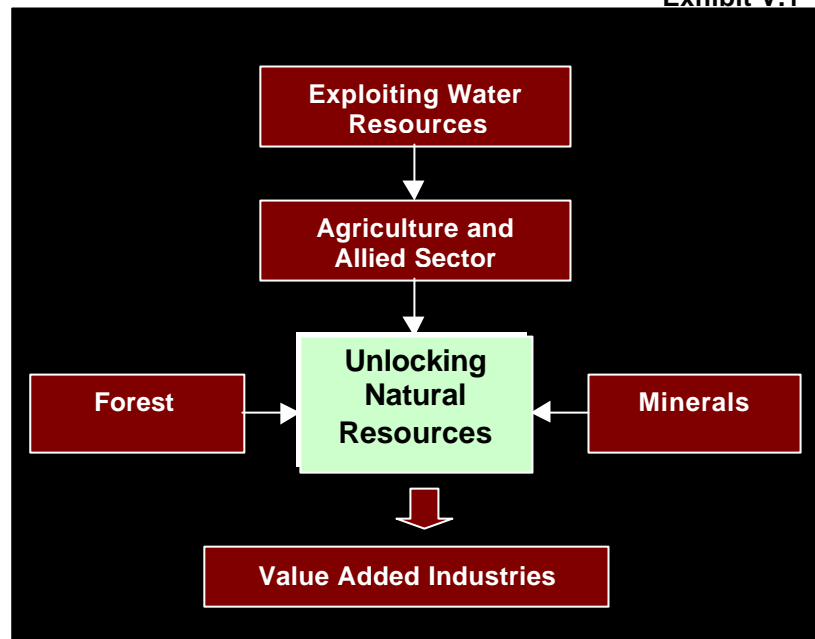


**V UNLOCKING NATURAL WEALTH**

**R**ealising the true potential of natural resources (Exhibit V.1) in Chhattisgarh would be one of the most immediate priorities of the State. This would ensure economic benefits to more than 3/4th of the population and help create large markets within the State that would help propel growth in the secondary and the tertiary sectors.

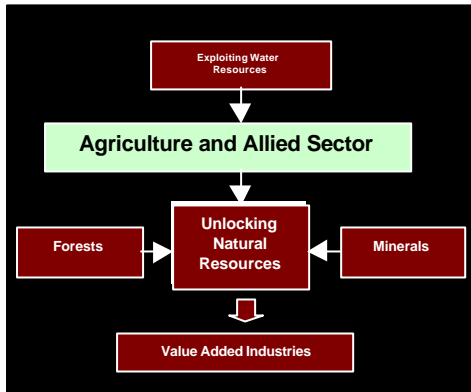
**Exhibit V.1**



Unlocking the true potential of the natural resources would be contingent upon the State's ability to address the issues facing agriculture, forestry, minerals and the water resources sectors as follows:

- Agriculture is the primary occupation of the people of Chhattisgarh. About 80% of the population depend on it for their livelihood. It is thus vital to the economy of the State, and any initiatives undertaken in this sector would have a lasting impact on the economy. Water being an important input for sustaining agricultural activities, its effective utilisation becomes vital for economic development. Chhattisgarh has sufficient water resources, but this resource largely remains untapped. In terms of the irrigation potential, it is estimated that 43-lakh hectare area can be irrigated as against the existing irrigation potential of 1.34 lakh hectare
- Forestry has a significant role in the economic development of Chhattisgarh. 44% of the State is covered with forests, ranking it third in India in terms of forest cover. The State boasts of an abundance of minor forest produce like Tendu leaves, Sal seed, Myrobolan, Mahua seed, gum, etc., which have enormous economic potential

- Chhattisgarh has not fully realised the potential of its abundant mineral wealth. The presence of vast reserves of coal, iron ore, limestone, diamond, etc. have positioned the State second in the country's list of mineral producing states



The reasons behind the low contribution of the agricultural sector towards the economy are manifold. Directing the State's energies and resources to search for a long lasting solution will be the constant endeavour of the State

## 5.1 AGRICULTURE AND ALLIED SECTORS

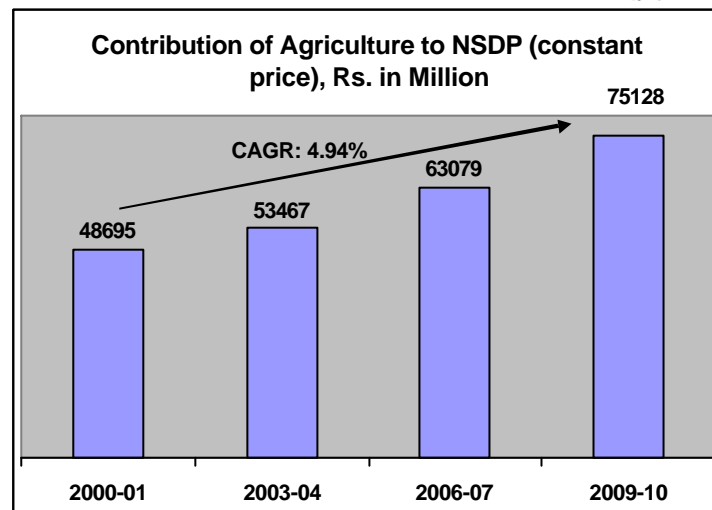
An improvement in agriculture and its allied sectors would help raise the income levels of the people dependent on this sector. This would thus create a large market within the State that would spur and sustain the economic growth in other sectors.

### Targets – Vision 2010

In order to improve the fortunes of agriculture and allied sectors, the State has set the following targets for itself:

- Reorient the current cropping pattern in the State
- Increase the contribution of agriculture to the State NSDP by over 50% over the next 10 years (Exhibit V.2)
- Increased yield in line with the increase in cropping intensity
- Move from single cropping to multiple cropping with focus on cash crops
- Greater emphasis on development of the allied sectors, especially animal husbandry

Exhibit V.2



### Current Situation

In order to meet these targets, the State has also prepared a time bound action plan. This action plan is based on a comprehensive understanding and analysis of the current situation captured in an Issue – Root Cause – Impact analysis presented in Exhibit V.3 overleaf. The illustration highlights the present situation of the agricultural sector:

- **Low productivity of land under cultivation –** Agricultural yield in Chhattisgarh is lower than the all India figures and compares poorly with states like Punjab.

The State has started a new scheme called “Indira Gaon Ganga Yojana”, which will provide an assured source of water supply to every village by pumping up the available ground water and augmenting traditional water resources

The low level of agricultural produce negatively impacts the contribution of the agricultural sector towards the State’s economy. Currently, farming techniques prevalent in the region are outdated. Technology, best practices, better implements, etc. have yet to change the lives of most farmers in the State.

• **Complete dependence on monsoons –**

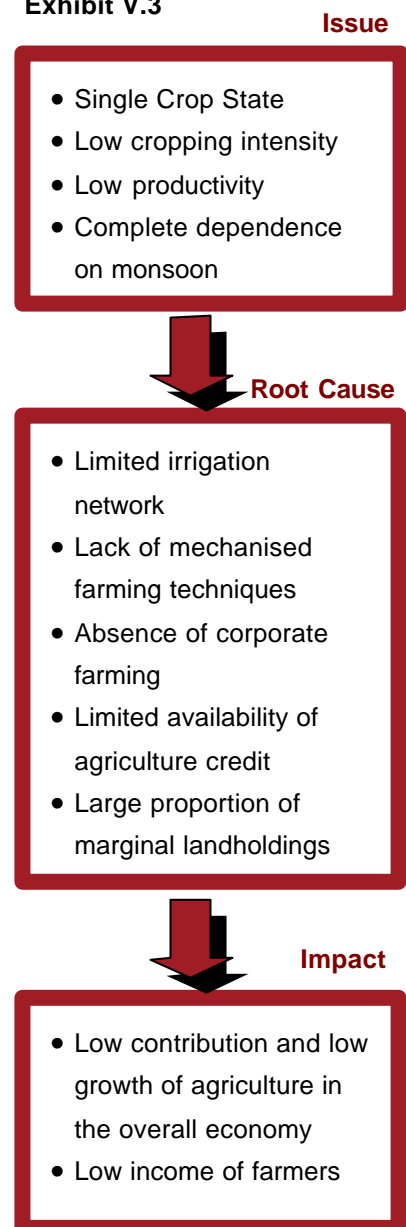
The limited irrigation network in the State has made the farmers completely dependent on rainfall. The vagaries of nature coupled with an ignorance of modern weather tracking techniques have culminated in the farmers being left to the mercy of nature. Further, since most of the farmers currently follow a single crop pattern, total dependence on the monsoons threatens productivity and as a result, their economic situation. Low number of irrigation pumpsets in the State further compounds the problem.

The regular occurrence of drought in the rice bowl of India is a serious concern for the State. It has already started a new scheme called “Indira Gaon Ganga Yojana”, to provide assured water supply to every village by pumping up the available ground water and augmenting traditional water resources

• **Low intensity of cropping –**

The cropping intensity in the State is on the lower side. Considering that the cropping intensity of Punjab is 183% as compared to that of Chhattisgarh’s 117%, it is evident that the State would have to make a concerted effort to increase the same

Exhibit V.3



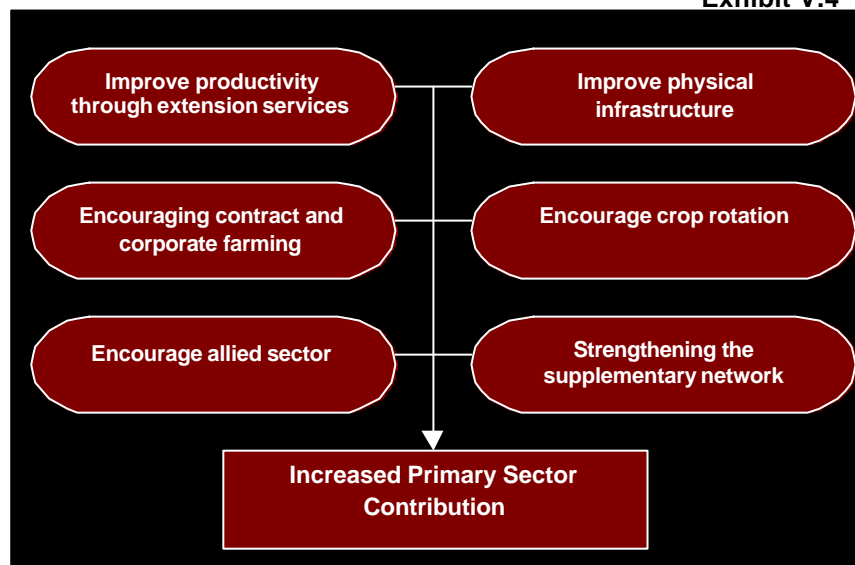
As indicated, better management of Water Resources would be critical to tap into the true potential of the agriculture sector. Besides this, sufficient Water Resource is also the key to the development of industries. Accordingly, Vision 2010 lays considerable stress on the development of this sector. An action plan for the development of the State's water resources is discussed at the end of this section.

**Action Plan**

As already discussed, in order to meet the targets and address the issues facing this sector, the State has prepared an action plan (Exhibit V.4) which is explained below:

It is essential to provide increased access to market information, insect and weather forecasts, latest soil management information, post-harvest technology with technical inputs, competitively priced farm machinery, seed development and production, and funds for farm animal breeding

Exhibit V.4



- Improving productivity through extension services**  
 About 30% of the farmers own 70% of the agricultural land and the State would immediately focus on them to maximise the impact of its schemes. In this regard the State would:

*Provide access to information* – Information would be the most precious commodity in the years to come, more so in a State dependent on a single crop. Additionally, the poor irrigation network in the State makes access to forecasting techniques (to provide warning signals) even more vital.

It is essential to provide increased access to market information, insect and weather forecasts, latest soil management information, post-harvest technology with technical inputs, competitively priced farm machinery, seed development and production, and funds for farm animal breeding. This would require capacity building of Directorate of Agriculture and institutions such as Mandi Boards, etc.

**Exhibit V.5  
Genetically improved rice  
variety**

The International Rice Research Institute in the Philippines has developed a new strain of super rice capable of boosting yields by 25%, amounting to an extra 100,000,000 metric tons a year - enough to feed an additional 450,000,000 people.

**Source: PwC Research**

**Exhibit V.6  
Biotechnology Park for Women  
– Chennai**

The proposed park at Chennai will be designed based on the decentralised production by appropriate centralised promote a series of high biotechnology based aiming to capture a number of markets in the areas of Ag-Food biotech, Medical biotech. When fully developed this Park consist of industrial centres, ultra modern information complex, quality verification reference etc. The R&D institutions, corporate sector and the institutions would assist the entrepreneurs in achieving objectives of the Park. The aimed at serving as a model to the technological and empowerment of

**Source: PwC Research**

The State would attempt to emulate the success of a large country like China, in using extension programs to demonstrate new technologies and methods to the farmers.

*Agriculture biotechnology* – Modern biotechnology helps create combinations of genes to emphasize certain traits. Various techniques like animal vaccine production, pest control etc., are already in use. The judicious use of the various technologies available, would be an effective means to the end of maximising productivity.

For instance, the use of biotechnology to develop plants that are inherently more pest resistant, would enable the farmers to reduce the use of chemicals and contribute in their own way to the global fight against environmental degradation. In addition, bio-engineered crops are being designed to increase yields (Exhibit V.5).

The State in its attempt to adopt new technologies and processes, which are relevant to the climate and topical needs, would learn lessons from pioneers in the field. Israel, remains the leader as far as agricultural biotechnology is concerned and is spawning radical business models on the back of original research in genome technology. Non-government spending on R&D in Israel as a percentage of its GDP is also among the highest in the world at 2.6% (Japan is the leader with 3%). Israeli biotechnology has evolved to a level where it can grow tomatoes from underground reservoirs of somewhat salty water and sell it in the winter markets of the US and Europe.

Given the large share of agriculture in the domestic product of the state and the significant forest cover, the Government will promote Biotechnology as a service industry to further enhance the potential of the State.

Government will encourage research organisations, service providers as well as companies involved in commercial production of these new products.

Raipur will be promoted as the center for Biotechnology development for the state given the existence of Indra Gandhi Krishi Vishva Vidyalaya, which would provide the necessary trained workforce. It would cater to the core infrastructure needs of individual enterprises, which develop and commercialise products and patents. The Biotechnology Park would foster both research laboratories as well as service providers. Exhibit V.6 illustrates one such example.

*Education and Training, Research and Development* – The presence of institutions concentrating on the dissemination of agriculture focused education, would be a foundation upon which the State can capitalise its

The State would explore innovative methods of cropping techniques viz. breeding of crop varieties that can withstand adverse conditions like more drought resistant sorghums and millets, and soil nutrient cycling through crop rotation

strengths in the primary sector. The State has already decided to set up three agriculture colleges and sixteen agricultural polytechnics during 2001-02.

Concurrently, the human resources in the universities would also have to be augmented. For instance there are only eleven professors in the Indira Gandhi Agriculture University at Raipur. This number is woefully small to fully concentrate on teaching activities as well as driving the research activities in the State.

The State would also introduce various vocational courses to ensure that the farmers are capable of repairing and maintaining their own implements, and are in a position to make an educated and need based choice regarding purchase of new equipment.

The industry-education linkage would be strengthened to benefit the farmer as well as further develop agricultural education in the State. The farmers would benefit monetarily from training with an industry focus. The State would also explore the possibilities of introducing agriculture-based courses in the school curriculum to disseminate information on modern farming techniques.

Training landless labourers would equip them with professional skills leading to their empowerment as well as an increase in the yield of land they work on. The State would invest a substantial amount of capital towards researching new methods and techniques, keeping in mind the local needs and environment.

The State is already engaged in the promotion of better variety of seeds; "Vandana" (an improved pedigree of paddy) was distributed in a recent gathering of farmers, at the Indira Gandhi Agriculture University

- **Improving physical infrastructure pertaining to the irrigation system, transportation and cold storage**  
*Irrigation and water management* – In a State with poor irrigation network, water conservation and optimum usage techniques are vital. Watershed development and rainwater conservation are important factors contributing to the increase in agricultural output. With water table levels going down in many places, awareness of the above assumes significance. With the development of a well-designed canal network complemented by a system of dams, the State would be able to move towards a multi-cropping system eventually. The relevance and utility of check dams would also be explored, to provide solace to a large spectrum of farmers at a considerably reduced cost.

The low level of created irrigation potential in the State is a cause of serious concern. Water available in the State currently can be successfully harnessed to irrigate 75

**The State has already prepared a horticulture master plan, since the climate is ideally suited for promoting horticulture on a large scale. Implementation of the master plan would provide additional income to 25 lakh people in the State**

percent of the cropped area. The actual irrigation potential that has been created covers just about 23 percent of the net sown area, against which the actual utilisation is only 16 percent.

The irrigation management experiment in Indonesia is based on the participatory model. Participatory programs enable changes like more equitable block-level water distribution, quality and appropriateness of construction, etc. It has resulted in improvements in planning operations, optimisation of resources and local cost sharing. Since it is an interactive process, the farmers have a stake in the outcome. For example, the labourers of the Berla sub-division of Durg district have set a precedent by contributing a part of their income to help dig four tube-wells, consequently raising the water level. This is a part of the works being undertaken under the Rajiv Gandhi Watershed Mission programme.

*Transportation and Storage facilities* – Efficient transportation and storage systems are important to a State focussing on the primary sector. The ease of transfer of goods from the area of production to the place of consumption would determine its final value. In the absence of good storage systems, the produce may be unfit for consumption thus negating the production efforts. Sanitation levels and the method of cold storage would be monitored periodically. The network of warehouses across the State would be scientifically mapped based on production and marketing centres in the state to enable the optimum utilisation of the existing as well as the establishment of new ones if needed.

- **Encouraging contract and corporate farming**  
The introduction of corporate and contract farming in the state, would be a step towards making farming more professional and organised. It would also be an indication that the State is willing to move ahead with the changing times. The new systems of organising labour and small to marginal farmers would help in improving productivity. Along with the professionalism that such practices breed, the farmers would also be exposed to the successes and failures of new technologies. Corporate farming would involve the interaction of different sets of people all working towards the goal of maximising the yield from the land. Contract farming on the other hand would enable the landless and small farmers to sustain their livelihood, at the same time drawing upon local know-how to maximise produce.
- **Encouraging crop rotation**  
*New-cropping techniques* – The low intensity of cropping in the State could have a serious impact on the economy of the State owing to the large number of people engaged in agriculture or related practises. The State would explore innovative methods of cropping

**The allied sectors of horticulture, floriculture, sericulture, pisciculture, poultry farming and dairy products constitute an attractive option to develop the allied sector. This would serve as an effective source of income, without shifting the focus from the primary occupation**

techniques viz. breeding of crop varieties that can withstand adverse conditions like drought resistant sorghums and millets, and soil nutrient cycling through crop rotation. Also care would be taken to implement integrated crop management strategies to control pests and diseases and maintain soil fertility.

The State would also pay special attention to upgrading the existing post harvest practices. For example, for thrashing paddy, bullock drawn stone rollers are still in use. It has been estimated that in rice, the post harvest losses account for about 20% of the total production. The need for applying relevant technology would be addressed so as to maximise the benefit of the produce. The State would also take steps to prevent the common and basic problem of open grazing. Most of the damage done to standing crops is due to the ineffective management of cattle. A clear demarcation of grazing land would also be effective in safeguarding the crops.

- **Encouraging allied sectors**

The allied sectors of horticulture, floriculture, sericulture, pisciculture, poultry farming and dairy products constitute an attractive option to develop the allied sector. This would serve as an effective source of income, without shifting the focus from the primary occupation. The allied sector has been developed in many countries to strengthen the rural economy. For example, the British government's long-term policy to promote the allied sector is to secure a more competitive and sustainable agricultural industry with a strong market orientation. In keeping with the above, the State would encourage and support farmers to develop sustainable business enterprises contributing to the rural economy and environment.

Intensive pisciculture techniques like pond cultivation as well as re-circulation of water would be employed to develop this sector in the State. Intensive pisciculture has been practised in canals, ditches, abandoned mines and quarries, etc., the world over. Success has been reported from China, Israel and Egypt among others are actively exploring new avenues.

The State would explore the option of setting up herbal villages in suitable locations. It would be a feasible option due to the increase in demand for herbal derivatives in the manufacture of cosmetics, skin care products, protein supporting food products.

The State would also encourage allied activities like agro-processing, cattle rearing, mushroom farming, bee keeping, etc. However, the potential of dairy products cannot be realised without a substantial amount of investment to improve the cattle breed as well as the

The State would improve the existing infrastructure of 'haats' and 'mandis'. Conglomerations of well planned trading spots all over the State would enable farmers across the spectrum to have access to an organised market

quality of cattle fodder.

Since the climate in the State is ideally suited for promoting horticulture on a large scale, a horticulture master plan has already been prepared. Implementation of the master plan would provide additional income to 2.5 million people in the State, for which the proposal worth Rs 2450 million has already been sent to the Union Government. The region is suited to the growth of mango, banana, guava, papaya, custard apple, pomegranate, tomato, brinjal, okra, cabbage, cauliflower, potato, leafy vegetables, etc. Since mangoes grown in the region tend to mature 2-3 weeks earlier than in Northern India, there exists a tremendous potential in using this advantage to gain market share.

- **Strengthening the supplementary network**

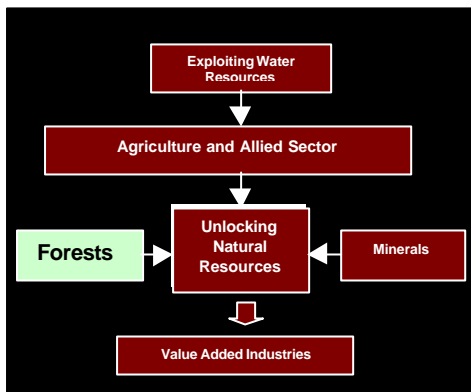
*Markets for the produce* – The State would improve the existing infrastructure of 'haats' and 'mandis'.

Conglomerations of well planned trading spots all over the State would enable farmers across the spectrum to have access to an organised market. This will obtain the best market price for their produce. The long distances that farmers have to traverse to sell their produce would also be shortened resulting in a better price. The security of obtaining a fair market driven price for the produce would also act as an incentive to follow better practices.

*Credit facilities* – Farmers would be supported by credit schemes initiated by the government. Providing tailor-made agriculture credit policies would give a choice to every farmer in the State. A free and fair market would ensure competitive pricing and an incentive to improve the quality and quantity of the yield. The Minimum Support Price offered by the government would be security for the farmers, and the potential to gain a better price would drive farmers to employ better farming practices.

*Institutional mechanisms* – The State would strive to position Chhattisgarh as a potential leader in the primary sector. The orientation of the target markets would be moving outwards after the initial consolidation.

Institutionalised attention to this would enable the setting up of marketing bodies, agro-finance institutions, and the promotion of wasteland development and agro/ food based industries. The State would take steps to integrate the working of the various bodies in the sector to achieve this.



**Exhibit V.7  
Finland – A case in point**

The net exports from the forest cluster in Finland are about 50% of the total exports. The assets cited to account for Finland's expertise in this area is high production technology and a professional work force. The Forest Certification System in Finland has aided the development and contribution of forest produce to the economy. A start to the development of Finland's National Forest Certification Council, (which introduced the Finland Forest Certification System) for sustainable forest management was made in 1996. By 2000, the system was adopted throughout the country and by 2001, 95% of the forests are under the FCCS umbrella. The industry is based on family forestry with about 62% of the lands owned by private forest owners (taking family members into account, every fifth Finn helps take a decision on forest matters)

**Source: PwC Research**

**5.2 FORESTS**

Forests contribute more to the environment than most other natural resources. Often referred to as the lungs of an economy, the efficient management of forests would lead to the flourishing of the State's 'health'.

The Great Indian Sal belt, which extends right through the length of the State, has tremendous economic potential for the people (Exhibit V.7 gives the example of Finland, where forests contribute significantly to the economic development of the country). Since forests cover a large portion of land in the State, and is also one of the primary sources of livelihood for most tribals in the State, harnessing its true potential is a key imperative for development in Chhattisgarh.

**Targets – Vision 2010**

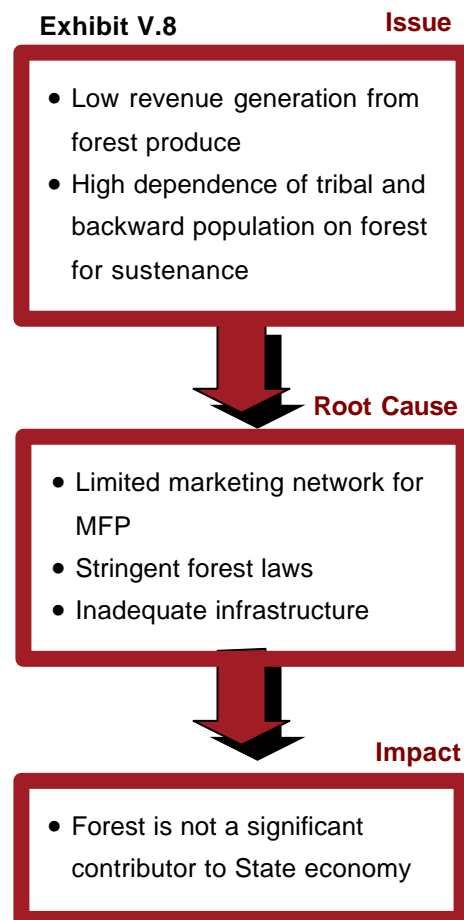
In order to address this imperative, the State has set for itself the following targets:

- Achieve a fivefold increase in the revenue from minor forest produce to reach approximately Rs10,000 million
- Develop 100% of the degraded forest area
- Strengthen the co-operative network of the State

**Current Situation**

To realise these targets the State has devised an action plan, which is centered on the principle of sustainability. The action plan is based upon a comprehensive analysis of the current situation of the State depicted in Exhibit V.8, and is briefly discussed below:

- **Low revenue generation**  
The vast resources of the State are hugely under-utilised as is apparent from the quantum of revenues collected. The inadequate marketing network in the State has also stymied collection efforts. Lack of information and knowledge on the potential of forest along with the absence of processing units limit the revenue potential



**Exhibit V.10  
New Paradigm in the National  
Forest Resource Management  
- Indonesia**

The **vision statement** of Indonesia for its forest is 'equal and democratic forest management for the people's welfare based on the natural resources and ecosystem conservation'. The efforts taken in this regard were:

- To develop a mechanism to recognise people's rights on the forest areas, and to develop and utilise the local institutions in the forest management to help improve the local economy
- To change the system of bureaucracy from the power oriented to public service oriented
- To change the forest management system from timber management to forest ecosystem management
- To implement the decentralisation of decision/policy making in the allocation and management of national forest resource
- To implement the equal and transparent forest management policy in an accountable manner
- To improve the participation of local people in making accountable and transparent decisions of the national forest resource management
- To develop a system for the people to monitor the national forest resource
- To utilise the forest conservation, sustainability and economy oriented forest managers
- To improve the productivity of the forest to support the availability of raw material and job opportunities

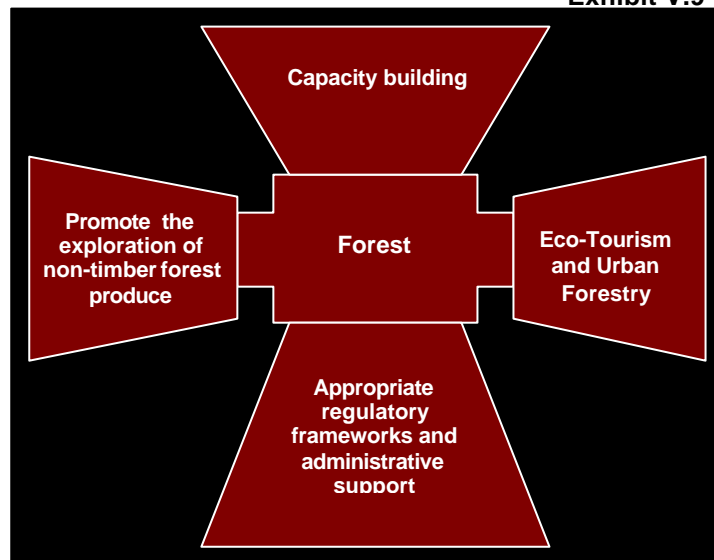
**PwC Research**

- **Inadequate infrastructure**  
Poor level of physical infrastructure in the State especially with respect to transportation facilities has resulted in the fact that forests in the State does not significantly contribute to the livelihoods of its people
- **High dependence of tribals on forests**  
The tribal population of Chhattisgarh have traditionally utilised the forest as a major source of their income. With little development of physical infrastructure in the State, they have had no option but to remain limited to their regular geographical areas of activity. Thus the resources have steadily depleted and fresher pastures have not been explored

**Action Plan**

The action plan that the State would follow (Exhibit V.9) to address the issues in the forest sector is discussed below:

**Exhibit V.9**



- **Promote the exploration of non-timber forest produce**  
The most common problem faced by forests the world over is the indiscriminate felling of trees. A major task before the State would thus be the prevention of potentially escalating rates of deforestation. Issues like global warming, depletion of forest cover, etc., have come to the forefront in recent years owing to such activities

There is a large amount of forest area in the State that is yet to be explored, as an alternative to timber based forest exploration. Medicinal plants, bamboo, lac, honey, etc., are potential areas that would be developed to create opportunities for gainful employment and development of small/ cottage industries

### Exhibit V.11 Andhra Pradesh - A Success Story

Joint forest management seems to have taken root most strongly in the state of Andhra Pradesh. Several features of the Andhra Pradesh program distinguish it from other JFM programs:

- Funds for forest work are transferred directly to the village committees, increasing their sense of ownership in the program. The committees also get 100 percent of the incremental production of timber and are required to invest half of that in the village fund, thus ensuring sustainability
- JFM is not merely confined to the Bank villages; in addition to 1,665 villages funded by the project, Vana Samarakshana Samithis (forest protection committees) have been formed in 4,606 more villages
- The program is also being funded from the poverty alleviation budget of the Rural Development Department, which has enabled the state to scale up the efforts of the project
- The Forest Department, down to the lowest levels, has strong commitment to participatory methods, thanks to vertically integrated training programs and continuity of excellent leadership
- Unlike other states, in Andhra Pradesh there is a strong emphasis on involving the press with the visit of senior officers and politicians to the villages allowing for publicity of the good work done **(Contd.)**

For instance, the Government of Orissa has estimated the MFP industry in Orissa to be worth Rs 50,000 million. Thus Orissa has declared its focus on the proper collection, processing and marketing of MFP's. Chhattisgarh with a large forest cover would be in a position to aim for similar levels of collection

- **Appropriate regulatory frameworks and administrative support**

The State realises that appropriate intervention at the policy level would help spur the contribution from the forests (Exhibit V.10 on the previous page profiles the vision Indonesia has for the effective utilisation of its forest). A viable forest policy, which is time bound, would address the needs and sensitivities of the tribals. The policy would follow a clearly set out strategy to promote the development and judicious use of forests

A Minor Forest Produce Costs and Prices committee in Chhattisgarh, is a first probably by any State government in India. It would recommend the Minimum Support Price (MSP) for all MFP except tendu leaves. The objective of the committee is to promote competition in MFP procurement while at the same time protecting tribal interests in *haat* bazaars

- **Capacity building**

The State would undertake capacity building exercises of institutions involved in the conservation and management of forest and forest produce. It would specifically take steps to strengthen the procurement and marketing linkages of Chhattisgarh MFP federation in order to increase the revenue generated by MFP in the state

It would also take steps to encourage and educate cooperative societies to set-up primary processing centres for forest produce so as to achieve higher value addition and it turn revenue. It would also look at ways (Exhibit V.11 briefly profiles successful JFM initiatives in Andhra Pradesh) of strengthening the functioning of the JFM network in the state

The 'hareli saheli' programme is representative of the State's approach to the development of degraded forestland by giving the right to use of the degraded land to local people. This would, besides creating additional forestland, also generate an additional source of revenue for local inhabitants. Active involvement of women in this programme would be encouraged with women panchayat members being specially trained with the involvement of NGOs

The State would also attempt to adopt professional forest management practises; for instance a well planned fire

### Exhibit V.11 (Contd.)

- The committees have the power to dispose off timber and bamboo in the open market through auction
- Eight hundred NGOs are participating in the project
- Political commitment for building community participation is strong in the state and the leadership sees political mileage in vigorously pursuing the agenda for building up local communities and for decentralisation

An evaluation by independent consultants (1998) showed that 88 percent of the committee members had participated in the Janma Bhoomi program (a program of social mobilisation started by the present chief minister), which required people to make personal donations or provide manual labour before the government released funds to the communities.

**Source: PwC Research**

**Ecotourism is the fastest growing market in the Tourism Industry with an annual growth rate of 5% worldwide and representing 11.4% of all consumer spending**

fighting procedure. This would aid the preservation of the forest wealth, and ensure the long-term sustainability of the forests' natural resources

Apart from the above, detailed research and relevant training and education about the scientific and professional forest management techniques would be made available. This would require serious capacity building and investment in research and development activities, coupled with a close co-ordination with academic centres for inputs

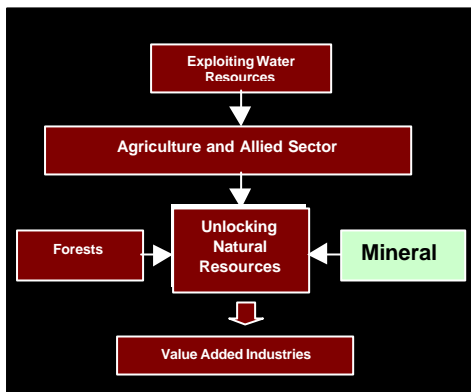
- **Develop Ecotourism and Urban Forestry**

Endowed with an extensive forest cover and a rich cultural heritage, Chhattisgarh has the potential for further developing its tourism industry. The primary objective of the Government of Chhattisgarh is to promote *Sustainable Tourism*- a scientifically based approach to the planning, management and development of sustainable tourism products and activities in the region

The State would undertake an extensive exercise of marketing tourism in the state starting with the theme of Ecotourism. The state with its rich and diverse flora and fauna will be positioned as an Eco tourism destination as well. Bastar District has been identified as a bio-diversity zone after the African countries. Certain Indian rare species and varieties of plants and trees are found here. Bastar along with the neighboring districts of Dantewada and Kanker will be promoted as destinations for Ecotourism

The State would launch entrepreneurship development and self-employment programs for providing various tourist facilities. The emphasis would be on strengthening small and medium enterprises, particularly micro enterprises to enable them to successfully engage in the tourism industry.

The State would also promote the concept of Urban Forestry through community officials and allied agencies. Programs would be launched to plant trees along roads, railway lines, rivers and canals etc. An Urban Forest Cell would be setup to provide direct assistance to local communities, provide technical assistance to manage the urban forests and expand educational capabilities to increase the understanding of urban forests



**With over 20 kinds of major and minor minerals present in the State, Chhattisgarh ranks third in terms of mineral potential among all the states**

### 5.3 MINERALS

With over 20 kinds of major and minor minerals present in the State, Chhattisgarh is the leader in terms of mineral potential among all the states. However, during 1999-2000, the State produced minerals worth Rs 35,690 million, which is only about 14.14% of the country's total mineral production – reflective of the under utilisation of the vast potential.

There exists a vast deposit of coal in the State, which is estimated to be enough for generating almost 50% of the country's additional power requirements. Chhattisgarh alongwith Jharkhand and Orissa constitutes over 80% of the coal reserves in the country. However, the long overdue revision of royalty rates on coal by the Central Government has limited the growth on revenues from coal to the State.

In India, the increasing levels of consumption, infrastructure development, a growing economy, etc., is likely to spur the demand for minerals especially minerals and precious stones. This would make exploration of minerals in Chhattisgarh an attractive option.

Internationally, the long-term trend in most commodities prices remains downward. However, countries with limited resources but favourable social-political climates are jumping the exploration queue. This worldwide urgency is indicative of the action Chhattisgarh would need to initiate to tap into the potential of this sector.

#### Targets – Vision 2010

In order to harness the potential of this sector, the State has set for itself the following targets:

- Double the contribution of minerals to the NSDP from the current level of Rs.12,000 million
- Ensure occupation and shelter to all tribals affected by mineral exploring activities

#### Current Situation

The action plan that the State has prepared to meet the above target is based upon a comprehensive analysis of the current issues facing the section illustrated in Exhibit V.12 (overleaf) and is discussed briefly below.

- **Forest cover and physical infrastructure**  
A large amount of land in the State is under the cover of forests. This factor has limited the scope of mining. The infrastructure for the mining industry is also limited. This has resulted in the presence of huge tracts of laden deposits but absence of modern implements or aids to help explore the same. The large distance from cities and transport nodes in the State is also a major inhibitor to attracting a large private sector presence

To attract private sector investment in the sector, the State would frame investor friendly policies, lay emphasis on value addition, and simplify minor mineral exploration rules

- Lack of policy initiatives**  
 The absence of any organised and planned initiative till date has resulted in the mineral wealth of the State being underutilised

**Exhibit V.12**

**Issue**

- Largely untapped mineral wealth
- Limited exploration activity
- Most development is State driven

**Action Plan**

In order to address the above issues and meet the target set for itself, the State would take a number of initiatives, highlighted in Exhibit V.13 and discussed below:

- Policy initiatives**  
 In order to attract private investment in this sector, the State would frame investor friendly policies, wherein the focus would be on providing quality escort services and shortening the time frame for processing approvals at district and state level.



**Root Cause**

- Limited Physical Infrastructure
- Lack of focus and policy initiative
- Limited focus on exports – landlocked State
- High forest cover and large mineral area under occupation of tribals

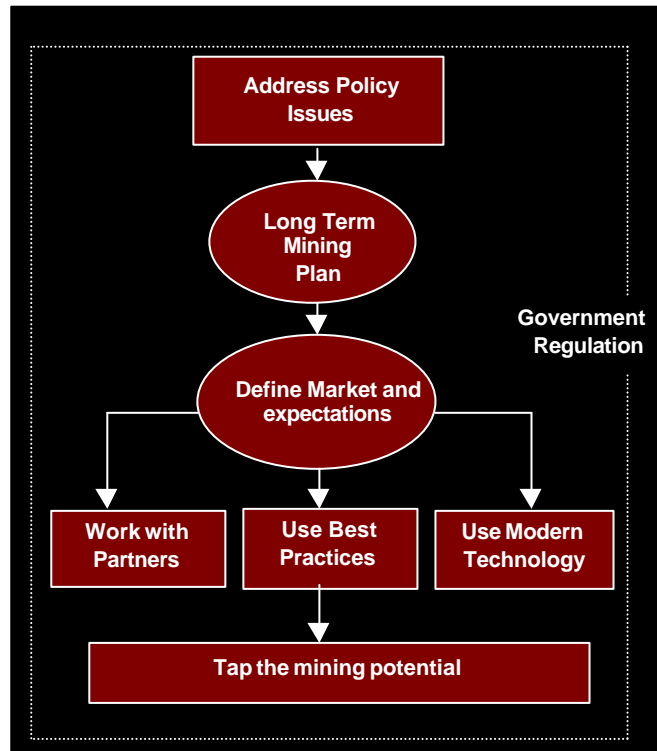


**Impact**

- Limited contribution of minerals to the NSDP

The overall objective of the policy initiatives would be to ensure that scientific

**Exhibit V.13**



### Exhibit V.14 Mining in Australia

The *Australian* coal industry has driven down the costs by 15-20 per cent over the past two years and the iron ore industry has reduced costs by 16 per cent. Australia was the world's third largest producer of gold with an output of 303 tonnes in 1999. In 1980, the output was 17 tonnes and by 1990 it had soared to 244 tonnes. The increase in production was fuelled by developing new infrastructure for mining finance, complete with gold loans, hedging and the adoption of technology. Low-grade pits that could be brought quickly into production turned profitable within a year and were at the heart of the boom that ultimately took Australian production to a record high of 313 tonnes in 1997.

The *Western Australian government*, keeping in mind the need for judiciously utilising its natural wealth, has made 'performance bonds' (bank guaranteed security deposits) as a guarantee from enterprises for restoring mined areas. The deposits are generally greater than the restoration costs.

**Source: PwC Research**

exploration techniques are employed to optimally utilise its mineral wealth. This together with ensuring mine safety measures and minimising the adverse effects of mining on the environment would put the State on the path of sustainable mining practices. It would look at successful examples of other countries such as Australia, (Exhibit V.14) while developing policies and initiatives for the sector.

The State would frame a new policy for the sector aimed at encouraging private sector participation in mining activities on a "first-come first-served" basis and provide the necessary linkages for the smooth and uninterrupted development of the mining industry.

It would lay emphasis on value addition through promotion of processing units and mineral-based industries and encourage export of minerals. An effective system to check unauthorised mining and the leakage of revenue and simplification of the Minor Mineral Concession Rules would also be undertaken.

In order to smoothen the interaction of private investors, a State-level facilitation group would be set up, under the chairmanship of the Secretary, Mining to provide single-window clearance. The Chhattisgarh State Mining Corporation would be set up.

The State would also provide escort services for setting up mineral-based industries by the Mining Special Assistance Cell to be established in the Directorate of Mines and Geology. The State would give priority to enterprises that will set up processing and beneficiation units in the State.

The State would also simplify minor mineral rules applying to granite, a major export item, with a focus on exports, conservation, modernisation and training of quarry workers.

The State would set up a policy implementation committee for policy review and implementation. Apart from overseeing policy implementation, it would also be responsible for supporting the efforts of the State Investment Promotion Board, the nodal agency for attracting and approving investments in the State. Besides this, the committee would also constitute action groups at the district level to prepare action plans for mineral exploration etc.

- **Prepare a mining plan**  
The State would prepare a long-term mining plan that would:
  - Map the potential mining sites completely

### Exhibit V.15

#### Revitalising Mining – African Experience

Africa has great geological potential, but the vibrancy of the mining sector, until very recently, has not been commensurate to this potential. The fundamental problems in most countries have been: lack of an attractive enabling environment for private sector investment in mining; paucity of updated geological information systems; inadequate or non-existent environmental regulations and standards; and insufficient human skills and capacity to effectively administer this sector.

State of affairs began to change in the early 1990's. Certain countries, notably Ghana as a leading example, undertook significant reforms towards the mining laws and the organisation of the sector. The result has been a remarkable growth in new investment and gold production. Mining sector reforms, have since been emulated by many other African countries, with equally positive results. For instance, production of gold in Mali had increased from just 1.5 metric tonnes in 1990 to nearly 20 metric tonnes in 1998.

The above has been achieved by reforming mining legislation, upgrading mining taxation to internationally comparable standards, strengthening institutions through re-organising government agencies responsible for supervision of the sector and training of public and private sector officials, putting into place mining title registries and land management systems, creating of earth and environmental science database management systems, improving technical, environmental and social conditions of small scale miners and privatising State owned enterprises and providing funds for geological cartography, geochemistry and geophysical surveys as well as remote sensing imagery

**Source: PwC Research**

- Prioritise mining areas based on potential, suitability to cluster mining, small scale mining etc., density of forest cover and existing infrastructure
- Prepare an infrastructure development plan in association with CIDC so as to ensure physical infrastructure is not a bottleneck for future development of the sector
- Update land revenue records of potential sites
- Prepare initial technical studies for exploring the potential mining locations

- **Forge partnerships and develop an export focus**

Although all efforts would be made to encourage setting up of mineral processing units within the state, the State recognises the need to focus on export of minerals, as there may not be enough domestic markets to fulfil the demand for the total mineral potential in the State.

The State Minerals Development Corporation would be encouraged to forge partnerships with other countries and state for creating market for exports. While processing applications for setting up processing units in the State, priority would be given to units with a potential for generating exports both internationally and nationwide

- **Concentrate on full utilisation of coal, iron ore and diamonds**

The State realises its strengths in terms of its minerals potential. Coal is available in abundance and has the potential to contribute to both the mineral revenues and the generation of power.

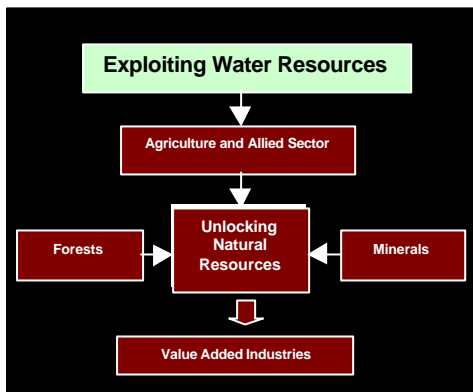
The potential from diamonds, which form a very important source of revenue and export for the state, is also high. It is projected that, if its diamond production potential were fully exploited, Chhattisgarh would become a major contributor to the World Diamond Trade. The State would encourage setting up of gems and jewellery parks in the State to attract new investment in the sector and reap the benefits of value addition

- **Create a world class standard of mineral production**

The State would strive to set best-in-class standards in mineral exploration, extraction and value-added services. In order to achieve world class standing, the State would begin by creating a database management system of earth and environmental science (Exhibit V.15 profiles similar initiatives of some African countries in developing the potential of mining in their countries). This would aid any foray into exploring new avenues.

The serious and vital issue of improving the technical, environmental and social conditions of small-scale miners would be tackled on a priority basis. Once the stage has been set by the above, the State would either

provide or seek funding for geological cartography, geochemistry and geophysical surveys and also for remote sensing imagery equipment. This would help in obtaining an updated estimate of the actual size of forest cover in the State, so that maximum possible utilisation of the mineral rich areas is undertaken



**Aware of the importance of water resources, the State has accorded high priority to the development of the sector by assigning more than 20% of the State's plan budget to the sector during the year 2001-02**

## 5.4 WATER RESOURCES

The importance of water as a catalyst for the development of a region or a State cannot be understated. This is particularly true for a State like Chhattisgarh, where almost 80% of the population is dependent on agriculture and allied activities for their livelihood. The agricultural sector contributes around 38% to the State's Net Domestic Product (Rs 84001 million out of Rs 219107 million in 1999-00).

However, despite the presence of abundant water resources, the State realises the urgent need to efficiently and effectively plan, develop and utilise these resources. This need is driven by the fact that in the irrigation sector, utilisation of irrigation potential is significantly lower than the national utilisation rate.

Aware of the importance of water resources, the State has accorded high priority to the development of the sector by assigning Rs 2464 million, i.e. more than 20% of the State's plan budget to the sector during the year 2001-02. The State is also aware that to improve the efficiency and effectiveness of the sector, there would be a need to bring about appropriate reforms. It also realises the need to involve the private sector to contribute financially and managerially to make the sector self sustaining.

The government has recently launched "Indra Gaon Ganga Yojna" under which provision of at least one dependable and environmentally sustainable water source in every electrified village in the State would be ensured.

As a step towards reforming the irrigation sector, Chhattisgarh has decided to continue with the 'Madhya Pradesh Sinchai Prabandhan Me Krishkon ki Bhagidari Adhinyam', 1999 or Madhya Pradesh Farmers' Participation in Management of Irrigation Systems (MPFMIS) Act. The Act sets out the framework of participation of farmers' in the operation and management of existing irrigation systems through a three-tier structure comprising of:

- Water Users' Association (WUA) at a primary level for minor canals which are part of a large project or for an entire minor project
- Distributory Committee at a secondary level for distributaries of a large project or for an entire medium project
- Project Committees at a tertiary level for a large project

### Targets – Vision 2010

In order to tap the complete potential of the water resources sector and ensure that it contributes to economic and social development, the State has set the following targets:

- 200 percent increase in the created irrigation potential
- 100 percent coverage of safe drinking water supply

**The agricultural potential in the State has not been fully exploited due to limited irrigation coverage leading to total dependence on the monsoons**

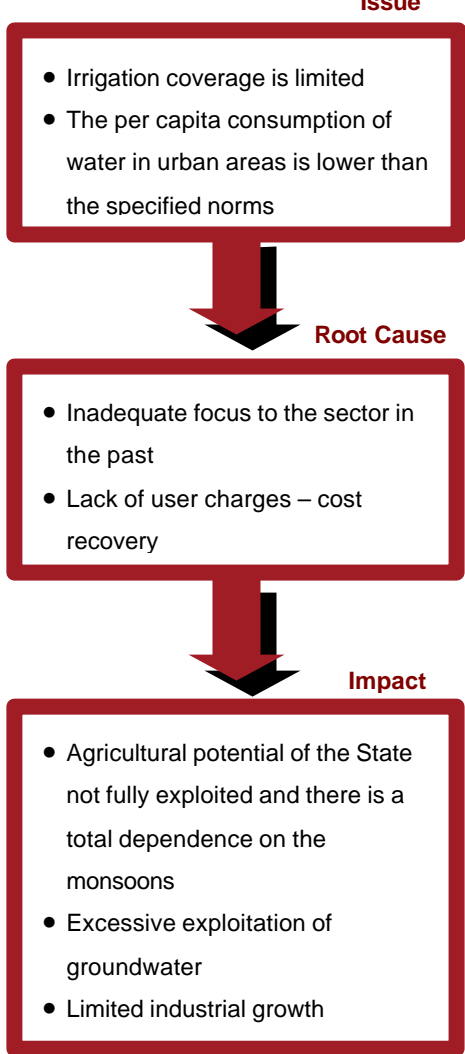
- All villages in the State to have at least one perennial source of water supply
- Tariff rationalisation – to cover at least the entire operation and maintenance cost
- Coverage of urban water service to meet prescribed norms. For example 140 Litres Per Capita per Day (LPCD) for cities possessing sewerage facilities

**Current Situation**

In order to meet these targets, the State has also chalked out a time bound action plan. This action plan is based on a comprehensive understanding and analysis of the current situation captured in an Issues-Root Cause-Impact illustration (Exhibit V.16) and briefly discussed below:

- **Low utilisation of developed water resources –** Though the State has an irrigation potential of 13.39 lakh hectare, the year-on-year actual utilisation of the designed potential is low especially for minor projects, primarily on account of poor maintenance of the canal system and inequitable distribution between head and tail farmers. There is also a very low number of irrigation pump sets in use, resulting in lack of proper consumption of the water resources
- **Inequitable development of resources –** The development of surface water resources in the State has been lop-sided with the index of creation of irrigation potential varying considerably from one district to another
- **Low coverage for urban water supply –** Though the State is purported to have sufficient water resources, the situation of urban water supply needs to be improved

**Exhibit V.16**

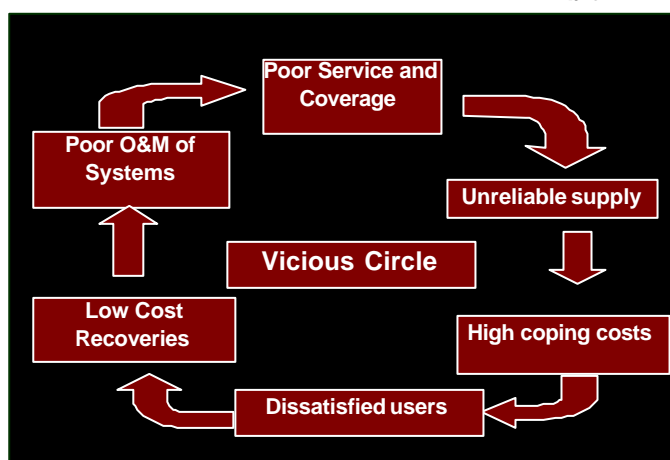


In order to meet the set targets and address the various issues facing the sector, the government had developed a comprehensive roadmap. The objective of this roadmap is to make the sector self-sufficient

- **Low funds for Operation and Maintenance** – Lower allocation for Operation and Maintenance in the past has led to the deterioration of the irrigation system, resulting in low utilisation of the designed irrigation potential. The State realises that unmet maintenance requirements over a period of time result in high rehabilitation costs
- **Limited capacity of the government to fund development** – The State has a number of on-going schemes. On the basis of the cost estimates of these schemes and their design irrigation potential, the average cost of a surface water scheme works out to 36,088 Rs./ha of irrigation potential. After these surface water schemes are completed, the State is expected to have an irrigation potential of 16.25 lakh ha. However, the State would require a hefty investment of about Rs 96,510 million to fully develop the estimated 43 lakh ha of its irrigation potential
- **Poor revenue recovery and low tariff**– The current level of revenue recovery by the water resources department and local bodies is very low. Besides, the tariffs currently being charged are also low
- **High manpower costs** – The State incurs high manpower costs as a percentage of the budget for works. 29% of the WRD budget goes towards meeting establishment costs
- **Limited skill sets** – The State encourages active participation of farmers in the management of irrigation systems. It also entrusts a lot of responsibility of O&M to various Water User Associations. While the traditional role of WRD did not involve significant user interface, the changed scenario would place additional demands on the skills of WRD staff, particularly at the field level (i.e. Executive Engineer and below). Such skills would hence need to be developed in WRD cadre.

Some of the issues highlighted above form a vicious circle (Exhibit V.17) and addressing them would require co-ordinated action.

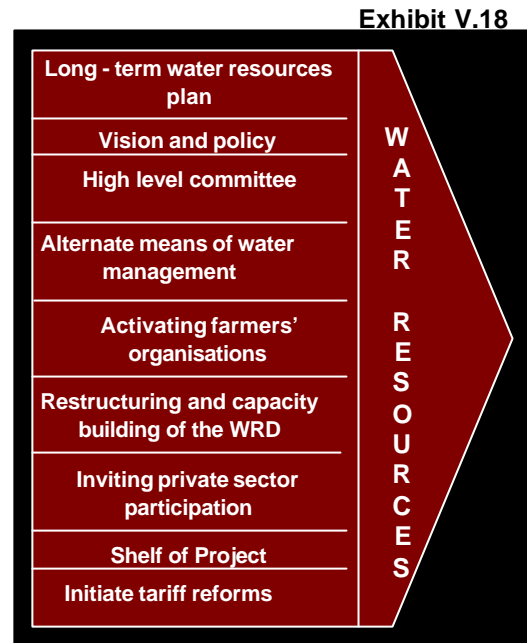
Exhibit V.17



**Action Plan**

As discussed before, in order to meet the targets set and address the various issues facing the sector, the State has developed a comprehensive action plan (Exhibit V.18). The objective of this action plan is to make the sector self-sufficient, and is discussed below:

- **Development of a long-term water resources plan** – The State would undertake a detailed technical study to map surface and ground water resources and formulate a long-term water resources plan.



This plan would help the State to identify the priorities for development of water resources to meet the future demand as also to provide a basis for prioritisation of the existing shelf of projects to ensure a balanced growth in the State

- **Vision and policy for the water sector** – In order to have a common understanding of the need for reforms and the way forward, the State would also develop a vision for the sector and set out the policy for development of the water resources sector.

This vision would be used as a basis for obtaining political commitment for the reform process. For instance, to realise the vision of providing safe drinking water for all, the State would establish minimum water quality standards, support technological developments and promote public awareness of critical issues regarding safe drinking water etc. The State is aware of similar initiatives been undertaken by other Indian states and would leverage upon such experience. The initiative of Andhra Pradesh in this respect is highlighted in Exhibit V.19

- **Formation of High Level Committee** – Realising that water resources in a State are subject to competing demands from various sectors, the State would form a high level committee of key stakeholders to take policy level decisions pertaining to the sector and inter-sectoral allocations. The mandate of this committee would be to

**Exhibit V.19**  
**Formulating Irrigation Sector Policy in Andhra Pradesh**

The State of AP initiated major reforms in the water resources sector through a series of deliberations involving key stakeholders in the State. The process started with a candid diagnostic of the State's irrigation sector issues presented in a 'White Paper' prepared by GoAP in 1996. The paper was extensively discussed through district-level meetings to address the question 'How to change?' The two main principles agreed upon to provide appropriate direction to the reform agenda included:

- Farmer empowerment and management
- Bold and comprehensive rather than incremental process

Based on such consensus the GoAP formed the Irrigation sector Policy for the State, which was approved by the cabinet in 1998. This policy provided a diagnostic analysis of the State, a discussion on the reform agenda and detailed presentation of the short and medium-term implementation plans.

**Source: PwC Research**

### Exhibit V.20

#### Water Harvesting Initiative in Coimbatore

Coimbatore has joined the select group of cities in the country, which have made rainwater-harvesting mandatory to reduce groundwater exploitation. Plans for all new structures within the corporation limit would be approved only if they satisfy the newly drafted guidelines of the corporation. The corporation council has approved the resolution, which necessitates residential buildings, commercial and industrial structures to possess proper rainwater harvesting systems. Over the years, the groundwater level has been depleting in the city and its surroundings following large-scale exploitation. It is estimated that the level could be down to 200 to 350 feet in most of the areas. Moreover, increasing encroachments at 17 of the 28 tanks have aggravated the situation

**Source: PwC Research**

evaluate the water resources scenario in the State; to take policy level decisions on immediate and future use; to ensure measures for effective and efficient use of water resources, viz. use of sprinkler systems and drip irrigation technology in agriculture and reduction of Unaccounted For Water (UFW) losses in urban systems; to ensure inter-departmental co-ordination and to implement tariff reforms in the sector, including a system of transparent subsidies (if subsidies are required to be given due to social cause)

- **Alternate means of Water Management** – Realising the importance of water harvesting, which generally means capturing the rain where it falls, or capturing the run-off in one's own local area viz. village or town, the State would actively encourage water harvesting. Water harvesting is widely considered as a cost-effective and sustainable approach in meeting the growing requirements of water for basic necessities and development. Apart from increasing the availability of water, local water harvesting systems developed by local communities and households can reduce the pressure on the State to provide all the financial resources needed for efficient water supply. Additionally, involving people will give them a sense of ownership and promote water conservation. The State would leverage on the experience of the recent initiative of Coimbatore in using water-harvesting techniques to reduce the pressure on ground water (Exhibit V.20) in developing similar initiatives in the State.

Rainwater harvesting would also be used as an effective tool to fight continuous drought. The State is aware of its effectiveness as is illustrated in the successful water harvesting in Nimbi, Rajasthan. Located barely 35 km from Jaipur, Nimbi, once a water scarce village now has a perennial water source in a reservoir that people restored in 1995. The successful water-harvesting project (carried out with the help of an NGO) has insulated the village from droughts that have severely affected Rajasthan in recent times.

The project involved an investment of Rs 0.5 million to rebuild a 200 year old check dam in the village that helped collect and retain rainwater flowing from the surrounding hills and enabled in cultivation of crops such as sugarcane. The village community bore 25% of the cost. The dam was rebuilt in two months and is now yielding an annual economic return of over Rs 4.5 million

- **Activating farmers' organisations in the State** – Though undivided MP formed WUAs, (of which 943 lie in Chhattisgarh), under the MPFMS Act, little action has been taken so far to actively involve them in the management of irrigation systems and hand over the responsibilities assigned to them as per the Act. Since

involvement of farmers is a critical pre-requisite for sustainable reforms in the irrigation sector, government would take steps to activate these WUAs

- **Restructuring and capacity building of WRD** – The State recognises that an important element in reforming the water resources sector is capacity building involving restructuring of relevant government departments and bodies. Capacity building of the departments would be undertaken keeping in mind factors like consumer orientation, transparent working and the ability to handle private sector participation in management of water resources. This in turn, is likely to help the departments in directly accessing capital markets for funding projects, as has been done in Maharashtra (Exhibit V.21)
- **Inviting private sector participation** – The State recognises its limitation in funding all large and small targeted projects. In order to supplement its efforts, it would actively seek private sector participation. This would be preceded by a tariff study, initiation of tariff reforms and formulation of a shelf of projects and a framework for private sector participation in the sector to attract investments

An area where private sector participation would be encouraged in the State is with respect to lift irrigation projects. These projects would be constructed to supply water to those regions, which due to their topography cannot be supplied water through gravity flow schemes. Since water tariff for water supplied by lift schemes is more than (normally double) the water tariff for water supplied by gravity schemes, and there exists a higher willingness to pay appropriate water charges on part of farmers. These schemes are considered suitable for initiating private sector participation (PSP) in irrigation sector

The State would leverage upon the experience of others in implementing such schemes. For example, in Andhra Pradesh, the State has formed corporate entities for construction and maintenance of lift schemes. In 1974 GoAP formed Andhra Pradesh State Irrigation Development Corporation (APSIDC) for construction and O&M of lift irrigation schemes, tube wells, etc. in the State. Amongst its various activities, APSIDC constructed around 180 lift irrigation schemes wherein the farmers contributed upto 50% of the cost of schemes and contributed in O&M

- **Developing a shelf of projects** – Besides developing a framework for PSP in the sector, the State would also identify a shelf of projects that can be developed through PSP. The shelf of projects would be developed for irrigation as well as for urban water supply. These

**Exhibit V.21  
Maharashtra Krishna Valley  
Development Corporation  
(MKVDC)**

MKVDC has been formed to complete the works in progress and fully develop the basin's irrigable area. To raise funds for the huge capital investments required, MKVDC has raised Rs. 400 crore through bonds. The bonds were rated by a credit rating firm and pay a high interest rate (17.5% p.a.) besides carrying a guaranteed mechanism for servicing through a designated escrow account.

The Government of Maharashtra has granted the Corporation the right to set adequate water charges, which is critical for servicing the bond issue through one's own revenues. The water rates needs to be determined for full cost recovery of O&M and depreciation on investment, including the interest rates set on the bonds.

**Source: PwC Research**

### **Exhibit V.22 Water Charges Review Committee in Andhra Pradesh**

Recognising the need for an institutional capacity for undertaking annual reviews of revenues and O&M costs in the irrigation sector, AP formed a WCRC in 1997 through a Government Order. The objective of the committee is to ensure that irrigation water charges and their collection rates provide revenues sufficient to cover:

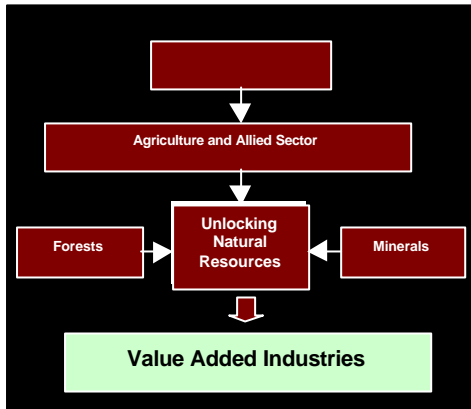
- desirable level of maintenance works required for operating systems at optimum level
- establishment cost and other recurrent costs required for operating the system
- phased introduction of affordable addendum to water charges for placing in a reserve fund for future contingencies and renewal of infrastructure

Though this committee does not have full autonomy for setting water rates, it does provide expert inputs to the process

**Source: PwC Research**

projects would also be prioritised on the basis of development priorities of the State and other economic and financial considerations

- **Setting up of a tariff regulatory body** – In order to insulate economic decisions from political considerations, and to protect consumers' interest, the State realises the need to form either a tariff review committee or a regulatory body for the water sector. The committee/ body would include professionals in order to take informed decisions. Such a committee/ body would be formed on the lines of regulatory bodies formed for other infrastructure sectors such as State Electricity Regulatory Commissions (in power sector) and Telecom Regulatory Authority of India (in telecom sector) and initiatives of other states such as Andhra Pradesh (Exhibit V.22)
- **Initiating Tariff Reforms**– Based on the analysis of the true O&M costs in the water resources sector, the State would initiate tariff reforms with the objectives of moving closer to recovery of full O&M costs in the sector. This would provide a clear signal of the State's intention to reform the sector by taking steps to make it self-sustaining, to help in building credibility for inviting professional private agencies to take up specific responsibilities in managing the sector and to raise funds from capital markets in order to fund development requirements. The State is also aware of the fact that tariff reforms should be accompanied by a set of measures for the overall benefit of consumers, rather than a one-sided burden enforced through higher tariffs



The industrial GSDP would approximately double to Rs.103935 million by 2009-10 from the present value of around Rs.53100 million

## 5.5 ENSURING VALUE ADDITION

Chhattisgarh possesses some of the requisites for being an economic powerhouse in the country- a strong natural resources base, a peaceful workforce, surplus power and the locational advantage of being closer to the markets of eastern and western India. However, the State has not yet been able to leverage these strengths to its fullest. Also in order to realise the true potential of the natural resources in the State, it is important to focus on value added industries.

The State recognises the above along with the fact that its industrial sector would be a driver in fuelling economic growth in the future.

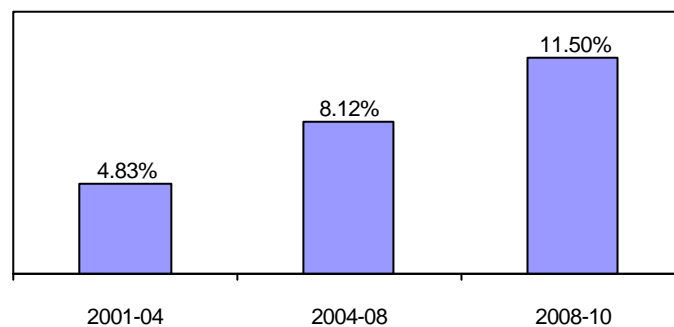
### Targets – Vision 2010

In line with Vision 2010, the State has set for itself the following targets:

- The growth in the industrial sector by the year 2009-10 would be 11.5% (CAGR)**  
 The industrial GSDP would approximately double to Rs.103935 million by 2009-10 from the present value of around Rs.53100 million. With the improvement of the infrastructure and the industrial climate in the state the industrial GSDP would increase progressively over the next ten years as illustrated in Exhibit V.23

Exhibit: V.23

GSDP GROWTH RATES FOR THE INDUSTRIAL SECTOR  
Real growth rate; per cent; const. 93-94 prices



- Attracting investments in excess of Rs. 250,000 million in the industrial sector over the next 10 years**  
 For the industrial GSDP to double by the year 2009-10, investments in excess of Rs 250,000 million has to be made in the industrial sector. The magnitude of the investments envisaged would be brought into the State with the active support of the private sector

Realising that long-term industrial development cannot be sustained without safeguarding the environment, the State would strive to achieve the best environmental standards

• **Achieving the best environmental standards while pursuing industrial development**

The State realises that industrial development cannot be sustained in the long run without safeguarding the environment. Hence, to ensure sustainable economic development, the State would strive to achieve the best environmental standards

**Current Situation**

Before outlining the strategies to be followed in order to meet the above targets, the State has mapped the existing industrial sector scenario. The current situation of the industrial sector is in Figure V.24, briefly discussed below:

- **Limited industrialisation**  
Chhatisgarh has primarily been an agrarian economy with limited industrial growth. There are, however, 165 medium and large scale industries in the core sector i.e. iron & steel and cement and the State contributes approximately 15% of steel and 10% of the cement production in the country. However, the State's contribution is not reflected in the industries contribution to GSDP. While the primary sector contributes to about 38% of the GSDP, the industrial sector contributes to only 26% of the GSDP.
- **Increasing incidence of industrial sickness**  
Recent times have witnessed an increasing incidence of industrial sickness in the State. There are 27 closed units (representing 16% of the medium and large-scale industries). Many more units are running but are either loss making or only marginally viable. Large portions of these units are engaged in the manufacture of steel casting or Ferro chrome.

Exhibit V.24

**Issues**

- Limited industrialisation
- Increasing incidence of industrial sickness
- Skewed industrial development in the State
- Limited growth on small scale industries



**Root Cause**

- Lack of adequate infrastructure
- High cost of power
- Limited local market
- Landlocked State
- Dominance of mineral based industry
- Inadequate thrust in the employment generating Small scale and cottage industries



**Impact**

- Low contribution of industry to the economy
- Limited employment opportunities in sectors other than agriculture
- Most industry have a similar cycle of boom and slump
- Unequal development within the State

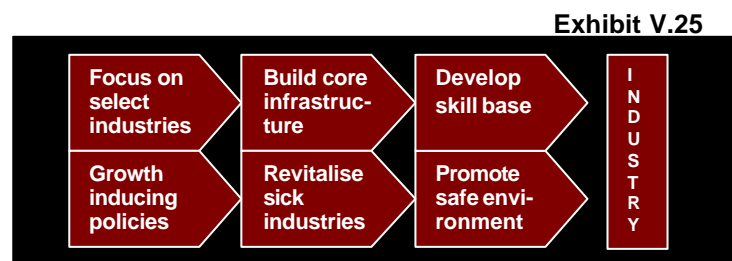
The skewed industrial development in the State is demonstrated by the fact that more than 75% of the industries are concentrated in the regions of Raipur, Durg and Bilaspur

Surprisingly, one of the reasons for these units closing down has been the high cost of power in the past. The other factor is increasing competition in this sector nationally and internationally

- Skewed industrial development in the State**  
 More than 75% of the industries are concentrated in the regions of Raipur, Durg and Bilaspur. However, in terms of investments and employment, the industries are more evenly spread. Approximately 57% of the investment and 40% of the employment is concentrated in Raipur, Durg and Bilaspur. There has been very limited industrial growth in the other districts of the State. The skewed industrial development in the State has increasingly led to the dependence of the people in the non-industrial districts on agriculture.  
 Moreover, there are only four growth centres in the State, situated in the districts of Raipur, Durg and Bilaspur. Most of the districts in Chhattisgarh do not have an industrial estate.
- Limited focus on small scale and cottage industries**  
 The small scale and the cottage industries are very important in terms of their employment generation potential. The growth of this sector also reflects the quality of life of the poor rural people of the State. Besides, improving the quality of life of the rural people, the growth of this sector would also safeguard and promote the traditional skills of the people.  
 For instance, in the year 2000-2001, 1991 small-scale industries were set-up with an investment of Rs 243 million providing employment to 4925 people. Thus the proportion of jobs created by the small scale sector to the total number of jobs in the State is only about 0.064%

**Action Plan**

In order to achieve its stated objectives and address the current issues, the State has identified some specific strategies, illustrated in Exhibit V.25 and discussed below.



- Focusing on specific industries**  
 Growth in the future would revolve around specific industries, which would build on Chhattisgarh's strengths as a resource base and the opportunities provided by

The State would focus on agro, forest and minerals based industries for wealth creation; small and medium enterprises and small scale cottage industries for employment generation

**Exhibit V.26**

**Agro Industrial Parks**

The Kerala Infrastructure Development Corporation KINFRA has also set up an Agro-industrial park at Mallapuram. Apart from the core infrastructure facilities, the park has modern cold storage facilities, ultra- modern quality control systems and marketing cum exhibition centre. The prime targets for the parks are food processing industries like Yeast, ready- to- eat snacks, breakfast cereals, soft drinks, fruit juices, etc.

**Herbal Village, Kinfra**

KINFRA has also planned setting up of the first modern herbal village in Idukki district. The activities that would be undertaken in the village would include plantation and farming, collection, semi-processing (including cleaning, packaging and processing to add value by extracting the oil etc.) and R&D. The government also intends to provide incentives like 5-year tax holidays to set up new industrial undertakings in the park

**Source: PwC Research**

these sectors in the future. The following sectors have been identified as the ‘thrust’ areas for the future:

- Agro and forest-based industries
- Mineral based industries
- Small & Medium Enterprises (SMEs) and the Small scale and cottage industries

**- Agro and Forest based industries**

Chhattisgarh would exploit its strengths as a predominantly agrarian economy and a State rich in bio-diversity to create more wealth for itself by developing value-added agro and forest based industries. The focus would be on horticulture, food processing, oil-seeds, cotton, sugar, cereals, spices and floriculture. The focus on the forest based industries would be the Sal, herb, olive, bran and amla processing industries.

The specific strategies for developing this sector are discussed below:

*Mapping the potential of growth*

The potential for the growth of agro and forest based industries would be identified in each district of the State. This would be done considering the climatic and the soil conditions. The bio-diversity of the forests would be mapped by the systematic classification of the rare flora and fauna

*Developing industry specific infrastructure*

Lack of proper infrastructure is one of the major bottlenecks to the growth of this sector. Apart from the core infrastructure, some industry specific infrastructure facilities would have to be created. The industry specific infrastructure facility would include setting up sector specific industrial parks like an agro-industrial park or herbal villages (Exhibit: V.26). Developing other infrastructure facilities would include setting up of cold storage facilities at the district level, developing cold chains that would link warehouses to cold storage facilities for perishable horticulture and food products and forest produces, in the rural areas, facilities to sort, dry and pack the agro based products etc.

*Forming policies to induce growth*

The existing policies would be modified to facilitate growth in the sector. For instance, the State would consider reformulating the agriculture land-ceiling act to attract private industries in the agro-industrial sector.

It would consider making Chhattisgarh Agro Industrial Development Corporation the sole agency providing licences, providing technical assistance and training to the farmers. Creating a regulatory framework and encouraging competition in MFP

procurement while protecting tribal interests would also be undertaken.

### *Strengthening the marketing base*

Setting up an agricultural marketing board would strengthen the State's marketing mechanism. The mechanism for the co-operative marketing body for agro-based products like HPMC, NAFED, etc. would be further developed.

The market information system would be improved by the e-governance initiatives of the government to provide market-related information like price, demand, etc., to the farmer regarding the agro-based products across the *mandis* in the State .

The State would initiate *mandi* reforms to make the marketing transactions transparent, user friendly and protective of the interests of the producers of agro-based products.

### – **Mineral based industries**

Mineral-based industries in Chhattisgarh would be developed to increase the revenues for the State. The main thrust industries in this sector would be the core industries such as steel, cement, aluminium and value added industries such as gems and jewellery industry. The growth in the mineral based industries would be pursued by increasing the productivity of the units, giving a higher preference to the mineral based units in the State, developing investor friendly policies and developing industry specific infrastructure in the State

### *Preferential status to State based industries*

The best grade minerals get transported to the mineral processing industries located in Orissa, West Bengal and Madhya Pradesh. By giving the mineral processing industries located in the State a preference in accessing minerals of the highest quality over their counterparts in the other states, the State intends to promote the mineral based industries.

### *Developing industry specific infrastructure*

Apart from development of the core infrastructure, which would be beneficial to all industrial sectors, there are some very specific infrastructure needs of the sector. One of them would be to develop industrial parks for the diamond and jewellery industry. This State realises the importance of this sector, especially after having discovered new diamond and gold reserves. The State would also promote the use of dry ports among the local exporting firms.

The State would provide marketing assistance for the development of small-scale industries by arranging buyer-seller meets, promoting haat centres, developing strong brands and arranging national and international exhibitions

– **Small/ Medium and Cottage industries**

The thrust areas for the State would be the ancillary industries, textile industries, and mineral processing downstream industries, the cottage and the handloom industries.

In order to promote these industries the strategies that would be followed include providing access to the latest technology to these industries, providing assistance in marketing, reformulating the policies to support the growth of this sector, enabling access to credit facilities and developing industry specific infrastructure

*Providing access to latest technology*

As the sustainability of these industries depends on their access to the latest technologies, the State would take initiatives in ensuring that the latest technology is available to these industries. It would help industries to source technology by setting up technology exchange centres. It would also assist in their training and collaborate with R&D centres.

Active collaboration with Research and Development institutions in the country would be forged to develop the indigenous technology. For instance, in order to improve the productivity in the handloom sector the Handloom Research and Development Centre would be developed in all districts.

*Providing marketing assistance*

The State would arrange for buyer-seller meets to accelerate the marketing activities. Efforts would be made to promote the marketing of handloom / handicraft products including the exports to other countries. Domestic sales of this product shall be promoted by setting up 'haat' centres in the State. Further, national and international exhibitions would be arranged to promote the products of this sector available in the State.

The State developmental agencies would take up common marketing and branding of the products in this sector as has been done in the co-operative sector e.g. NAFED, HPMC etc.

*Reformulating the State's policies*

The existing rules prevent the diversion of agricultural land for industrial use. The State would simplify the procedures of diverting land from agricultural to industrial use.

Formation of private co-operative societies for the cottage and rural industries would be encouraged. This would lead to increased bargaining power of this group

**The State would address the problem of industrial sickness by conducting a survey of these units to understand the root cause and reformulate the industry unfriendly policies**

with the raw material suppliers.

- **Improving the core infrastructure facilities:**  
The core infrastructure facilities like railway links, roads and highways, inland container depots and storage facilities would have to be improved to facilitate the transport of raw materials and products to and from these industries.

Apart from the transport linkages other core infrastructure facilities like power, water, urban and social infrastructure needs to be developed as a precursor to industrial development.

Detailed strategies that the State would follow in order to aid industrial growth, have been discussed in Chapter 8'

- **Framing growth enabling policies**  
The State recognises the importance of the private sector participation to promote the industrial sector and would ensure that industrial policies be developed keeping the private investors in mind.

The State is committed to reduce the gestation periods for setting up industrial projects and for simplifying the procedures for administration to create a "hassle free" atmosphere for industries.

The District Trade and Industries Centre (DTIC), developed in all the sixteen districts would play a pivotal role in the development of the industries in the small scale and the tiny sectors. The State would empower DTICs to act as sole agency for granting clearances, permissions and registrations to the concerned industrial units. CSIDC would act as a nodal agency for developing the industrial infrastructure including industrial parks of the State and would be empowered to take all pertinent and relevant decisions..

In order to accelerate the flow of funds into the industrial sector, the State would grant attractive concessions to potential investors. The concessions would be in the form of subsidies, exemptions from commercial and entry taxes, and concessions for investments in thrust sectors identified above.

The State would actively promote entrepreneurship, especially in the small scale and the tiny industries. DTIC would be the nodal agency involved in entrepreneurship development. Special incentives to entrepreneurs, especially among the SC/ST and the women groups, would be given by creating awareness among the rural people and encouraging them to set up their own ventures and by arranging for credit facilities to aid in the start-up.

**The State would encourage the establishment of educational institutions of international repute like the IIT, IIM, REC, etc with a view to improve the technical and managerial skill base**

- **Promoting environment consciousness**

The State would enforce strict environmental standards prescribed by the State pollution control board. In order to comply with the standards, the following measures would be undertaken:

- Strengthening the machinery of the State pollution control board
- Tightening the implementation of the environmental laws and
- Supporting the setting up of common effluent treatment plants and facilities for collection and disposal of effluents and hazardous wastes.

In order to encourage environment consciousness the State would give special incentives to the industrial units accredited with the ISO 14000 certification.

- **Revitalising the sick industries**

The State is seriously concerned about the sick medium/large and small-scale industries and especially a high mortality of the tiny units. The State would address this problem by first conducting a survey covering all industries to identify the sick units. Based on the survey the State would try to understand the major factors leading to the industrial sickness and try to reformulate the industrial policies responsible for the above phenomenon. Early warning systems for incipient sickness through effective monitoring of units by State level financial institutions would also be developed.

As revival of the sick industries would not be possible without the active and full co-operation of the banks and financial institutions, the State would ensure that the industrial revival scheme would be implemented with the full participation and involvement of the banks and financial institutions.

- **Developing the skill base**

In order to develop the industrial sector, there is a need to develop the skill base of the people. The State would aim to increase the skill base of its people by developing the quality of higher education in the State and by improving the research activities of the State.

The State would encourage the establishment of educational institutions of international repute like the IITs, IIMs, RECs, etc with a view to improve the technical and managerial skill base. Setting up industrial and agricultural polytechnics in the State would increase the employment prospects among the people.

The State would also initiate steps to set up state level offices of national institutes in the field of research like the CSIR, SISI, etc.