field, India is ready to take a quantum jump in the new millennium as a biotech giant.



Source: Biospectrum

In 2004-05 Indian biotech industry reached a major milestone by crossing the USD 1bn in revenues. Registering an exponential growth rate of 39.4% the industry garner USD1.09 bn in revenues. Further, it is expected to become USD 5 bn opportunity by 2010. Like IT, biotechnology is also an export driven sector, which accounts for nearly 52% of the total revenues in 2004.

Among the various sub-segments, biopharmaceuticals is the largest segment of the domestic biotech industry. With revenues of USD 811mn in 2004-05, it accounts for three fourth of the total biotech market. Driven by the vaccines business the segment registered a growth rate of 30% in 2004. The other key segments are bioservices, agribiotech, industrial biotech and bioinformatics.

Segments	Sales (US\$ mn)	Sales (US\$ mn)	Growth (%)
	2003-04	2004-05	2004-05
Biopharma	625.45	811.36	29.72
Bioservices	62.50	96.59	54.55
Agribiotech	29.55	75	153.85
Industrial biotech	54.09	72.73	34.45
Bioinformatics	18.81	22.73	25
<b>Total Industry Size</b>	<b>789.77</b>	<b>1078.41</b>	<b>36.55</b>

Source: Biospectrum-ABLE Annual Survey 2005

Though agri-biotech contributes a mere 7% of the market value in 2004-05, it was the fastest growing segments with a growth rate of nearly 154%.

Significant opportunities are arising across the globe for Indian biopharmaceutical companies to tap. An estimated USD 21 bn worth of branded drugs would be losing patents in 2006 and a total of USD 100 mn would be going off patent over the next five year.

#### **India's value proposition for supporting Biotech Industries**

- More than 300 graduate educational and training institutes across the Country offering degrees and diplomas in biotechnology, bioinformatics and the biological sciences.
- A biosciences and engineering knowledge pool of over 3 million graduates, 700,000 post graduates and 15,000 PhDs.
- A strong multinational presence that offers Indian talent, exposure to cutting edge technologies and the opportunity to work on advanced research projects.
- A robust IT industry which has already established India's credentials as a viable investment destination.
- The presence of a well-defined industry base (pharmaceutical industry).

Indian biotech sector has the caliber to emulate the growth trajectory of the domestic pharmaceutical industry, which has made the Country self-reliant for its therapeutics requirements and is a key source of attracting foreign investment.

Having recognized the immense potential of biotechnology, the Government has taken key policy initiatives to facilitate the growth of the sector. Numbers of fiscal and non fiscal benefits are granted to the companies and research institutions engaged in research and development in the field of biotechnology.

Key policy initiatives of Central Government to promote biotech sector are:

- Department of Biotechnology (DBT) to promote and support 10 biotech parks by 2010.
- A competent single National Biotechnology Authority with separate divisions for different sectors proposed.
- Single window clearance for biotechnology companies.
- Task force set up under the leadership of Dr. R A Mashelkar, Director General (CSIR) to formulate modern and efficient regime for recombinant DNA pharma products.
- Provisions in Patent act (Third Amendment), 2005 specifically for biotechnology.
- Bioinformatics policy of India 2004, DBT identifying Bioinformatics as high priority area under Tenth Plan.
- “National Stem Cell Priority Fund” to finance research on stem cells.
- States leading from the front in bio-policy and infrastructure support.
- Exemption of import duty on key R&D, contract manufacturing/clinical trial equipment and duty credit for R&D and consumer goods.
- 150% weighted tax deduction on R&D expenditure.
- Removal of custom duty on imported raw material where finished product is duty free.
- Simplification and streamlining of procedures.
- Efforts to promote Indian regulatory data internationally.

### **2.3 Availability of highly skilled talent pool is the key industry driver**

Biotech being a knowledge intensive sector demands the availability of large pool of knowledge workers with significant scientific and technical skill sets, to flourish. The sector is rapidly burgeoning and with a positive forecast for the industry across the globe there are significant opportunities for the domestic industry to leverage.



The shortage of skilled manpower would be the key limiting factor, the biotech sector would likely face in the future. Since the technical education infrastructure in the Country is not expanding in proportion to the requisite demand, the industry would face a severe shortfall of technical workforce in the near future.

According to industry estimates India requires around one million trained biotech professionals by 2010. Acknowledging the huge manpower requirement its imperative that the education infrastructure of the Country should be expanded vigorously.

Factors necessitating the development of specialized biotech education infrastructure are:

- To create a thriving base of knowledge workers to meet the challenges of the rapidly flourishing biotech industry.
- To assist industry in capitalizing the maximum growth opportunity at the global scale by ensuring the supply of its key raw material i.e skilled workforce.
- To build a strong workforce with adequate technical skills to drive the growth of industry in the 22<sup>nd</sup> century.
- To create a strong technical workforce that would act as a lucrative value proposition for international players to invest in the Country, which would facilitate the overall socio-economic development of the Country.
- To build a highly trained knowledge workforce that has the acumen to keenly understand the peculiar operational and strategic aspect and technicalities of the biotech industry.

#### **2.4 MP could harness industry potential towards socio-economic development**

The IT revolutions was instrumental in establishing metropolises such as Bangalore, Hyderabad, Pune etc. on the global map as a key knowledge hubs and a lucrative investment destination. The IT opportunity was successfully leveraged by some of the States Government towards economic development of their respective States.



Having missed the IT wave Madhya Pradesh can utilize the tremendous potential of biotechnology towards enhancing knowledge and economic prosperity of the State. A vibrating biotech cluster supporting a geographic concentration of industry and

academia would act as key value proposition for domestic and international investors to invest in the State.

**2.4.1. The key factors which necessitate the development of a thriving biotech cluster in the State are:**

Agriculture is the predominant sector in the State and supports nearly 75% of the State rural population and also contributes nearly one third to the State GDP. The State can utilize biotechnology towards developing potential breakthrough solutions for the problems faced by the farmers such as low crop yield, vulnerability to diseases and destruction by the pests. Biotechnologically modified transgenic crops such as Bt-cotton, hybrid seeds etc. would enable farmers to enjoy high quality disease free crops with higher production yields.

Further significant opportunities exist for developing the agriculture dependent food processing industry by implementing advanced biotechnology solutions. The development of which would facilitate the State to realize high value margins along with enhanced prowess at the higher end of agro-food value chain.

With 31% of the area under the forest cover the State has a vast unexploited biodiversity base. The forest contributes significantly to the State economy and apart from sustaining the wild life; they are a rich source of wide variety of wild plants with potential medicinal value. Biotechnology enabled approach could be applied for conservation, mapping, characterization and patenting of vast biodiversified base of wild flora and fauna, especially those with a commercial value.

Biotechnology enabled techniques such as solid waste management, effluent treatment; organic farming etc could be successfully employed for environment protection and forest conservation.

Thus biotechnology not only has the potential to provide solutions to the State key concerns but could also aid in enhancing the overall socio-economic prosperity of the region.

**2.5 Investment in Education is the key towards economic development**

As discussed earlier, the strength of technical and knowledge workforce would determine the pace of regional development and would be a key driving force for the overall socio-economic prosperity of any region in the present millennium.

MP should at the earliest, invest in the development of institutions of higher knowledge. A strong base of high-end education infrastructure would determine the overall pace of economic development of the State in future. Further it would also be the key factor which would ascertain MP's position among the developed and prosperous State in the Country and its contribution in overall economic development of the nation.

Madhya Pradesh already has a well developed primary education infrastructure. Likewise the State has a sizeable number of engineering, technical and management colleges including the prestigious IIM and IIIT. This has assisted the State to support a large number of manufacturing industries and technical sectors by assuring the availability of the requisite supply of quality technical and management talent.

Education	No. of Institutes	No. of Students
Engineering (All streams)	61	20,210
MCA	45	2,310
MBA	47	3,735
Polytechnics	49	9,094
Industrial Training	110	14,298
<b>TOTAL</b>	<b>312</b>	<b>49,647</b>

In order to fully leverage the present and future opportunities in the upcoming biotech sector, the State needs to support large number of biotech institutes. These centers would acts as “Knowledge Factory”, producing the requisite technical human resource that would hold the reigns of the upcoming biotechnology industries in the State.

Sensing the constraint in dedicating the Government resources and machinery towards unidirectional development of the high-end biotech education infrastructure in the State, private sector participation is imperative for this endeavor.

The State Government is keen to invite the participation of private investors in the education sector. The State is willing to extend key financial and operational support to the investors such as free land, R&D infrastructure funding, subsidized utilities etc. along with the assured support of the State administrative machinery.

## 2.6. Indore and Bhopal can emerge as potential biotechnology hub

Indore and Bhopal are the two key metropolitan cities of Madhya Pradesh. Both are well developed and are hub to majority of the State commercial, industrial and administrative setup. Bhopal is the official capital of MP while Indore is the commercial capital of the State. Located at a Strategic point and well connected with all the key commercial and trade centers and other major cities of the country they have tremendous potential to support a thriving biotech cluster in the State.

Both Indore and Bhopal support a thriving industrial base. Due to various strategic and cost competitive advantages offered, industrial houses across the country are contemplating to establish their business and operational center in these cities.

In the following table both the cities are compared on certain critical parameters, which are imperative to support such project.

S.no	Parameters	Bhopal	Indore
1	Connectivity	Good	V.Good
2	Land cost	Low	Low
3	Existing Primary Education Base	Developed	Developed
4	Business Environment	Conducive	Conducive
5	Quality of life	High	High
6	Existing Industrial Base	Evolving	Established
7	Existing IT base	Evolving	Established
8	Internal Transport System	Good	V. good
9	Cost of Living	Low	Low
10	Overall environment	Conducive	Conducive

Indore and Bhopal are suggested as potential destination to establish the envisaged Institute of Biotechnology.

### **3. Business Model**

The Government of Madhya Pradesh aspires to position the State as a key education center for advance learning and research in biotechnology. The Government proposes to establish a chain of biotech institute at various locations across the State, which would be finalized by comparing different potential destinations over certain critical parameters.

The Government wishes to partner with private investors in the envisaged project, the involvement of which would not only ameliorate the resource constraint but would also hasten the implementation of the project plan.

The institute will be set up on 15 acres of land that would be provided by the State Government free of cost or at a subsidized rate. It would endeavor to be a high-end State-of-the-art center for studying intricate aspects of biotechnology and its various specialized sub functions. The institute would house well functional laboratories equipped with basic and modern instrumentations such as electrophoresis, DNA micro arrays, PCR etc. to aid in experimentation and advance research in biotechnology.

The institute would offer B.Sc in Biotechnology, a 3 year degree course at the graduate level. The course would span over six semesters, during which the candidates would be acquainted with various fundamental and advanced aspects of biotechnology along with a mandatory industrial training of 4-5 months in the final semester.

The Institute will align its academic courses in terms of course content, specializations and pedagogy to meet the specific requirements of the biopharma and biotechnology industry. This will address a key concern for the industry – the need for rigorous training of fresher's to fit the industrial requirements, by developing a workforce with the right skills and the ability to commence work with minimal internal training.

At the Post-graduate level, a master's program of 2 year duration would be offered with specialization in one of the specific field such as plant-biotech, environmental-biotech or biopharmaceutical etc. The program would aim towards building a highly skilled talent force suitable for higher positions in the industry, academia as well as in research.

Further, the research facilities would be complemented by the well developed support, residential and entertainment facilities. Thus, the institute would provide an ideal combination of support infrastructure and conducive environment for young scholars engaged in education and research in the institute.

### **3.1 Vision of the Institute**

*To be among the leading biotech institutes in the country and contribute in the development of highly skilled human resource base to support the biotech industry.*

### **3.2 Objective of the State**

The key objectives of the proposed life science and technology institute are

- To provide a high-end facility for studying fundamental and specialized aspects of biotechnology in the State
- To provide a specialized seat of higher learning in the State for candidates interested in choosing biotechnology as a career option
- To develop a sizable graduate workforce specially trained to understand the complex functional, operational and management aspects of biotechnology industry.
- To provide impetus to the non existence biotech education base in the State.

### **3.3 Project Layout**

In line with the vision and objective of being the top notch center for biotechnology research and education, the institute would be an integrated unit with adequate infrastructure and support facilities.

In total the institute would have three key infrastructure components

- Teaching and research complex
- Residential complex
- Recreation complex.

The research complex would house various departments, corresponding laboratories, lecture halls and administrative and staff building. Separate residential facilities would be constructed for scholars and faculty.

A recreation complex with a Gym and other Indore and outdoor gaming and entertainment facilities such as Table tennis, Tennis court etc would also be constructed.

### 3.4 Land utilization plan

Space	Acres	Build up area (Sq. feet)
Teaching & Research Block	5	130,682
Hostel	5	130,682
Convention Center	2	52,273
Recreation Center	3	52,273
<b>Total</b>	<b>15</b>	<b>365,911</b>

#### Teaching and Research Block

The block would be the epicenter of the research and learning and would comprise of the following facilities:

- Fully furnished Lecture rooms equipped with high end facilitating equipments such as slide projectors, multimedia projectors, audio visual systems etc.
- Air condition building
- Internet cafe
- Library
- Lavatories

#### Hostel

Separate hostel building would be constructed for men and women. The hostel would have the following facilities:

- Well furnished rooms for students
- Common lavatories with highly sanitized and drainage system
- Common mess
- Common recreation rooms with facilities such as TV, audio system, TT. Table and a common magazine corner
- High speed Internet port in every room

- Communication system

### **Convention Center**

To facilitate various academic and extra curricular activities such as seminars, lectures of eminent scientists, annual day celebrations and various cultural programmes, the institute would have a State-of-the-art convention center with adequate seating capacity.

The center would be equipped with the following facilities:

- Central air conditioning
- Acoustic sound system
- Comfortable seating facilities
- Lavatories
- Stage equipped with audio visual system

### **Recreation Center**

The center would have the following facilities

- Swimming pool
- Gymnasium
- Magazine corner
- Tennis court
- Badminton court
- Basket ball court
- Indoor games station

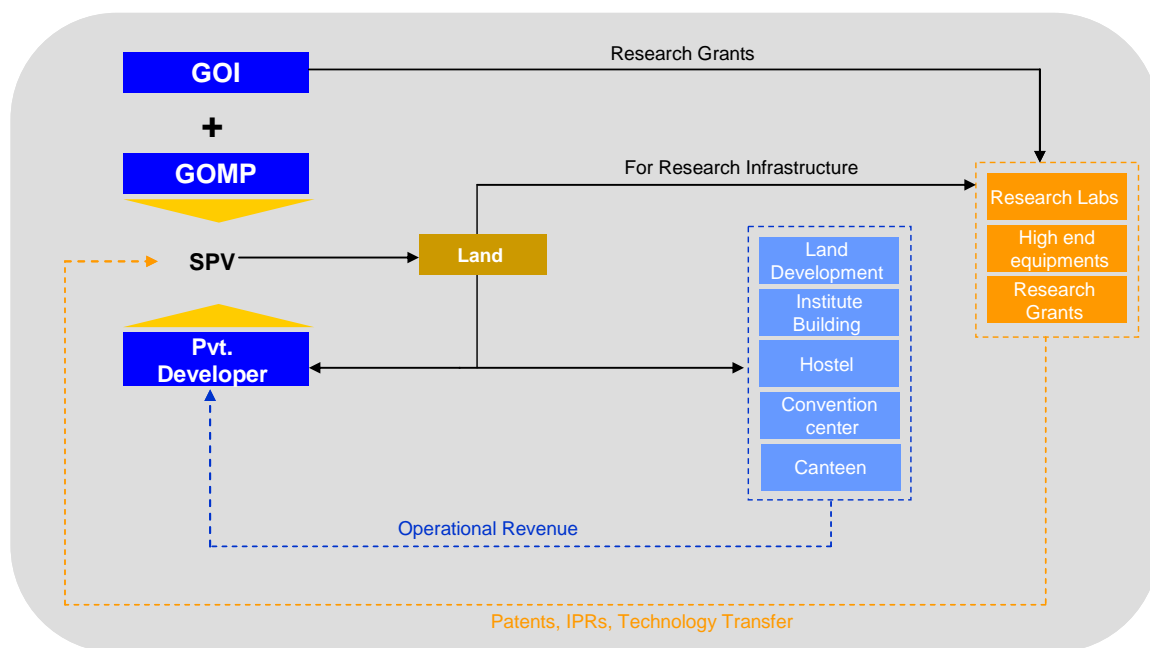
### **Playground**

A healthy brain resides in a healthy body, the institute would be well equipped with all the necessary facilities required for maintaining physical fitness and health. It would have a lush green playground with adequate facilities for cricket and football games and other outdoor physical and athletic activities.

### 3.5 Project Configuration

The institute would be developed using a public private partnership model through an agreement between the State Government and the private developer. A Special Purpose Vehicle (SPV) would be formed for the project in which, the Government would contribute its equity in the form of land which would be transferred to the private developer free of cost or at a subsidized rate.

The private player would develop and operate the entire envisaged infrastructure. The State Government would further provide grant for the development of high end research labs, while the central Government through its various departments such as Department of Biotechnology would fund the high end research infrastructure in the institute and would further provide funds for research projects and expensive equipments.



### 3.5 Center of Excellence

In the next development Phase, a center of excellence would be established in the vicinity of the institute. An additional 5 acre of land would be appropriated beside the institute for the center. The center would be dedicated for cutting edge research, utilizing ultra modern instrumentation and techniques in one of the specific area of biotechnology such as biopharmaceuticals, bioinformatics etc. The center would be accredited by reputed organization such as NIH and WHO and would also strive to attract international research funds from national and international funding agencies such as Gates foundation, CDC, CSIR etc.

The Center would be established as a joint initiative between the Central and the State Government. The Institute of Biotechnology would act as a support facility and a building block for the envisaged Center. The Institute would extend all its facilities (residential, recreational and convention center etc.), for the use of the Center of excellence. In turn the Center would extend its excellent research facilities and other resources for advance research and training to the IOB research scholars under the consummate guidance of its eminent scientists and professors. The student of IOB would further benefit by the monthly or fortnightly seminars and workshops that would be conducted by the distinguished research fraternity of the Center.

The center would aim to be the best among the contemporary research centers in the world and would position MP as a key hub of research and education in biotechnology.

## 4. Role of Government

The Government has a prominent role in the successful completion and implementation of the concept plan. The State Government will be a key stakeholder, while the role of Central Government would be restricted mainly as a funding and accrediting agency.

Following sections describes the role of the Government in detail:

### 4.1 Role of State Government

The State Government of Madhya Pradesh is the key Guiding force behind the conceptualization of the project. The Government wishes to play a major role in facilitating the development and mobilization of the requisite financial and other support infrastructure for the expedite implementation of the concept plan.

The Government is willing to extend major fiscal and non fiscal benefits to the private players along with assured support of Government administrative machinery. The key contribution of the Government in SPV would be in the form of land that would be granted to the private developer at a subsidized rate or free of cost.

As a facilitator the key role of the State Government would primarily be to facilitate timely and hassle free clearance of various proposals and paper work across multiple Government department.

Further Government wishes to extend monetary support for the development of various high-end, capital intensive research facilities and instrumentation in the Institute. It would also fund the various research projects especially with a potential to foster the development of society and State at large.

Thus the role of State Government would primarily include:

- Assist in funding and development of various R&D infrastructure components
- Assist in furnishing basic infrastructure including
  - Uninterrupted supply of major utilities such as Power, water etc, at a subsidized rate.
  - Basic road connectivity.
  - Drainage system.
  - Facilitating easy access to intra-city transportation system.

#### **4.2 Role of Central Government**

Since the institute would be engaged in advanced research in the field of biotechnology it would come under the preview of Department of Biotechnology (DBT). The institute would thus be eligible of various grants and support facilities under the various research facilitating schemes of the department.

## 5. Role of Private Player

The private player would be a joint partner in the SPV along with the State Government. Apart from coordinating and timely implementation of the concept plan, the private player would be chiefly entrusted with construction, operation and maintenance of the various core components and other supports functions of the institute.

Except for the development of high-end research facilities and sophisticated experimentation laboratories, the entire infrastructure would be constructed by the private partner. He will be responsible for day to day operations and smooth functioning of the institute and would leave no effort in positioning it as a prominent seat of advanced learning among the contemporary institutes present in and outside the state.

Further the private partner would be responsible in utilizing various research grants (from central and State Government) towards creating high-end research facilities and conceptualizing research projects especially with a potential to aid in Socio-economic development of the State and Nation.

Hence the key role of the private developer would include:

- Carry out the planning, detailed studies, surveys and investigations for the Project.
- Incorporate a Special Purpose vehicle under The Companies Act, 1956.
- Complete the design and detailing of the Project.
- Reach financial closure for the Project as per the time stipulated in the project agreement, including mobilizing debt & equity.
- Develop a comprehensive business plan for the institute.
- Invest in the equity component of the institute.
- Procure required clearances for commencing and implementation of the Project.
- Complete construction of the works within the stipulated time frame.
- Provide regular updates about the development of the institute to the Advisory Committee proposed to be set up by the Government of Madhya Pradesh.
- Maintain and operate the institute.

- Procure requisite accreditation from key education controlling Central and State organizations such as UGC, AICTE etc.
- Design and implement the course curriculum in due consultation with multiple stakeholder such as accrediting University, Central organization, State education department, industry and other academic advisors.
- To conceptualize various research projects to garner research funds from R&D and education funding agencies in India and abroad
- Market the institute to attract best of talent from State and the other parts of the country.
- Assist the candidates in securing suitable employment opportunities in the Industry.

## 6. Financial Feasibility

The purpose of this section is to present the estimation for both expected costs as well as the revenues. The assumptions for cost calculations are based upon the current market rates while for revenue calculations are estimates are based on conservative estimates.

### 6.1 Cost of Project

Various cost outlays have been explained in the following tables.

**Table 6.1: Project cost calculations:**

	Construction Costs	Teaching & Research Complex	Hostel	Recreation Centre	Convention Centre
		(USD 000)	(USD 000)	(USD 000)	(USD 000)
1	Basic Building Structure	1,161.6	1,161.6	465	465
2	Interiors	261.4	290.4	70	105
3	Electricals & Fire Detection	348.5	145.2	81	139
4	Heat/ Ventilation/ Air Conditioning (HVAC)	145.2	-	-	58
5	Plumbing & Fire Fighting	145.2	145.2	116	58
6	Networking	87.1	87.1	12	35
7	DG Sets	145.2	20.0	12	58
8	Building Automation/ CCTV	130.7	130.7	52	52
9	External Development & Landscaping	87.1	87.1	23	35
10	Parking	8.7	8.7	3	3
11	Architect, Consultant Fee	290.4	246.8	99	116
	<b>Total</b>	<b>2521</b>	<b>2076</b>	<b>834</b>	<b>1008</b>
12	Contingencies 5%	126	104	42	50
	<b>Total Cost</b>	<b>2647</b>	<b>2180</b>	<b>876</b>	<b>1059</b>

The total estimated cost for the complete project is estimated around USD 7.5 mn. The key cost involved are land development cost, construction cost, cost of

establishing various utilities and other pre-operating expenses such as project engineering fee, architecture fees etc.

Key assumptions that have been taken in the cost calculation are:

- Land is assumed to be transferred free of cost.
- FSI for the project is 0.60

**Table 6.2. Total Cost Calculations:**

S.no	Cost Heads	Amount (USD 000)
1	Preliminary Expenses	761
2	Land and Development Cost	83
3	Teaching & Research Complex	2647
4	Hostel	2180
5	Recreation Centre	867
6	Convention Centre	1059
<b>5</b>	<b>Total</b>	<b>7597</b>

### 6.3. Revenues

Key sources of income would include:

- Fees from the graduate course
- Fees from the master's course
- Hostel rent

Key assumptions taken for revenue calculations are:

- 100% occupancy rate has been assumed both for the graduate as well as post graduate courses from the year one.
- An increment of 20% in the annual fee after every three years has been assumed for the Master's course.

<b>Revenues</b> (USD 000)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Graduate Course	277	553	830	830	830	830	830	830	830	277
Masters Course	165	312	330	418	418	418	418	502	502	165
Hostel	102	201	272	275	275	275	275	275	275	102
<b>Total</b>	<b>544</b>	<b>1,066</b>	<b>1,432</b>	<b>1,523</b>	<b>1,523</b>	<b>1,523</b>	<b>1,523</b>	<b>1,607</b>	<b>1,607</b>	<b>544</b>

6.4. Profit & Loss Statement:

PROFIT & LOSS STATEMENT										
<b>REVENUES</b>	-	544	1,066	1,432	1,523	1,523	1,523	1,523	1,607	1,607
<b>OPERATING EXPENSES</b>	239	349	502	545	576	595	614	635	665	689
Inventory W/off	-	-	-	-	-	-	-	-	-	-
Salaries	46	98	193	206	224	240	256	274	294	314
Supplies	12	9	9	9	9	9	9	9	9	9
Administrative Expenses	6	14	27	25	28	31	34	37	40	44
Insurance & maintenance for Building	-	9	9	9	9	9	9	9	9	9
Marketing Expenses	-	-	3	6	9	9	9	9	9	10
Misc Expenses	-	44	85	115	122	122	122	122	129	129
Maintenance, Cleaning & Other Exp	175	175	175	175	175	175	175	175	175	175
<b>EBITDA</b>	(239)	195	565	887	947	928	909	888	942	918
Depreciation	-	648	648	648	648	648	648	648	648	648
Preliminary Expenses written off	-	85	85	85	85	85	85	85	85	85
<b>EBIT</b>	(239)	(538)	(167)	155	215	196	177	156	210	185
Interest	-	-	-	-	-	-	-	-	-	-
<b>EBT</b>	(239)	(538)	(167)	155	215	196	177	156	210	185
Tax										
<b>PAT</b>	(239)	(538)	(167)	155	215	196	177	156	210	185

## 6.5. Balance Sheet

BALANCE SHEET										
<b>Liabilities</b>										
<b>Networth</b>	<b>7,961</b>	<b>7,423</b>	<b>7,256</b>	<b>7,410</b>	<b>7,626</b>	<b>7,822</b>	<b>7,999</b>	<b>8,154</b>	<b>8,364</b>	<b>8,550</b>
Equity	8,200	8,200	8,200	8,200	8,200	8,200	8,200	8,200	8,200	8,200
Reserves & Surplus	(239)	(777)	(944)	(790)	(574)	(378)	(201)	(46)	164	350
Deposits from Tenants	-	-	-	-	-	-	-	-	-	-
Increase in Long Term Loans										
<b>Total Liabilities</b>	<b>7,961</b>	<b>7,423</b>	<b>7,256</b>	<b>7,410</b>	<b>7,626</b>	<b>7,822</b>	<b>7,999</b>	<b>8,154</b>	<b>8,364</b>	<b>8,550</b>
<b>Assets</b>										
<b>Land</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>	<b>83</b>
<b>Other Fixed Assets</b>										
Gross Block	7,041	7,041	7,041	7,041	7,041	7,041	7,041	7,041	7,041	7,041
Less: Acc. Dep.	-	648	1,295	1,943	2,590	3,238	3,886	4,533	5,181	5,828
<b>Net Block</b>	<b>7,041</b>	<b>6,393</b>	<b>5,746</b>	<b>5,098</b>	<b>4,451</b>	<b>3,803</b>	<b>3,156</b>	<b>2,508</b>	<b>1,860</b>	<b>1,213</b>
<b>Total Fixed Assets</b>	<b>7,124</b>	<b>6,476</b>	<b>5,829</b>	<b>5,181</b>	<b>4,534</b>	<b>3,886</b>	<b>3,238</b>	<b>2,591</b>	<b>1,943</b>	<b>1,296</b>
Investments	-	-	-	-	-	-	-	-	-	-
<b>Total Current Assets</b>	<b>76</b>	<b>270</b>	<b>835</b>	<b>1,722</b>	<b>2,669</b>	<b>3,598</b>	<b>4,507</b>	<b>5,394</b>	<b>6,337</b>	<b>7,254</b>
Debtors										
Inventory	-	-	-	-	-	-	-	-	-	-
Cash & Bk. Bal.s	76	270	835	1,722	2,669	3,598	4,507	5,394	6,337	7,254
<b>Total Current Liabilities</b>										
Trade Creditors										
<b>Net Current Assets</b>	<b>76</b>	<b>270</b>	<b>835</b>	<b>1,722</b>	<b>2,669</b>	<b>3,598</b>	<b>4,507</b>	<b>5,394</b>	<b>6,337</b>	<b>7,254</b>
Misc exp to be w/o	761	676	592	507	423	338	254	169	85	
<b>Total Assets</b>	<b>7,961</b>	<b>7,423</b>	<b>7,256</b>	<b>7,410</b>	<b>7,626</b>	<b>7,822</b>	<b>7,999</b>	<b>8,154</b>	<b>8,364</b>	<b>8,550</b>

**6.6. Cash Flow Statement**

CASH FLOW										
<b>Sources of Funds</b>										
Equity	8,200									
Increase in Long Term Loans										
Deposits from Tenants										
PAT + Dep + Prel. Exp. w/off	(239)	195	565	887	947	928	909	888	942	918
<b>Total Sources</b>	<b>7,961</b>	<b>195</b>	<b>565</b>	<b>887</b>	<b>947</b>	<b>928</b>	<b>909</b>	<b>888</b>	<b>942</b>	<b>918</b>
<b>Application of Funds</b>										
Capital Expenditure	7,124	-	-	-	-	-	-	-	-	-
Inventory W/off	-	-	-	-	-	-	-	-	-	-
Investments										
Pre-operative Expenses	761	-	-	-	-	-	-	-	-	-
<b>Total Applications</b>	<b>7,885</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Opening Cash Balance	-	76	270	835	1,722	2,669	3,598	4,507	5,394	6,337
Surplus/Deficit	76	195	565	887	947	928	909	888	942	918
<b>Closing Cash Balance</b>	<b>76</b>	<b>270</b>	<b>835</b>	<b>1,722</b>	<b>2,669</b>	<b>3,598</b>	<b>4,507</b>	<b>5,394</b>	<b>6,337</b>	<b>7,254</b>

## 7. Conclusion

Resource constraints and highly bureaucratic Government machinery has restricted the development of technical education infrastructure in the Country. The sector has not been able to meet the demand of high end technical workforce by the rapidly flourishing industrial base. The presence of large number of private engineering and management colleges is largely instrumental in creating a significant pool of technical and management workforce in the State. The biotech education sector has yet to witness the private participation comparable to other education field.

The rapidly burgeoning education Sector presents lucrative opportunities for private investors to collaborate in State and National building efforts integrated with commercial and profitability feasible business venture offering substantial return on investment.

The Institute of biotechnology offers and lucrative investment venture for the private sector. Apart form the operational revenues the private partner would also be eligible for a major part of the royalty that would be generated by the propriety research via selling of Patents rights, tech-transfer and other intellectual property of the institute.

On conservative estimates the Institute would offers an estimated IRR of 12.2%.