DEVELOPING A POLICY FRAMEWORK FOR PROMOTING BETTER MANAGEMENT PRACTICES IN FOUR COTTON STATES

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This report is a part of the Project, "Cotton in India – Challenges and Opportunities to implement Better Cotton" supported by WWF Sweden. Through this study WWF India attempted to examine state level policy frameworks influencing agriculture of four major cotton growing states namely Gujarat, Madhya Pradesh, Maharastra & Andhra Pradesh, policy hindrances that restrict the uptake of Better Management Practices (BMP) and provide recommendations on policy scenarios that would facilitate the wider adoption of BMPs

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Prepared by

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We would like to thank Dr Sejal Worah, Programme Director, WWF-India, for her time and support for this study.

Developing a policy framework for a sub-sector like cotton is a strategic piece of work. We acknowledge Mr Ravinder Kumar, Director, VLRC, and his entire team for taking the pain of conducting the study and timely delivering the report.

Developing the policy framework invariably involves consultations with key policy-makers in government ministries and departments, civil society experts, sectoral specialists, private sector heads, and so on. The quality of output in such a case is dependent upon the quality of advice available from these sectoral players. We express our sincere thanks to all the agencies/ people whose views and perspectives have shaped this policy framework.

ABBREVIATIONS AND ACRONYMS

AP	Andhra Pradesh
BAU	Business Advisory Unit
BCI	Better Cotton Initiative
BE	Budget Estimates
BMP	Better Management Practices
CBO	Community Based Organization
CICR	Central Institute of Cotton Research, Nagpur
DFID	Department for International Development
DPIP	District Poverty Initiatives Project
DSC	Development Support Centre
EC	European Commission
ELS	Extra Long Staple
EU	European Union
FD	Forest Department
FFS	Farmers' Field School
FLD	Field level Demonstration
GGRC	Gujarat Green Revolution Company
GoG	Government of Gujarat
GoI	Government of India
ICDP	Intensive Cotton Development Programme
ICM	Integrated Crop Management
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
IRMA	Institute of Rural Management, Anand
IS	Information System
IWM	Integrated Water Management
LF	Logical Framework
M&E	Monitoring and Evaluation
MIS	Micro Irrigation System
MM-II	Mini-Mission II
MoU	Memorandum of Understanding
MP	Madhya Pradesh
NGO	Non-Government Organization
NR	Natural Resources
NRM	Natural Resource Management
OVI	Objectively Verifiable Indicator
PIM	Participatory Irrigation Management
PR&RD	Panchayati Raj and Rural Development
PRA	Participatory Rural Appraisal
PRI	Panchayati Raj Institutions
RE	Revised Estimates
RKVY	Rashtriya Krishi Vikas Yojana
SS	Sajjata Sangh
TMC	Technology Mission on Cotton
UNDP	United Nations Development Programme
WWF-India	World Wide Fund for Nature–India

Policy Framework for WWF for Promoting Better Management Practices in Four Cotton States

1 Background

Cotton is an important cash crop for India, with widespread economic and environmental implications. The country is the second largest producer and consumer of cotton, with a vast majority of poor small farm holders being responsible for cotton production. WWF's overall strategy for cotton is to move the mainstream commodity market towards sustainable production, by both increasing the demand for "sustainable cotton" from globally significant retailers and brands and by supporting farmers to move towards more sustainable and economical cotton production methods. The ultimate aim of this strategy is to reduce the ecological footprint (particularly, the water footprint) of the entire chain from cotton production to retail sale, ultimately showing positive impacts on key ecosystems and river basins. Towards this, WWF has developed Better Management Practices (BMPs) through field projects that promote the uptake of Better Cotton Initiative (BCI) compliance.

WWF-India has been involved in the development of BMPs that have helped cotton farmers, as well as the environment, in two states. A WWF document says that the pilot project in the Godavari Basin in India has had far-reaching economic, ecological, and social benefits. In order to scale up the implementation of BMPs, there is a need to facilitate policies that promote sustainable agriculture. The study was commissioned to examine the respective state-level policy frameworks influencing agriculture and policy hindrances that restrict the uptake of these BMPs, and provide recommendations on policy scenarios that would facilitate the wider adoption of BMPs.

To meet the stated objectives, the study was accompanied by wide-ranging discussions with various stakeholders and state-level policy analysis in the four cotton states of Andhra Pradesh (AP), Madhya Pradesh (MP), Gujarat, and Maharashtra. This is the study report.

2 Objectives and framework of the study

WWF's 'freshwater' mandate drives its agenda of work in the cotton sub-sector. Cotton is a thirsty crop, requiring the use of ground and surface water, with extensive potential for water depletion. Water contamination is another rationale for WWF to work in this sub-sector. It is estimated that 50% of all pesticides used in India is applied to the cotton crop (Shetty, P K, 2004), part of which goes into freshwater. The BMPs on cotton focus on interventions related to soil fertility management, optimum use of water, reduced use of pesticides, and clean picking. These BMPs have been evolved and established by the pilot project implemented by WWF. This study has been undertaken to understand the existing policy framework in four cotton states, in order to scale up WWF's pilot initiatives, with the possibility of 'mainstreaming' them through governmental programmes.

The study objectives are as follows.

- Examine state-level policy frameworks and policy hindrances that restrict the uptake of BMPs
- Develop a policy framework that can promote wider adoption of BMPs
- Contribute towards a WWF strategy for the expansion and wider adoption of BMPs (in the four states)

To achieve the above-mentioned objectives, the study:

- Reviews the financing schemes and spending pattern of the governments of the four target states to understand how these could facilitate the promotion of BMPs and their broader adoption
- Studies the findings of the State Planning Commission reports, fiscal management, budget reform, and finance options for BMPs
- Conducts policy discussions with selected agriculture and cotton experts in each of the four states

The study examines the existing agricultural policies and programmes related to the allocations for BMPs in the cotton sector in the four target states (AP, MP, Maharashtra, and Gujarat). In consultation with policy-makers, planners, and agriculture and cotton experts, the study assesses how conducive are the existing cotton-related policies, programmes, and allocations to the wider adoption of BMPs. Based on this analysis, the study developes an overall policy framework and state specific recommendations that can facilitate wider adoption of BMP in the four target states.

2.1 Approach and guiding principles

The Vrutti team visited the four states and held in-depth discussions (largely, one to one discussions and some focus groups) with the State Planning Commission, agriculture department, specific government body dealing with cotton, agriculture and cotton crop experts, and agri-economists. Although the number of meetings in each state was expected to be 8–10 (in total, about 35 meetings across four states), ultimately, 55 meetings were conducted, involving 70 key stakeholders. The team collected a variety of relevant information from government and other sources. The team analysed the policy and programmatic trends in the last 2–3 years for cotton crop, with specific relevance to BMPs. The team held internal consultations to develop coherent ideas about the policy framework. The team validated the emerging policy framework with experts (at state and national levels), before presenting it to WWF-India. Finally, in consultation with WWF-India, the policy framework was finalized.

2.2 Main users of the study

The study captures perspectives and reflections of 70 important players within the cotton sub-sector. Therefore, the synthesis has many uses for different stakeholders. However, the report is prepared primarily for WWF-India's use. WWF-India, along with the Better Cotton Initiative (BCI) and its partners, can use the findings of this study to promote the wider adoption of BMPs, using the right policy framework at the national and state levels.

2.3 Stakeholders and coverage

The study team conducted interviews/in-depth discussions with 55 institutions, involving 70 important players in the cotton sub-sector. The coverage achieved by the typology of stakeholders covered is as given below.

Table 2.1 Cotton policy framework study respondents

Typology	Stakeholders covered	Total coverage
University	State Agriculture University Registrar and Vice chancellor, Head of the Department of Agriculture College, especially Department of Entamology	4
Government	Agricultiure Department, State Planning Comission, Cotton Corporation of India, Ministry of Agriculture, Ministry of Textiles, Ministry of Fertilizer	12
Technical/research institute	CRIDA, ICAR, CICR, NARI, National Centre for IPM/NPM, Cotton Connect, NABARD, CEE	9
Civil society	WASSAN, AFPRO, Oxfam, IIM-A (Prof. Sukhpal Singh), Agrocel, AKRSP, GVT, ISAB, DSC, Better Soya Initiative, farmers federation	23
Bi-lateral/multilateral projects	Indira Kranti Pratham (IKP), MPRLP, DPIP, Tejaswini	2
Private sector	Tata Rallies, pesticides dealers, M&S, IKEA, Arvind Mills	5
Total		55

2.4 Limitations of the study

Rapid study; may have missed some in-depth perspectives: The study is based on the perspectives of a range of stakeholders, met during the short time available. The study could not cover the entire range of stakeholders in all the states. It is possible, therefore, that the study would have missed some in-depth perspectives.

Data availability: The study team had to procure important data sets pertaining to BMPs in the cotton sub-sector. But data availability was a key issue, especially the availability of recent data. Particularly difficult was to obtain state agriculture department data, related to allocations and utilizations.

Separating cotton budgets from the state budgets: The national-level Technology Mission on Cotton (TMC)—Mini Mission–II (MM-II) was the most relevant investment by the government on cotton. The investment has been well analysed by the study team. However, the state agriculture budgets are not decided by specific crops. It was, therefore, difficult for the study team to understand the nature of state-level budgets allocated to or spent on cotton.

3 Existing policy framework for promotion of BMPs

More than 60 million people, including 4.5 million farmers in India, depend on cotton for their livelihood. The sub-sector, therefore, needs closer examination while developing a policy that can promote wider sustainable improvements. The development of a policy framework for WWF for expanding its BMPs in cotton requires a comprehensive review of the sector, in general, and BMPs, in particular. Thus, it is important to understand the 'context of cotton' at the national and state levels. Within this context, the existing policy frameworks at the national level are analysed in this section. State-specific policy analysis is presented in section-4.

3.1 Context of cotton

Area, production, and productivity

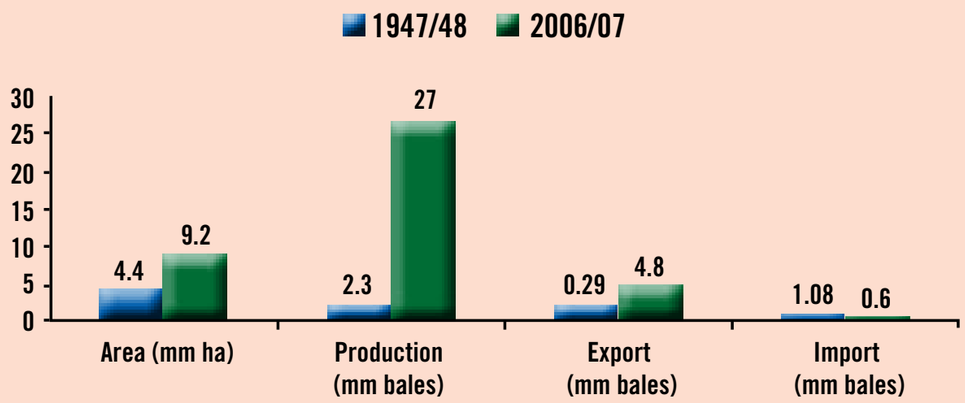
In India, cotton production is expected to rise from 158 lakh bales in 2001/02 to 295 lakh bales in the current cotton season 2009/10 (October–September), said Smt. Panabaaka Lakshmi, Minister of State for Textiles, in a statement in the Lok Sabha (4 March 2010).

During the last few decades, there has been a seven-fold increase in cotton production and more than four-fold increase in productivity, as illustrated below.

Table 3.1 INDIA Cotton-at a glance

Year	Area (Million hectares)	Production (Million bales of 170 kg each)	Yield (Kg/ha)
2004/05	8.79	16.43	318
2005/06	8.68	18.5	362
2006/07	9.14	22.63	421
2007/08	9.41	25.88	467
2008/09	9.41	23.16	419
2009/10		23.66	

Source:www.agricoop.nic.in



India accounts for 25% of the area under cotton in the world and produces 20% of the world's cotton. The differential can be explained by the productivity gap, succinctly illustrated in the table below.

The global average productivity in 2007 was 788 kg per hectare. India, therefore, has a great potential to close the productivity gap that exists. The gap becomes more perceptible when looking at the situation in the four major cotton-producing states, as depicted in the table below.

Table 3.2 Area in lakh hectares/ Production in lakh bales of 170 kg/ Yield kg per hectare

Year	APY	Gujarat	Maharashtra	Madhya Pradesh	Andhra Pradesh
2004/05	Area	19.06	28.4	5.76	11.78
	Production	73	52	16	33
	Yield	651	311	472	469
2005/06	Area	19.01	28.75	6.2	10.33
	Production	89	36	18	32
	Yield	794	213	494	527
2006/07	Area	23.9	31.07	6.39	9.72
	Production	103	50	19	36
	Yield	733	274	505	630
2007/08	Area	24.22	31.94	6.3	11.38
	Production	112	62	21	46
	Yield	786	330	567	687
2008/09	Area	24.17	31.33	6.55	13.45
	Production	90	62	18	53
	Yield	633	336	467	670

Source: Cotton Advisory Board

About 80% of the area under cotton in the country is in four states, viz. AP (14%), Maharashtra (33%), MP (7%), and Gujarat (26%). AP and Gujarat have achieved the highest level of productivity in cotton, which stands at 670 kg and 633 kg per hectare, respectively (2008/09). Maharashtra and MP are among the states with the lowest level of productivity in cotton.

Overall, the highest yield in the country is recorded in the Junagarh district of Gujarat (5.63 bales per hectare) and the lowest yield is in the Satna district of MP (0.5 bales per hectare). The highest and lowest productivity districts of the four states are given below.

Gujarat
- Highest: Junagarh—5.63 bales per hectare
- Lowest: Patan—1.09 bales per hectare

Andhra Pradesh
- Highest: Guntur—3.54 bales per hectare
- Lowest: Nizamabad—0.76 bales per hectare

Maharashtra
- Highest: Jalna—2.21 bales per hectare
- Lowest: Nanded—0.6 bales per hectare

Madhya Pradesh
- Highest: Chindwara—2.43 bales per hectare
- Lowest: Satna—0.5 bales per hectare

Pesticide use in the cotton cultivation

About 54% of the total pesticides used in Indian agriculture is applied to cotton alone, even though it accounts for only 5% of the total cultivated area. On an average, Indian cotton farmers spend roughly Rs 500 crores on seeds, about Rs 500 crores on fertilizers, and almost Rs 2500 crores on pesticides every year (Sukhpal Singh, 2010). Although cotton represents less than 3% of the world's agriculture, it uses more than 25% of the world's chemical insecticides and more than 10% of the world's chemical pesticides. It is estimated that only 0.1% of these chemicals reach the targeted pests, with 99.9% dispersing into the soil, water, and air (Myers, 1999).

3.2 Existing agriculture policy and interventions on BMP promotion

The existing policy framework linked to BMPs in the cotton sub-sector could be viewed from two perspectives—interventions in agriculture, in general, and in cotton as a crop, in particular. This section discusses the general scenario of agriculture policy and interventions. Section 3.3 talks about cotton-specific policies and interventions.

Focus areas in the existing agriculture policy

The existing agriculture policies at the national level focus on the popularization of Integrated Water Management (IWM), Integrated Pest Management (IPM), and Integrated Nutrient Management (INM) practices. While the INM and IPM practices are promoted by the agriculture department, IWM is promoted by the water resource/irrigation department, supported by the agriculture department. Crop-specific allocations and interventions are usually not designed at the state level. Therefore, at the field level, the focus on crop-specific interventions is quite limited.

The thrust of BMP-related practices varies across states. For example, Gujarat focuses on soil health (linked to INM) and micro-irrigation (linked to IWM); MP focuses on organic (linked to INM); Maharashtra focuses on pest surveillance (part of IPM); and AP focuses on micro-irrigation (linked to IWM) and non-pesticide management (linked to IPM). The detailed analysis of state-specific agriculture policy is given in Section 4. There has been limited location- or crop-specific research linked to these practices. Although IWM, INM, and IPM are integral parts of Integrated Crop Management (ICM), in practice, these are promoted as stand-alone interventions. As per the respondents interviewed during the study, there has been limited research related to ICM practices as well.

Programme investments

The annual state agriculture budgets usually range from Rs 180 crores (in MP) to more than Rs 1000 crores (in AP), and Intensive Cotton Development Programme (ICDP) by and large constitutes about 3%–10% of these budgets. The state budgets analysis shows that agriculture extension and BMP-related interventions receive less than 25% allocations.

Table 3.3: Madhya Pradesh: Average Trend in State Budgetary Allocations

S.No.	Major budget heads—top 10	Average trend over the last three years	Allocations: 2009/10		
		Percentage of overall budget	Percentage of tribal sub-plan budgets	Percentage of overall budget	Percentage of tribal sub-plan budget
1	Agriculture Extension	24.9%	25.1%	9.4%	11.1%
2	Oilseed Production Programme	3.5%	2.6%	2.4%	1.7%
3	Intensive Cotton Development Programme	0.9%	1.2%	0.5%	1.7%
4	Surajdhara	2.7%	5.1%	1.0%	2.1%
5	National Pulses	1.7%	1.2%	0.8%	0.7%
6	Annapurna	2.2%	4.0%	0.9%	1.8%
7	Macro Management	4.9%	4.2%	1.5%	1.5%
8	Watershed Development	4.9%	2.4%	1.1%	0.8%
9	Research and Education	11.1%	12.8%	1.5%	2.0%
10	*Balram Talav*	1.0%	0.8%	3.3%	0.0%

Note: the budgetary allocation does not include Rashtriya Krishi Vikas Yojana allocations, which are about 65% of the total state budget.

It would be interesting to note that the Government of India, in relation to BMPs, has put emphasis on 'organic farming'. The Tenth Five-year Plan underlined the promotion of organic farming, with the use of organic waste, IPM, and INM, allocating Rs 100 crores for the same.

The Ministry of Commerce initiated a national programme on organic production in 2000, with an outlay of Rs 57 crores. It has taken several measures, such as the constitution of a national steering committee; preparation of national standards, accreditation criteria, and certification procedure; identification of accreditation agencies; and constitution of a national accreditation board. The Ministry's involvement in the promotion of organic farming is clearly a good example of how market-related institutions can alter the sectoral dynamics and influence quick changes.

Sectoral institutions

The Agriculture Extension Department is the main institutional framework to promote the BMPs. However, in practice, extension services to farmers are provided by input dealers/companies. The role of non-governmental organizations (NGOs) is well-recognized in facilitating extension at the farmer level. However, there are only a few NGOs with expertise to provide agriculture extension services. Similarly, there has been a limited interface between the agriculture department and the NGOs with focus on agriculture. Nevertheless, the agriculture extension system could be revived through the involvement of these NGOs with the government's agriculture extension system. This is crucial because in the absence of a functional agriculture extension system, it would be difficult to popularize the BMPs at a large scale.

Based on field research, the State Agriculture Universities (SAUs) release Packages of Practices (PoPs) for different crops. Different SAUs have developed PoPs for cotton. Based on these PoPs, extension functionaries provide scientific know-how to farmers.

The National Centre for Integrated Pest Management (NCIPM), a national research centre of the Indian Council

of Agricultural Research (ICAR), India, was established in February 1988 to cater to the emerging plant protection needs of the different agro-ecological zones of the country. The activities of the Centre extend across and beyond different disciplines and agencies to establish partnerships with the SAUs, government agencies, industries, NGOs, and farmers. The NCIPM plans and conducts eco-friendly IPM research and development programmes, essentially required for sustainable agriculture. It is working towards the establishment of a national network for the development of area-specific IPM modules and technologies for the major production systems of India's different agro-ecological zones.

The civil society organizations are the backbone of BMP promotion in the four cotton states. Shop for Change, for instance, is helping farmers in Gujarat, Maharashtra, AP, and Orissa to develop their communities with enhanced knowledge and better market prospects.

3.3 Cotton-specific agriculture policy and interventions

Usually, the Government of India focuses on specific crops. There are specific crop schemes, implemented through the State Directorate of Agriculture, which focus on enhancing productivity. In the context of cotton, the Directorate of Cotton, Ministry of Agriculture, Government of India, has been implementing the TMC. Under this, Mini Mission–I (MM-I) focuses on research and MM-II focuses on enhancing productivity. MM-I gets implemented through ICAR institutes like the Central Institute for Cotton Research (CICR). Under MM-II, the emphasis has been on improving productivity through the release of new varieties of seeds. There has been a limited thrust on IWM, INM, IPM, and the overall ICM practices. IPM in cotton has received attention mainly due to the increase in the cost of cultivation because of the extensive use of chemical pesticides.

The Government of India launched the TMC in February 2000 to address the issues related to raising productivity, improving quality, and reducing the cost of production of cotton in India. The TMC covered the following four Mini Missions.

- Mini Missions I and II focused on effective production technology, increasing productivity, and reducing the cost of cultivation.
- Mini Missions III and IV undertook the development of 'market yards', modernization of ginning and pressing factories, and reduction in contamination level.

MM-II was specifically designed to improve the adoption of PoPs at the farm level. MM-II, therefore, is the only policy initiative of the Central government for the promotion of BMPs. As stated earlier, MM-II focuses on enhancing productivity in cotton cultivation. In consultation with the states, guidelines have been issued for the implementation of this scheme. The scheme subsidizes production and distribution breeder, foundation, and certified seeds. It incentivizes micro-irrigation techniques like sprinkler and drip irrigation. There is specific focus on plant protection, which includes seed treatment with chemicals, distribution of pheromone traps, supply of bio-agent/bio-pesticides, supply of sprayers, surveillance of diseases and pests, setting up of bio-agent laboratories. Plant protection is popularized through Farmer Field School (FFS)—a key approach to extension—and field-level demonstrations (FLDs) on IPM by various NGOs. The scheme also lays emphasis on indigenous technologies.

Extent of existing policy focus on BMPs promoted by WWF-India

As MM-II is the singular policy intervention with regard to cotton, the extent of the government's current focus on BMPs can be analysed by comparing the BMPs being promoted by WWF-India and those under the TMC's MM-II.

Table 3.4 : Extent of government focus on the BMPs promoted by WWF-India

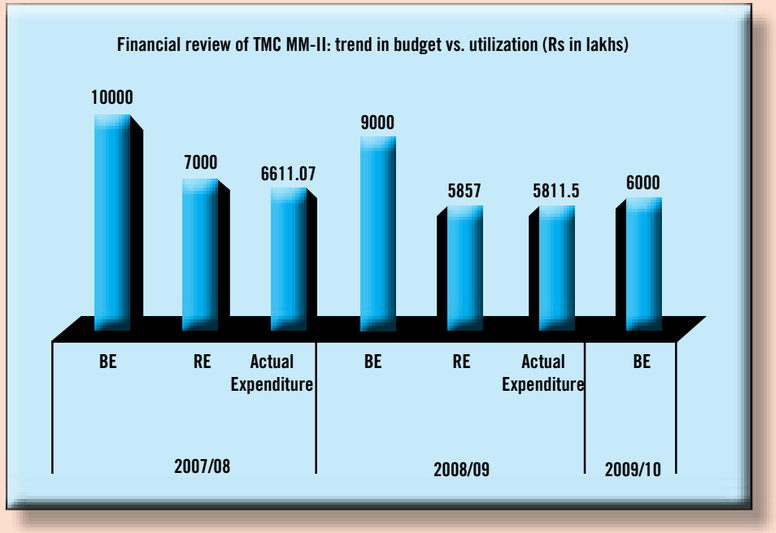
BMP Area	WWF's BMPs	TMC's MM-II Focus
Integrated Nutrient/Soil Fertility Management	◆ Summer Deep Ploughing ◆ FYM application ◆ Vermicompost ◆ Compost preparation with *Madhyam* ◆ *Amruthajalam* (prepared with cow dung, cow urine, *ghee*, and jaggery) application ◆ Tank Silt application ◆ Sheep penning	
Integrated Water Management	◆ Paired row technique ◆ Drip irrigation ◆ Closed spacing ◆ Nipping of plants	◆ Sprinkler ◆ Drip irrigation
Integrated Pest Management / Plant Protection	◆ Pheromone traps ◆ Trap crops like castor and marigold ◆ Neem oil spray ◆ Bird perches ◆ Vitex (wild bush) decoction ◆ Neem seed kernal extract ◆ Chilly and garlic mixture ◆ Bio-pesticide sprays ◆ Boarder crops like maize and jowar ◆ Yellow sticky boards ◆ Cow dung and urine spray ◆ Tobacco decoction	◆ Seed treatment with chemicals ◆ Setting up of bio-agent labs by private agencies ◆ Setting up of bio-agent labs by state ◆ Surveillance of diseases and pests ◆ Distribution of pheromone traps ◆ Supply of bio-agent/bio-pesticides ◆ Supply of sprayers—manual and power-operated ◆ FLDs on IPM by NGOs
Other including process elements of BMP facilitation	◆ FFS ◆ Training of farmers/extension workers	◆ Seed production—foundation and certified ◆ Seeds distribution—breeder and certified ◆ FFS ◆ FLD on farm implements ◆ Indigenous Technical Knowledge (ITK) model ◆ Training of farmers/extension workers

As is evident from the table above, the Government of India's policy focus has largely been on IPM and plant protection measures. In water management, the priorities for MM-II have been drip irrigation and sprinklers. It is evident that MM-II has not promoted BMPs related to INM/soil fertility management. Furthermore, there is a clearly distinguishable difference between the type of BMPs that are part of the government framework and the type of BMPs that are promoted by WWF-India. MM-II investments are largely directed towards infrastructure (such as setting up of bio-labs), agriculture equipment (like sprinklers and sprayers), and input provision (such as foundation and certified seeds). But, the BMPs promoted by WWF-India have focused on management practices, an aspect which has not received due attention in the government framework. This may be because MM-II has limited funds available for the entire country. The promotion of BMPs requires intensive efforts, for which the government machinery is neither available nor capable. It is not surprising, therefore, that the government has chosen to allocate and spend money on items like equipment and infrastructure, wherein utilization is higher with lesser efforts. Table 3.4 gives an inkling of where the current government focus is with respect to cotton BMPs. The distribution of sprayers and supply of bio-agents, pheromone traps, and other such items are interventions where targets are higher and achievements against targets are relatively better than other BMP-related interventions. This shows that government investments are largely channelized towards infrastructure, equipment, and input-related interventions, and not so much towards management-related interventions, as propagated under BMPs. Another important consideration here is the level of government investments on BMPs. TMC's MM-II budget

estimates (BE) in 2007/08 was Rs 100 crores, which was revised to Rs 70 crores. The actual expenditure in that year was Rs 66 crores. The BE in the next year (2008/09) was reduced to Rs 90 crores. Revised estimates (RE) were Rs 58.5 crores, which was the actual spending as well. Learning from this experience of "not being able to spend more", the government has planned to invest Rs 60 crores under MM-II this year (2009/10). This level of investment translates to only few lakhs at the district level. With this amount of money, not many results can be expected from BMP promotion.

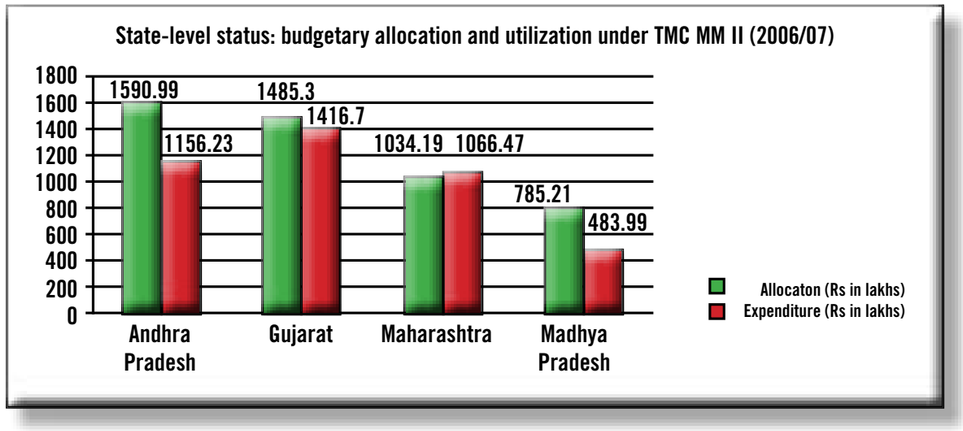
Table 3.4: TMC's MM-II: target vs. achievement

Mini Mission II	Target	Achievement	Target	Achievement
	2007/08		2008/09	
Seed distribution (in qtls)	45,722	25,126	32,887	28,033
Training of farmers/extension workers (no.)	625	394	216	160
Sprinkler (ha)	3802	629	2150	1207
Drip irrigation (ha)	5196	3106	4960	3659
Sprayers (no.)	167,778	171,994	155,889	151,833
Supply of pheromone traps (no.)	77,667	50,180	54,833	37,942
Supply of bio-agent (ha)	10,497	80,743	68,731	66,678
FFS (no.)	5728	5053	7413	6335
FLD on farm implements (no.)	351	284	159	40
Seed treatment (qtls.)	21,980	1106	17,780	4594



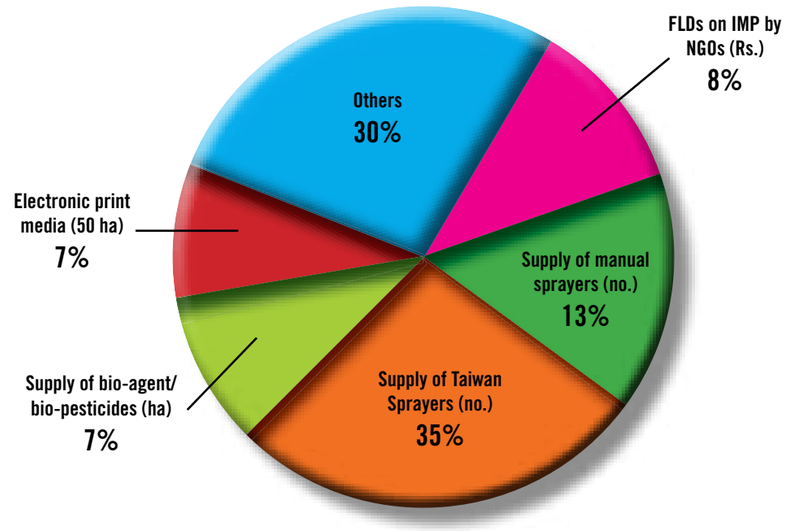
The state of TMC's MM-II investments in the four cotton states throws a very similar picture as that of the national level. Let us take a look at it.

The four cotton states get close to 80% of MM-II investments (which suggests that the allocations are proportionate to the area under cotton cultivation). About half of MM-II budget is allocated for two states—AP and Gujarat. While AP has utilized 73% of its allocation, Gujarat has utilized 95% of it. While Maharashtra has utilized above 100% of its allocations, MP's utilization is much lower at 62%.



The utilization pattern is revealing. For example, in Andhra Pradesh, 35% of the budget in MM-II is utilized for supply of Taiwan Sprayers and another 13% for manual sprayers. FLDs on IPM by NGOs get about 7% of the total budget. Overall, NGO–governmental organization (NGO-GO) partnership for BMP promotion has not evolved as yet. The utilization pattern is more or less similar across the other three cotton states. In Gujarat, 46% of the budget is utilized for distribution of certified seeds. In Maharashtra, close to one-third of the budget is utilized for distribution of pheromone traps, bio-pesticides, and manual sprayers. In MP, more than half of the budget is utilized for distribution of drip sets. Expenditure on process elements (FLDs, FFS, training of farmers, and so on) is the highest in Maharashtra (24% of the state MM-II budget) and lowest in MP (2.7% of the state MM-II budget). In AP, process elements get 16.2% of the state MM-II budget, whereas in Gujarat, the figure is 4.3%. This shows how limited BMP promotion efforts are in the existing policy framework. However, policy-level recognition for BMP

Utilization pattern in Andra Pradesh: TMC MM-II (2006/07)



promotion is quite evident, highlighted by a CICR statistics that suggests how much farmers will benefit from the adoption of each of the BMPs (see table 3.5).

Overall, it seems that the MM-II scheme encompasses different aspects of the BMPs being promoted by WWF-India. However, a closer look at the implementation of this scheme reveals that these interventions are not promoted in an integrated manner, focusing on a specific geography/group of farmers. Thus, efforts taken under the scheme get diluted. Within it, there is more focus on distribution of implements like sprayers, rather than process-oriented

Table 3.5 Additional income to farmer from the adoption of BMPs

BMP	Added income (Rs per ha)
Dry sowing	3782
In situ soil moisture conservation	4518
Drip irrigation	4279
Intercropping with green gram	3861
Integrated weed management	4795
INM	3148
IPM	5842

Source: CICR

interventions like FLDs in IPM or FFS. Inadequate number of field functionaries and lack of motivation are affecting the popularization of BMPs. Nevertheless, as the production of cotton in India has increased to the optimal level, it may be quite relevant to redesign MM-II to focus on specific geography, moving towards the popularization of BMPs for the production of "better cotton".

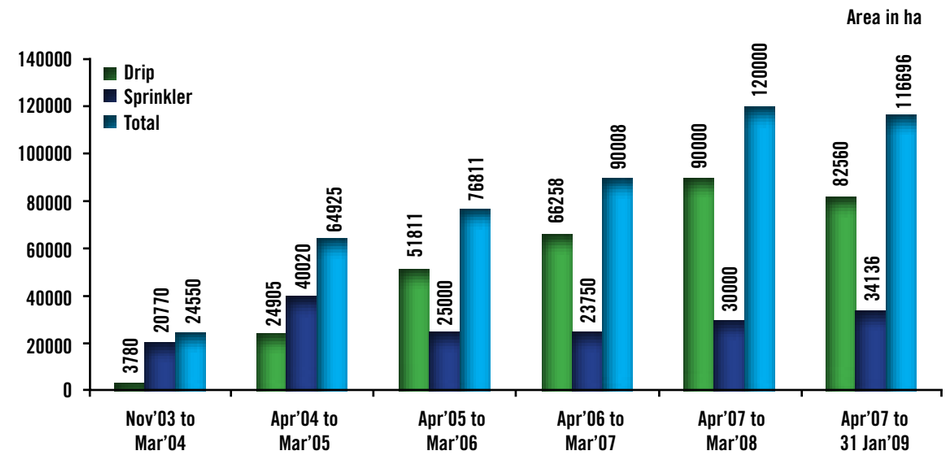
4 State-specific policy analysis

Since the agriculture sector in India consumes about 85% of the available freshwater, effective utilization of water in agricultural activity is most desirable (anonymous, 2003). In India, the water use efficiency in agriculture is the lowest (30%–40%) in the world, as against a high 55% of China. In a micro-irrigation system, water use efficiency varies from 70%–95%, whereas it is just 35%–40% in traditional irrigation techniques (flood irrigation), due to huge amounts of seepage, evaporation, distribution, conveyance losses, and so on (Michael and Ojha, 1997). After realizing the vast potential of this untapped sector, the union government has already decided to invest Rs 61,500 crores. The Tenth Five-year Plan envisaged bringing three million hectares under micro-irrigation and the Eleventh Five-year Plan has provisions for covering 14 million hectares. Currently, the area under micro-irrigation is about 1.2 million hectares, of which drip irrigation accounts for 0.5 million hectares and sprinkler irrigation for 0.7 million hectares. This is against the potential of 69 million hectares (Sukhpal Singh, 2010). The data shown here is not specific to cotton, but it nevertheless demonstrates the policy focus on micro-irrigation. This section analyses the policy intents, state budgets, spending pattern, financing schemes, specific BMP-related interventions, and stakeholders' views on promotion of BMPs across the four cotton states. However, it should be noted that in some cases, where state-level budgets are presented, it is difficult to separate out the budget on a specific crop like cotton.

4.1 Andhra Pradesh

In 1998, the AP government introduced the first ever state subsidy scheme for micro-irrigation. **AP Micro Irrigation Project** (APMIP) is the first comprehensive project being implemented in a big way in Andhra Pradesh. The APMIP was launched on November 2003, with an objective of enhancing the crop productivity by improving the water use efficiency through micro-irrigation systems. The performance of the APMIP is shown below.

APMIP performance from Noveber 03 to 31 January 2009



Under the APMIP, a 70% subsidy is permitted to the farmers, for both drip and sprinkler, with a subsidy limit of Rs 50,000 per family. The Government of India has been supporting micro-irrigation from 2005/06 onwards, under a "Centrally Sponsored Scheme". Out of the total cost of a micro-irrigation system, 40% is borne by the Central government, 30% by the state government, and the remaining 30% is the beneficiary share, either through their own resources or through soft loans from financial institutions.

APMIP is being implemented by the Department of Horticulture, Government of AP.

Achievement of APMIS as on 31 January 2009

Area covered - 1.16 lakh ha
Total project cost - Rs 378.57 crores
Subsidy - Rs 274.37 crores
Indian government's share - Rs 131.11 crores
State's share - Rs 143.26 crores

(Source: http://www.aphorticulture.com/apmip_details.htm)

Crop-wise micro-irrigation coverage paints a dismal picture for cotton (0.3% of the total area covered under micro-irrigation is on cotton), as shown in table 4.2.

The state budget for agriculture in AP was Rs 866 crores in 2007/08, out of which 85% was utilized. The budget allocations for BMP-related interventions (*polambadi* or FFS, extension, INM, and MM-II) were only 8% of the total state plan budget. It should be noted that this budget is for all the crops, except the MM-II budget. MM-II itself was 2% of the overall state agriculture budget. The detailed budget is given in table 4.3.

The MM-II in AP had the following components during Kharif 2008/09.

- FFS (through *polambadi*)
- Distribution of bio-agents on 50% subsidy, limited to Rs 900 per ha
- Surveillance of pests and diseases to monitor the pest population (Rs 100,000 per district)
- Distribution of monocrotophos for stem application on 25% subsidy, limited to Rs 50 per ha
- Distribution of sprayers on 50% subsidy—hand-operated sprayers (limited to Rs 800 per unit), power sprayers (limited to Rs 2000 per unit), tractor-operated sprayers/Taiwan Sprayers (limited to Rs 10,000 per unit)
- Distribution of sprinklers on 50% subsidy to small farmer/medium farmer (SF/MF), Scheduled Caste, and Scheduled Tribe, and 33% subsidy to other farmers to bring more area under irrigation
- Trainings to field functionaries and dealers to enrich the knowledge
- FLDs on IPM (whole village concept), through *polambadi* cell
- FLDs of one hectare on production technologies, with a subsidy of Rs 5000 per demo

Table 4.2 Crop-wise area covered under micro-irrigation from Nov'03 to Mar'08

Area in ha

S.No	Name of the Crop	Achievement
1	Banana	15,215
2	Cashew	530
3	Citrus	68,986
4	Coconut	1677
5	Cotton	997
6	Flowers	351
7	Grapes	1205
8	Jatropha	3166
9	Mango	45,849
10	Medicinal and aromatic plants	519
11	Oilpalm	12,335
12	Ornamental	6
13	Others	43,721
14	Tobacco	277
15	Papaya	8013
16	Pomegranate	2703
17	Sapota	4609
18	Sericulture	322
19	Spices	3227
20	Sprinkler	139,540
21	Sugarcane	13,611
22	Vegetables	9436
Total		**376,294**

Agency	Programmes/scheme/project/ activity/purpose for which budget is allocated	Amount released last year	Amount spent last year	Budget released during 2008/09
		2007/08	2007/08	
CENTRAL SECTOR SCHEMES				
Dept. of Agriculture	Seed Village Scheme	773.68	773.68	0
-do-	Quality Control Arrangement on Seeds	125.2	48.22	0
-do-	PM Rehabilitation Package	27,887	21,814	0
-do-	National Food Security Mission	2522.81	2522.81	5578.28
-do-	Rashtriya Krishi Vikas Yojana	6108	3773.78	59.83
Sub Total (Central Sector Scheme)		**37,416.69**	**28,932.49**	**5638.11**
CENTRAL SPONSORED SCHEMES				
	Work Plan on Macro Management basis	5502.3	3700.41	7353.52
-do-	ISOPOM-Oilseeds	4134.97	3987.64	1578.01
-do-	ISOPOM-Pulses	345.53	310.84	521.86
-do-	ISOPOM-Maize	176.59	162.47	70.22
-do-	MM-IITechnology Mission on Cotton (ICDP-Cotton)	1447.63	1163.11	412.33
-do-	Agriculture Technolgy Management Agency (ATMA)	2723.19	1092	0
-do-	Jute Technology Mission	85.53	43.37	40
Sub Total (CSS)		**14,415.74**	**10,459.84**	**9975.94**
STATE PLAN				
-do-	Integrated Nutrient Management	1375.51	1314.64	603.62
-do-	Farm Mechanisation	2981	2977.83	1125
-do-	Supply of Seeds	2139.46	2123.48	3513
-do-	*Polambadi*	657.5	636.35	250
-do-	Extension	3196	2743.35	6224.99
-do-	National Agricultural Insurance Scheme (NAIS)	24,454	24,454	250
-do-	Buildings to Agriculture Department	0	0	250
-do-	Crop Loans to Farmers (Pavala Vaddi)	0	0	7750
	Sub Total (SS)	34,803.47	34,249.65	19,966.61
	Total Plan	86,635.9	73,641.98	35,580.66
	Total Non-Plan	17,458.1	15,286.24	9681.16
Grand Total		**104,094**	**88,928.22**	**45,261.82**

Following are the summary points from data analysis and discussions with the state-level stakeholders.

State government investments on BMPs: Government investments are largely focused on micro-irrigation and IPM-related BMPs. FFS (*polambadi*) has been used largely as a method of extension. Areas with low subsidy elements have lower utilization patterns. Government investments on actual extension are minuscule; even the Rashtriya Krishi Vikas Yojana (RKVY) funds are channelized for farm machinery.

Collaborative work among institutions: During the discussions with the stakeholders, it was observed that scientists at universities and research and extension institutions are not engaging with the civil society, and vice-versa. The civil society and scientists from technical institutes may, in fact, talk to each other on ecological issues, although they may not involve the government in the process. Partnership precedence among institutions with similar mandate is not available in the state.

Preferred BMPs: A research by CRIDA showed that drudgery-enhancing practices are not preferred by farmers. In fact, off-the-shelf products are preferred. Therefore, BMP promotion will require "productization", if, for example, the NPM available off the shelf will have lot more takers from the farmers community.

Strong civil society presence in the cotton sector: NGOs like Wassan, Centre for World Solidarity (CWS), Centre for Sustainable Agriculture (CSA), and Action for Food Production (AFPRO) are deeply involved in sustainable agriculture/cotton initiatives in the state. Their strength and experience should be leveraged by WWF-India.

Large multi-lateral programme supporting BMP-related interventions: Parastatal bodies like IKP, with World Bank funding, have upscaled NPM. Employment of 'NPM volunteers' at the village level has been a reasonably successful model for supporting the farmers to adopt a particular BMP.

Organic markets operate at small scale: Challenges to organic cultivation of cotton are many; some are being witnessed by international non-governmental organization (INGO)-supported programmes. For example, Oxfam initiatives on organic markets are well-knit, but are facing non-Bt seed, productivity, and other challenges.

Input companies and dealers as extension agents: The pesticide company network is well "entrenched", far better than any other initiatives on the ground. Dealers also command a lot of respect among the farmer community for their advice. Therefore, private sector-based extension services are being delivered to farmers at their doorstep. While "promotion of business interest" may be the primary objective for the pesticide companies and dealers, but, in the absence of any other alternative, farmers are taking their advice very regularly and seriously.

Overall, the state is moving towards NPM, while the government is investing on IPM, though not in a major way. Micro-irrigation is the special focus in the state. Organic farming is still done at a very small scale and is meant for a niche market. Some of the stakeholders felt that BMP promotion in the state can be better done in partnership with the state's Rural Development Department, as it is open to such partnerships and there is past record of its successful delivery of bi-lateral/multi-lateral projects, such as the IKP.

Pesticide companies feel that all NPM/IPM movements are at a very small scale and are, thus, feeling that there is no need to alter their marketing strategies in a significant way in the near future (say 5–10 years).

4.2 Gujarat

In the second position in 'Green Revolution' is Gujarat, a state that has achieved the agricultural growth rate of 9.6% and has carved a niche in the field of agricultural development in India. As of 2009, Gujarat's agriculture growth rate has been three times more than the national growth rate.

Gujarat has a total geographical area of 19.8 million hectares, of which 9.6 million hectares is utilized for agricultural purposes. About two-third of the area is under arid and semi-arid tropics. In this tract, millions of small and marginal farmers practise diverse dry and rainfed farming, under risk-prone conditions. The area under food crop is only about 30% of the total cropped area, as against the 62% at the national level. The state has 21% area under cash crops. Cotton occupies 16% of the total cropped area.

BMP-related initiatives in the state

Sardar Sarovar Project: The world's largest irrigation network was made possible by the Sardar Sarovar Project on river Narmada, with the dam height being raised from 90 metres to 121.9 metres. The project has contributed immensely towards irrigation, hydropower, and drinking water supply.

Check dams and village ponds: A government-supported scheme for village ponds and check dams, called Sardar Patel Sahabhagi Jal Sanchay Yojana, has been quite popular in the state. Under this scheme, 60% of the costs is borne by the government (80% for tribal and border areas) and 40% by the beneficiaries. The respective share for tanks has been fixed at 90% and 10%. In this novel experiment, the responsibility for maintenance rests with the beneficiaries. The success key point in agriculture is the increased access to water. Gujarat has created history in water conservation by launching a drive for "blue revolution", constructing a number of check dams. Gujarat is a drought-prone state, with an irrigation cover of just 36% of the gross cropped area. But, increased water supply from the Sardar Sarovar Project, higher investments in check dams and watersheds (as of June 2007, a total of 297,527 check dams, *boribunds*, and *Khet Talavadi* (farm ponds) had been constructed by the state, in cooperation with NGOs and the private sector), and good rainfall in the past few years have helped to propel growth.

Soil Health Card: Gujarat was the first state to launch the Soil Health Card Scheme for every land to farmers. Farmers can verify the soil specimen with the help of scientists who examine the mineral composition in the soil. Based on the report, they can provide the fertilizer with appropriate mineral percentage. This has helped in soil enrichment, as well as reduced soil erosion to a great extent. As per government data, Gujarat farmers who used to grow 1–2 crops can now grow 3–4 crops, with increase in profit. More than 42 lakh farmers have received Soil Health Card. The district-wise data on this aspect is given in Annexure–8.

Water Harvesting Structures: Three lakh water harvesting structures have been constructed in the state in the last five years. This has not only increased the groundwater level throughout the state, but also the agriculture income by four times.

Water Use Efficiency: Many villages in Gujarat have adopted 100% drip and sprinkler irrigation systems to water crops. In June 2009, more than 93,000 farmers in the state adopted drip irrigation for their total 1.51 lakh hectare of land.

Gujarat Green Revolution Company (GGRC): The GGRC is aimed at promoting micro-irrigation among the farmers of Gujarat, as an implementing agency on behalf of the Government of Gujarat (GoG) and the Government of India to bring the second Green Revolution. This would be in consonance with the agriculture policy of the Gujarat Vision 2010, so as to save water and energy, besides providing multiple benefits to farmers to improve agricultural productivity and farmer's prosperity, at large.

The GGRC was established with an investment of Rs 15 billion. It achieved a target of 16,152 drip and sprinkler sets during 2005/06. Agriculture being the biggest user of water, introduction of water-saving technology on a wider scale will ensure greater water use efficiency. This has the potential of bringing about major transformation in water management in Gujarat (though only 3% is covered under the micro-irrigation system in cotton). The updated progress of a month (February 2010) of the GGRC is shown in table 4. 4. During the discussions, the GGRC invited WWF to the state with their concept. It commissioned an independent evaluation of the benefits of the micro-irrigation scheme. Table 4.5 presents some interesting results from that evaluation.

Table 4.4: Crop-wise progress report of the GGRC				
S. No.	Crops	Physical progress		Financial progress (in Rs crores)
		No.	Area (Ha)	
1	Horticulture	641	1010.32	1.67
2	Non-horticulture	2924	4576.25	5.44
Total		**3565**	**5586.57**	**7.11**

Table 4.5: Benefits under different crops on implementation of the project				
Crop	Water saving ('000 cu m/ha)	Energy saving (KWh/Ha)	Increase in production (tonnes/Ha)	Payback period (cropping cycle)
Cotton	2.3 (31%)	368 (16%)	0.8	3--4
Banana	10 (40%)	2166 (22%)	15	1.8
Sugarcane	7.5 (42%)	1562 (22%)	30	2.7
Potato	30%	543 (22%)	8	3.7
Mango	2.0 (33%)	NR	2.5	1.6

Source: Report of Concurrent Monitoring and Evaluation of Micro-irrigation Scheme by Agriculture Finance Corporation (2005/06 and 2006/07)

Watershed Management: A total of 48.883 million hectares of land has already been treated through various schemes of watershed management (Mahesh T Pathak and P K Singh, Frontiers of Agriculture Development in Gujarat, 2007).

Mega Extension Effort: Another significant development has been a systematic and massive extension effort, called Krishi Mahotsav, launched by the GoG during May–June 2005. This month-long pre-monsoon campaign covered all villages (about 18,000 villages) of Gujarat by involving approximately 100,000 personnel from 18 government departments.

Pesticide Use: As per a study by Dr B Lalitha and Dr Bharat Ramaswami of the Gujarat Institute of Development Research, the per-hectare expenditure on pesticides for all varieties of cotton is Rs 4743 in the state. The study found that out of the 25 pesticides being used in the study area, 2 belong to the highly hazardous chemicals category (as per WHO classification), 10 came under the category of moderately hazardous, 3 came under the category of slightly hazardous, and only 8 are non-hazardous to human health under normal use. As per the study, the city of Rajkot accounted for 50% of the total pesticide consumption.

Overall, the following points emerged from the data analysis and discussions with the players in the cotton sector of the state.

- The GoG is planning to take up cotton cultivation in the Narmada catchment. This can be a possible area for interventions by WWF.
- Cotton experts argued that the focus of BMP promotion should be on the BMP field rather than the BMP crop. BMP field is more scientific, as the adoption of BMPs for all crops will make the farm nutrients better and reduce the overall cost of cultivation.
- RKVY is a scheme that complements cotton promotion in the state.
- Some of the stakeholders felt that mainstreaming is possible through markets, as the ultimate realization of the product is through the market.
- Gujarat is in the forefront of corporate farming. 'Producers Company' and contract farming are emerging as effective extension systems in the state.
- Better support from the government can be envisaged under the overall framework of support, with focus on cotton (WWF can communicate and push its agenda better as well).
- There can be a brand for organic and sustainable cotton. Efforts should be made to link cotton with fair trade initiative, which will take care of the distribution of profit among stakeholders.
- Common Service Centres are there in every sixth village in Gujarat. This can be banked upon for BMP promotion.
- The Director of Agriculture said that there are no specific state government scheme; only Government of India schemes related to cotton are being implemented.
- Sajjata Sangh is a network of civil society organizations in Gujarat. The network is working on BMP, policy lobbying, and marketing. The strength of the network can be leveraged for large-scale BMP promotion in the state. The Development Support Centre (DSC) is steering the network. DSC is already a part of the IKEA-supported initiative for better cotton.

4.3 Madhya Pradesh

Context of cotton in the state

Out of the 11 agro-climatic zone in MP, 6 have cotton cultivation, consisting of 14 districts. The area coverage under cotton in 2009/10 is 6.46 lakh hectares (12% increase from normal). Bt cotton-covered area is 6.11 lakh hectares (2009/10). Extra Long Staple (ELS) cotton covers 0.26 lakh hectares of area.

Since 2003/04, record yields are being witnessed in cotton. Cotton production has increased 400 times—from 117 kg/ha to 578 kg/ha. MP is producing 4% of the cotton in India from 6% of the area at the national level. In 2005/06, the cultivable area also increased with production—up to the highest level in the state. The estimated seed cotton productivity is now 700 kg/ha (as per the presentation of the Joint Director, Agriculture Department, given on 28 January 2010 for TMC MM-II, MP).

The cotton districts in MP are Khandwa, Burhanpur, Khargone, Badwani, Dhar, Jhabua, Ratlam, Mandsaur, Dewas, Betul, Harda, Chhindwara, Sehore, and Alirajpur. District-wise area, production, and productivity in the state are as given below.

Table 4.6: District-wise area, production, and yeild prospects of cotton, and ranks in MP					
District	Area—000 ha; Production—000 bales; Yield—kg/ha				
	2009/10			Rank in area	Rank in yield
	Area	Production	Yield		
Chhindwara	24	64.24	450.45	IX	I
Ratlam	33.9	57.83	287.1	VI	II
Dhar	106.9	171.88	270.6	II	III
Dewas	32.3	47.5	247.5	VII	IV
Khargone	210.5	288.92	231	I	V
Barwani	62.9	72.15	193.05	IV	VI
Khandawa	85.9	94.32	184.8	III	VII
Jhabua	24.4	25.84	178.2	VIII	VIII
Burhanpur	54.1	53.04	165	V	IX
Alirajpur	4.4	4.1	156.75	X	X
Harda	3.7	3.37	153.45	XI	XI
Sehore	0.5	0.39	132	XIV	XII
Mandsaur	0.5	0.37	125.4	XIII	XIII
Betul	1.1	0.81	123.75	XII	XIV

Major investments on BMPs related to cotton

MM-II is the major investment in the cotton sector of MP. The updated progress on MM-II in the state is given in table 4.7.

Table 4.7: Progress on MM-II

Component	Physical target	Physical achievement	Beneficiaries
FFS	125	113	3390
Distribution of bio-agent	13,500	13,220	13,220
Supply of sprayers	15,600	10,896	10,896
Drip	2377	1410	1410
Sprinkler	2300	1458	1458
Season-long training	1	1	29
State-level training	14	11	270
Farmers' training	62	53	1610

Source: Joint Director, FW&AD, Bhopal, 28 January 2010

MP has various bi-lateral and multi-lateral projects. The Madhya Pradesh Rural Livelihoods Project (MPRLP), supported by the Department for International Development (DFID), works towards eliminating rural poverty by empowering rural households in nine districts, mainly tribal, of MP. The MPRLP aims to improve agriculture methods and water resource development. The District Poverty Initiative Project (DPIP), supported by the World Bank, is working in over 2900 villages in 14 northern districts of MP to alleviate poverty by improving the capacity and opportunities for poor and disadvantaged people, with special focus on women. The total size of the project is Rs 521 crores. These poverty alleviation projects have many components, and of these, at least two components (in both MPRLP and DPIP) are related to BMPs. Therefore, it is estimated that about 20% of this budget will be utilized for BMP-related interventions.

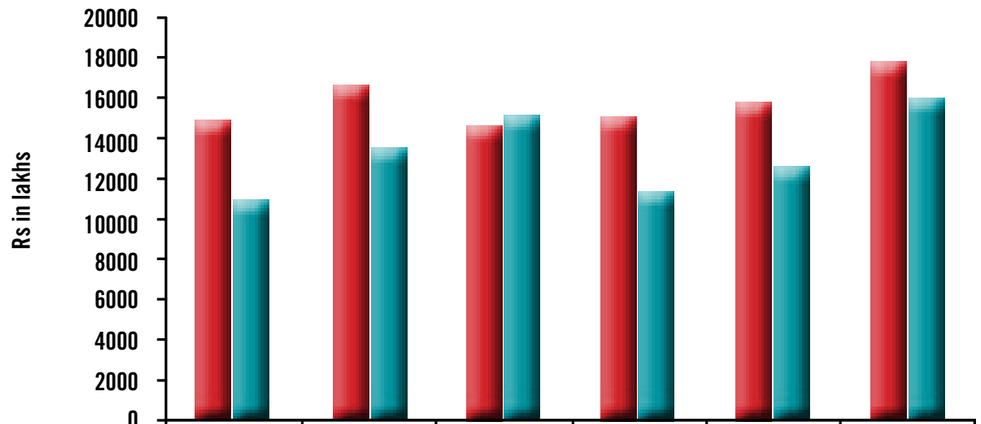
Civil society and public-private partnership initiatives contributing to agriculture development in the state

At present, 1538 farmers' clubs are working in MP, supported by the National Bank for Agriculture Development (NABARD). NABARD largely facilitates the clubs in the state with the involvement of civil society organizations. Farmers have the opportunity of exploring better PoPs and technologies. The clubs organize periodic meetings, involving the agricultural experts from the Agriculture Department and Krishi Vigyan Kendra (KVK).

Self-help groups (SHGs) have a presence in most panchayats of the state, promoted under different programmes and agencies. They are a good vehicle for supporting farmers in getting timely agriculture credit and inputs, building capacities, disseminating information, and so on. NGOs are playing a catalyst role in the promotion of SHGs and micro-finance institutions in the state. A number of NGOs like PRADAN are playing a pioneering role in the development of agriculture-based livelihoods, especially for the tribal communities in the state.

The private sector is also contributing significantly towards agriculture development in the state. Some of the key private players in MP include ITC, Dawat Group, and Hariyali. The public-private partnership (PPP) initiatives in the state started in 2001, with the Memorandum of Understanding (MOU) signed between the Director of Agriculture, MP, and the Chairman of the Dhanuka Group to work together in areas like soil testing, training, farmers tour programmes, demonstrations, transfer of technology through cyber dhabas, agriculture fortnights, establishment of markets, and provision of credit facilities to farmers. Thus, MP became the first state in the country to have a private extension policy and pioneered by implementing the initiatives. In 2005/06, the Agriculture Technology Management Agency (ATMA) programme was launched in the state. The main aim of the ATMA is to provide timely extension services. In the first two years, the Agriculture Department implemented the ATMA on its own. In the third year (2007/08), through PPP, private companies and NGOs joined hands with the Department to implement the programme to better reach its goal. Two partners joined hands initially—ITC for demonstrations, training, and farmers' school extension services, and Krishk Jagat Education Society for the publication of the monthly newsletter *ATMA SANDESH*. In 2008/09, four more partners joined in (NGOs Action for Social Advancement [ASA], Gramin Vikas Trust [GVT], PRADAN, and India–Canada Environmental Facility [ICEF]), along with a corporate (Daawat group) and a DFID-funded project, MPRLP. The partners in their areas used various extension tools like demonstrations, training, exposure, improved seed distributions/trails, and interaction of farmers with scientists. In 2008/09, Rs 16 crores were spent by the government under this programme, while the contribution of the partners was about Rs 3.72 crores. After the successful results of the initial years, the Department is planning to expand the coverage, and 12 new partners have been identified for this purpose.

Department utilization trend



	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Plan Outlay	14,927.70	16,571.55	14,621.61	15,100.98	15,774.49	17,775.00
Expenditure	10,952.69	13,470.98	15,000.55	11,430.85	12,526.75	15,996.16

Agriculture interventions in MP are done through the following channels.

- Farmers Welfare and Agriculture Development (FW&AD) Department
- Horticulture Department
- MP Agro and Agriculture Marketing Federation
- National-level developmental programmes like NREGA, which contribute towards agriculture development
- State-level developmental programmes like MPRLP, DPIP, Tejeswini, and so on
- Civil society organizations like NGOs, the private sector, and so on

Although specific state-level agriculture policies do not exist in the state, there are various guidelines and plans, which provide strategic intent to the agriculture interventions by the FW&AD Department. With a view to facilitate the execution of various programmes in a coordinated manner, various schemes have been grouped as under.

- Agriculture production
- Soil conservation
- Minor irrigation
- Micro minor irrigation

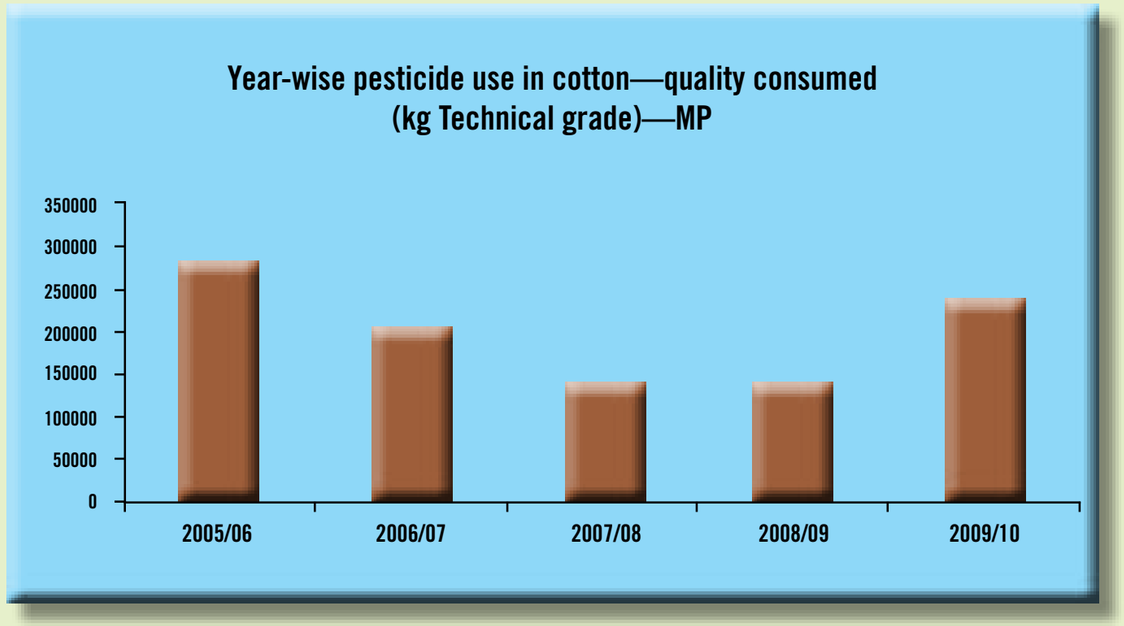
The public investments in agriculture have been stagnant during the three-year period of 2005/06 to 2007/08. The planned outlay in the agriculture sector in MP marginally moved up from Rs 148.63 crores in 2005/06 to Rs 177.75 crores in 2007/08. The planned outlay for the last financial year (2008/09) increased significantly to Rs 689.61 crores. The actual expenditure till November 2008 shows that only Rs 155.98 crores (25% of the total plan outlay) have been utilized. The planned outlay for 2009/10 is projected at Rs 585.61 crores, of which 23% is the tribal sub-plan (TSP) outlay. The major addition to the current fiscal outlay is the RKVY, which brings in Rs 380 crores of additional public investments in the sector (of which 23% is under the TSP). Clearly, the public investments in agriculture have almost tripled for the current fiscal, as against the trends of annual utilization over the last five years. The crucial issue to monitor will be whether the tripling of investments brings in increased reach and coverage of agriculture services, and, possibly, tripling of agriculture growth in the state, to move up to 5%, as envisaged in the annual plan for 2009/10.

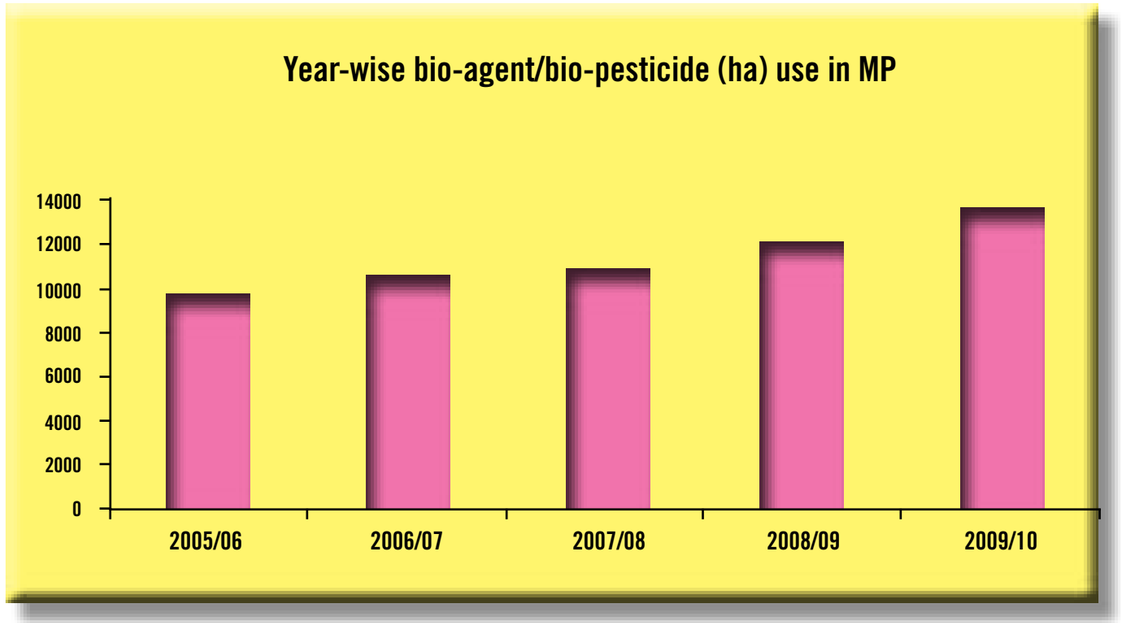
The above analysis is an indication of low level of investment through the state agriculture budgets on the BMP- related interventions (*Balram Talav*, watershed development, ICDP, and so on).

Summary points

In MP, a large area is under rainfed cultivation. Undulated topography and lack of awareness among the farmers about better cotton practices are the main reasons behind the low level of cotton productivity in the state.

Pesticide Use Pattern: The data from the Agriculture Department shows reduced use of pesticides in the state, while the use of bio-agent/bio-pesticides is increasing over the years (see graphs).





Significant state-level policy initiative

To arrest the alarmingly increasing rate of use of chemical fertilizers, the MP government has formulated an 'Organic Agriculture Policy'; probably, the first of its kind in India. Under the policy, the government will introduce a new system for the registration of organic seeds, certification of organic food grain, creation of separate *mandis* for trade of organic grain, and formulation of a strategy to make farmers understand that organic farming is better than modern farming. Compared to the national acreage of organic farming on 5.38 lakh hectare, MP's share stands at 1.63 lakh hectare. The acreage went up 30.89% during 2008/09 in the state. This indicates how farmers are inclined towards organic farming in MP. State Finance Minister Raghavji recently said that the state government wants MP to become an "organic state". These developments augur well for scaling up BMP promotion in the state.

MP is the leading textile centre of India, with a thriving textile cluster in the south-west region (Malwa). Since the Malwa belt has a large cotton growing area, a large number of textile mills are clustered around Indore, Ujjain, Burhanpur, and so on. At present, there are about 51 textile units in the state. From production of raw material to the final manufacturing of readymade garment (RMG), MP has significant strength across the entire value chain. The presence of some of the leading textile players in the state provides testimony to the significance of MP in the domestic textile industry. Some of these key players are Bhilwaras, Indo-Rama, Bhaskar, Oswals, S-kumar's, Maikal, and Parasrampuria. Despite this, MP has not been able to take full leverage of its position. At present, MP's share in the total apparel exports from the country is less than 1%. The key reason behind this is the high degree of fragmentation and lack of modern infrastructure facilities. The state government has initiated several reforms aimed at modernization of the existing units and development of high-end infrastructure facilities in the state.

4.4 Maharashtra

Agriculture plays an important role in the state's economy, as more than 65% of the population depends on it for their livelihood. In recent years, the relative contribution of agriculture to the state's gross domestic product (GDP) has decreased, with consequent increase in rural poverty and migration of landless individuals from villages to towns and cities.

BMP-related initiatives in the state

Like MP, the Maharashtra government has also formulated its state organic policy. The organic cultivation practices are on the upswing, supported by INGOs, other donors, and international market players. The study team met a private company, named Eco Farm, based at Yavatmal, Maharashtra. Eco Farm works with more than 7000 farmers with 50,000 acres under organic cultivation, of which 20,000 farmers are engaged in cotton cultivation.

National Information System for Pest Management was implemented in 12 cotton-growing districts throughout India on a pilot scale, with 20 villages in each district.

The Government of Maharashtra has adopted a **new strategy for agricultural extension services.** The strategy is about a multidisciplinary interdepartmental approach of extension, with the support of line departments, input suppliers, NGOs, and private organizations.

BMPs in cotton is being implemented jointly by AFPRO and IKEA at the Yavatmal district of Maharashtra to motivate the farmers to produce pesticide-free cotton, so as to reduce environmental damage. A total of 7148 farmers have registered under the BMP project from eight blocks of the district. The total number of villages under the BMP project area is 97, with the area coverage of 14,270.6 hectare.

Institutions and projects supportive of BMPs

From the **All India Co-ordinated Cotton Improvement Project** (AICCIP), the data on population dynamics of insect pests and natural enemies was collected from 16 centres from 2006 to 2009.

The awareness-cum-surveillance programme for the management of major pests is one of the major initiatives in the Soybean–Cotton–Pigeonpea- and Chickpea-based cropping systems in Maharashtra, sponsored by the Commissionerate of Agriculture, Government of Maharashtra, under the RKVY.

The **FAO/IPM project** has been successful in creating a cadre of experienced extension workers by training facilitators in the implementation of FFS in the Akola, Washim, and Yavatmal districts. The sustainability of this new extension system has been demonstrated in various agricultural sectors of Maharashtra, especially in the area of high-value crop production. The IPM approach promotes the use of eco-friendly pest and disease management practices through the use of bio-control agents. Constant monitoring of pests and diseases becomes a normal practice in the farmers' fields. The ultimate objective of the Department of Agriculture is to spread the IPM approach to all major crops. Training of farmers, facilitators, and input suppliers in the concepts and implementation of IPM is conducted through the FFS approach.

The Agriculture Support Services Project will establish the Water User Associations (WUAs), and the Agricultural Support Services (ASS) component will complement this initiative by forming smaller farmer interest groups (FIGs) in project villages/WUAs, as well as multidisciplinary and interdepartmental technical support groups at various levels. About 10,000 demonstrations, which are to be organized on the farmers' field during the life of the project, will cover integrated plant nutrient management (IPNM), IPM, ICM, improved rain/irrigation water management, seed production, and so on. Since the success of IPM requires that its demonstrations should cover a fairly large area, the demonstrations will cover all crops grown in a given village. The project budget is Rs 85 crores for various components, with about Rs 17.5 crores for ICM.

The National Watershed Mission and the proposed National Horticulture Mission and Dry Land Farming Mission are implemented with clusters of villages and micro watersheds as the basic unit of project-based approach, within which dry land farming and crop diversification take place along with livestock development, dairy development, fisheries, sericulture, and agro-forestry in an integrated manner. Once a reliable source of protective irrigation and moisture retention is created under watershed development through a communit-driven implementation model, communities are encouraged to have their own **water budgeting** and crop planning, for which organizational structure under Watershed Association are created.

Maharashtra has launched a campaign to constitute 500,000 user groups and 10,000 Krishi Vigyan Mandals as the units of crop planning and technology dissemination for groups of villages with 1000 families each.

The Maharashtra State Cooperative Cotton Growers Marketing Federation (MAHACOT) supports the cotton farmers to get a remunarative price for their produce and supply unadultered cotton to its consumers with reasonable market price.

The Directorate of Cotton Development in Mumbai coordinates and monitors the implementation of ICDP under MM-II of TMC at the national level. The Directorate is the nodal office in the country on cotton. Scaling up of promotion of BMPs, therefore, needs to work closely with the Directorate.

5 Enabling and constraining factors for scaling up BMPs

Based on the policy and sectoral analysis presented in the earlier sections, the following pointers to the factors, both enabling and constraining, which will influence the scaling up of the BMPs emerge.

Policy intent exists; translation of that intent into results is a key issue: The analysis above clearly points out that BMPs are part of the government's promotional efforts (kind of "mainstreamed"). However, focus and investments on these are quite limited. The quality of BMP promotion by the government is also a big issue, as in the current scenario, the NGO-GO partnerships that exist in several livelihood promotion programmes do not show any clear evidence of the quality of BMP promotion. It is evident that the existing policy framework is supportive of BMPs. But, this policy intent has not yet fully translated into proper allocations, institutional arrangement, relevant programming, or actual actions on the ground. This is possibly where WWF-India needs to carve out a role for itself—in making the government machinery work better and in leveraging the investments by the government by providing top-up funds.

Government of India's shift in focus from cotton to pulses and oilseeds: A macro-trend perceived by the stakeholders interviewed during the study is that the Government of India is shifting its focus from cotton to pulses and oilseeds, due to food security considerations. This trend is expected to continue for the next few years at least. More so because production and export benchmarks have been achieved in cotton. Therefore, the shift, which will become more perceptible with the closure of TMCs, offers opportunities for other significant players like the BCI and WWF-India to support sub-sector investment for BMP promotion (from the ecological footprint point of view).

Supportive institutional delivery mechanism exists; but it does not work in unison: Supportive institutional mechanism is available in the form of agriculture extension department, university, and research institutes; farmers' organizations; and civil society organizations working on agriculture, in general, and cotton, in particular. But, all of these are not working in unison. This is a classic case of 'continuum' not working. The research is not feeding into new extension messages. The extension system is unable to capture ideas for new research. The stakeholders are not working together on a coherent agenda. There is little precedence of partnerships among universities, research institutes, and the civil society. Any scale-up effort will, therefore, have to draft a 'collaborative agenda' at the very outset.

Extension system is ineffective, government does not have a priority for reviving it: Although large Central government schemes like the RKVY and the ATMA provide opportunities to improve the existing extension system, the scope and flexibilities of these schemes are not being utilized optimally. Training and visit (T&V) system, supported by the World Bank, developed human resources in the government for doing extension work. However, they are engaged in and over-burdened with non-core activities. Thus, it will be difficult to rely on them for steering the agenda of BMP promotion.

Two schools of thoughts and conceptual struggle: 'Better cotton' means different things to different stakeholders. Some espouse the organic cause, while others talk about non-pesticidal agriculture. Other schools of thoughts talk about IPM, balanced use of chemicals, and so on. BMPs have usually taken a middle and somewhat practical position, and propagated the agenda of IPM, INM, and IWM, and clean picking (social dimension). The proponents of organic cotton believe that there can possible be no 'middle' agenda. The organic cotton is driven by corporates in the four cotton states, with MP and Gujarat in the lead. The reach of organic cotton is still limited to few percentage points. 'Organic Cotton' is a distinct brand identity, while 'Better Cotton' identity is still developing. There are many issues to be answered regarding 'better' part of better cotton. While markets provide certain level of push to organic cotton, the same is not available for 'better cotton', unless distinct brand identity is carved out. In the government circles as well, the understanding and visibility of 'better cotton' is not evident at this stage (policies do promote a set of practices, but do not categorize it under any specific identity for cotton, which is produced using certain BMPs). Therefore, efforts to scale up BMP adoption at a wider scale face stiff challenges at this juncture.

No official recognition of BMPs: PoPs require recommendations from university/research institute set ups. In WWF-Pakistan, representatives shared how they have kept universities in the loop from the start, so that BMPs identified by WWF-Pakistan can become a part of the university recommendations to the extension department. In India, the system also works in the same fashion, wherein BMPs will be tested by universities before becoming a part of the mainstream system. The BMPs evolved from WWF-India's pilot project have not been put through this grind, which explains why visibility and recognition of BMPs and 'Better Cotton Initiative' is weak in the government circles.

State-level policy thrust on water management: Micro-irrigation and participatory irrigation management are specific state-level policy thrusts, especially in Gujarat and Maharashtra, providing an enabling environment for BMP promotion.

Increasing role of private entities: The pesticide and input dealers, pesticide companies, and various corporates are now playing an increasing role in agriculture. Extension services are now embedded in the products that private players are marketing to farmers. Corporates are also directly linking up with farmers for their raw material supply, with corporate farming gaining some scale.

Weak NGO capacities in agriculture/cotton; limited scale: NGOs, over the last few decades, have gained skills in social mobilization and technical delivery of natural resource management (NRM) programmes (watersheds, NRM-based livelihoods, and so on). However, this generic expertise has not yet developed into specific sectoral expertise in agriculture or in sub-sectors like cotton. This will limit the scale of programmes related to cotton, as there might not be sufficient capacity for scaling up.

INGO thrust on agriculture is weak: India's development is supported by many INGOs, which play significant roles in bringing in innovations and scaling up the existing interventions. INGOs have traditionally focused on rural development and livelihood-focused initiatives, which have been generic in nature. With their specific mandates and multiple agendas, the agriculture sector as a whole has received little focus in INGO programming. This has limited the scale of work currently underway in the sector, as well as the creation of capacities among NGOs to work on agricultural issues.

Thrust on productivity and not profitability: Overall, the work of the government, the civil society, and the private sector on agriculture has been confined to the improvement of production and productivity. The interventions related to technology and management practices (encompassing seeds, chemical inputs, and pesticides) are chosen to enhance the level of cotton production. The farmers, therefore, also tend to look at cotton cultivation from the production/productivity enhancement angle while evaluating the need to take up certain interventions. In the overall scheme of things, the case of BMPs, which focus on improved profitability through cost reduction (less input use) and some improvement in productivity, does not carry much weightage, making it difficult to scale up initiatives related to BMP promotion.

6 Proposed policy framework : WWF-India

6.1 Policy objectives for WWF-India for scaling up BMPs in cotton

The policy objectives for WWF in scaling up of BMPs in cotton can be as follows.

Pushing the conservation agenda, reducing ecological footprints: BMPs in cotton cultivation developed by WWF-India have the potential to reduce the use of freshwater, as well as improve the quality of water (with reduction in the use of pesticides). WWF-India, in collaboration with research institutes, can plug the enormous research gaps that exist. The research issues are related to providing evidence to the link between BMPs, water, and nutrient conservation. The pilot projects of WWF-India have only partially addressed the research gaps.

Transforming markets for 'Better Cotton': BMPs by farmers result in the reduction of the cost of cultivation and, thereby, increase profitability. In the short run, this may work out as a motivating factor for the farmers. However, most of the stakeholders perceive that, in the long run, it is only demand in the "market" leading to a premium price for cotton that can motivate cotton farmers to adopt BMPs. In this context, it is worthwhile for WWF-India to continue to pursue its efforts towards developing a market for 'Better Cotton' in India. The key focus of the overall policy framework for WWF-India, therefore, is to continue its efforts in "transforming markets" for supporting its conservation agenda. As part of the international Better Cotton Initiative, WWF-India may contribute towards developing the demand for 'Better Cotton' in India. In this regard, the Ministry of Textiles and the Ministry of Commerce can also be pursued to have schemes that would encourage production and marketing of 'Better Cotton'.

Addressing institutional delivery problems in the agriculture sector, specifically in cotton: The promotion of BMPs will face the institutional delivery challenges cited earlier. These require a stronger facilitation role, which an agency like WWF-India is well-equipped to undertake. Besides, there are no other large players doing the facilitation role. The government focus is also shifting from cotton to pulses and oilseeds.

6.2 Strategic options for interventions by WWF-India

WWF-India, at this juncture, faces strategic choices for scaling up its interventions related to BMP promotion. Let us run through these options.

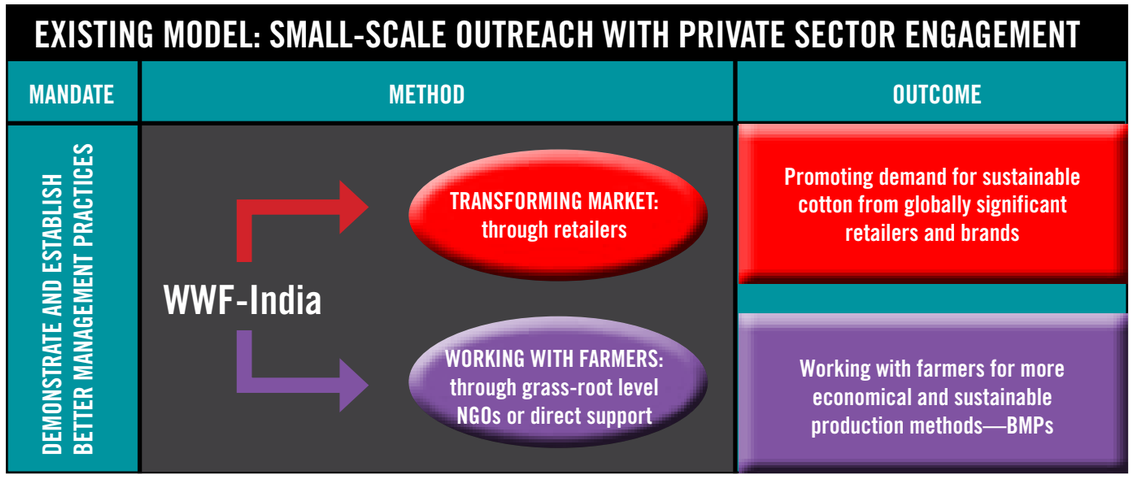
Strategic Option 1—WWF as implementer: WWF-India can scale up BMPs through its own initiatives and projects (acting as an implementer), that is, it can choose to scale up its implementation of projects, similar to the pilot projects underway in two locations. For doing this, WWF-India may tie up with private players (global supply chain partners) like IKEA, Marks and Spencer, and so on. However, through this option, WWF-India may not be able to achieve the scale envisaged in the long run. Clearly, this is not a sustainable and cost-effective option.

Strategic Option 2—WWF as facilitator: WWF-India can think of supporting and facilitating the "missing links", and develop a collaborative agenda for the other institutional players like research institutes, universities, and governments. It is possible to achieve the policy objectives outlined above by WWF-India playing the role of a facilitator. However, this will entail serious engagement for a very long duration, chances of success of which will be dependent upon higher order institutional capacities at WWF-India.

Strategic Option 3—Mainstream through 'outreach model': The other approach for WWF will be to "mainstream BMPs through outreach model". Here, WWF will play the role of a collaborator and facilitator at the same time. The process,in this case, will be long term, but is expected to be more impactful and cost-effective. The table below delineates the strategic options, with their pros and cons.

Strategic option	WWF-India's main role	Discussion
Scaling up through direct implementation in the cotton states; another possibility is direct implementation, in partnership with private players in selected pockets; NGOs involved at the grass-root level	Implementer cum technical support provider	• Direct (by self) or indirect (by NGO partners) outreach to designated/prioritized geographical areas • With private players, it will be difficult to balance business interests, farmers interests, and conservation agenda • No long-term strategic linkages developed with the mainstream system • Cost-effectiveness and sustainability of results will remain doubtful
Mainstreaming by facilitating the missing links	Collaborator; linking up the policy–research–extension continuum	• Most cost-effective model • Facilitating institutions so that joint planning and implementation take place • Supporting research institutes, extension departments, and universities in areas where they feel constraints in working together • Requires enormous policy engagement and relevant institutional skills for the purpose • Long-haul work and short-term results cannot be expected or showcased to WWF donors
Mainstreaming through an "outreach model", involving large private-sector market players	Collaborator and facilitator	• Reasonably cost-effective and impactful model • WWF scale up through outreach, with NGO partners and private players; resource organizations identified and supported by WWF, which will support the NGO partners • At the same time, WWF develops collaborative linkages with research institutes, extension departments, and universities • Outreach to targeted geographical locations will provide the necessary leverage and demonstration sites to WWF to talk to government and other sectoral players • Collaborative approach will give the platform to WWF to talk about "mainstreaming"

The study team suggests that WWF-India should choose the third strategic option, that is, play the role of a collaborator as well as a facilitator. It should do "mainstreaming through an outreach model". To explain it further, it is important to look at the existing model of WWF-India in relation to the promotion of cotton BMPs.



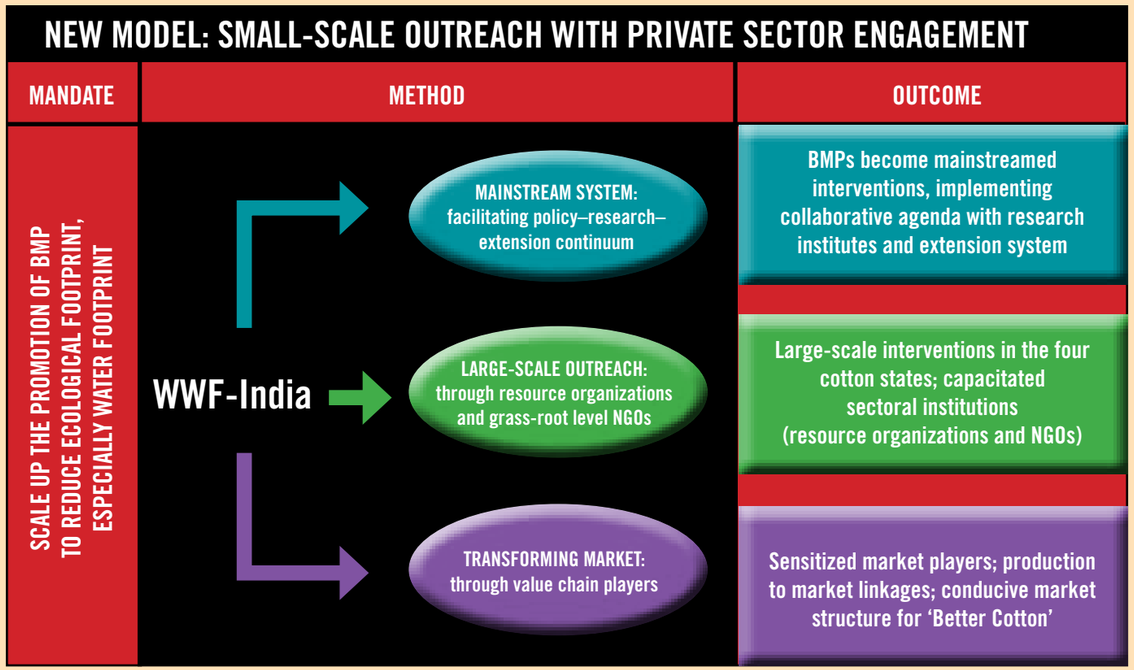
WWF-India started with the mandate of demonstrating and establishing BMPs through pilot projects. It worked at two levels for the purpose—with the farmers, directly or through grass-root level NGOs for motivating them to adopt BMPs, and with the major retailers for promoting demand for 'better cotton'. But, for scaling up BMP promotion, the existing model may not be sufficient.

The proposed policy framework is shown in the diagram below.

For scaling up their interventions for BMP promotion, WWF-India needs to work with the mainstream system. Without this, achievement of scale will be limited and expensive. However, working with the mainstream system is not easy and will require the following interventions and roles to be played by WWF-India.

- Policy engagement and influence: As stated earlier, the Government of India's policy intent for BMPs does exists. But, what is required is the translation of the already-existing policy intent into results, through proper allocations, institutional arrangement, relevant programme design, and actual actions on the ground. This report has highlighted these areas in the earlier sections.
- Developing collaborative agenda: Without this, the efforts of all institutions will remain disjointed. For example, the missing link in the policy–research–extension continuum will remain and, therefore, achievements will be sub-optimal.
- Implementing collaborative agenda: The collaborative agenda needs to be implemented through the development of joint plans and implementation structures with research institutes, universities, and extension departments.

An important institutional structure will be to constitute national- and state-level BMP steering committees, involving key planners, researchers, academicians, WWF, and extensionists. WWF-India needs to bring key influencers into their steering committees from the very beginning. With the approach of making these influencers co-travellers, the effectiveness of the entire initiative will improve.



WWF-India should develop an uniform understanding on BMPs (across the continuum). Through the Better Cotton Initiative and engagement with different ministries (including the Ministry of Commerce), WWF-India can also contribute towards generating demand for "Better Cotton". With increase in the production of cotton in India, some of the stakeholders perceive that there may be dilution in the focus on cotton as a crop. In the interest of promoting the production of "Better Cotton", WWF-India should engage with the Directorate of Cotton in the designing of the next phase of TMC. This should be done in partnership with farmers federation and policy organizations.

Strengthening research–extension link: Current research efforts are directed more towards the introduction of new varieties of cotton seeds and augmenting production. Although there is a wider acceptance of the principles of BMPs like IWM, IPM, and INM, there is inadequate focus to put these principles into practice. With the learning of the pilot experience, WWF-INDIA can now collaborate with research institutes like CICR and SAUs to integrate BMP in research agendas and take up BMP trials. BMP, as a component, can be included under the All India Coordinated Cotton Research Project (AICCRP). With this, BMPs will move into the POPs released by SAUs, which will lead to wider acceptance of BMPs.

Outreach model: The outreach model suggested in the above policy framework consists of three layers—state-level resource organizations, district-level implementing NGOs, and beneficiary farmers. WWF-India will no longer need to work at the grass root, but play the role of a technical support provider for the state-level resource agencies. State-level resource agencies provide technical support to district- and grass-root level NGOs in the promotion of BMPs among the farmers. State-level agencies, being expert institutions, will also support WWF-India in state- and national-level policy engagement, networking, and advocacy. The arrangement will help in strengthening the capacities of all institutions involved, which will be a long-term contribution of WWF-India.

Popularizing BMPs through effective extension models: WWF-India should collaborate with the state agriculture departments and state-specific agencies identified during the field study, such as the Department of Rural Development in AP, Cotton Federation in Maharashtra, GGRC in Gujarat, and Planning Commission in MP, to facilitate the implementation of district-focused outreach models. Resource agencies and the NGO partners of WWF-India should supplement the efforts of the Department of Agriculture at state/district/block level. During the field study, most of the stakeholders expressed that the government's extension system is not able to reach out to the farmers. It is also difficult for the government functionaries to popularize BMPs, as most of them are quite process intensive. Hence, the involvement of WWF-India and its resource agencies and NGOs will be critical in the extension strategy.

While pursuing a district-focused outreach at the state level, it would be important to align with the ongoing agriculture extension approach in the states. This includes FFS in AP, Krishi Mahotasav in Gujarat, and Progressive Farmer-led extension in MP and Maharashtra. Similarly, it may be desirable to build on the ongoing efforts of the government linked to BMPs, such as NPM in AP, micro-irrigation and soil health in Gujarat, popularization of organic farming in MP, and pest surveillance in Maharashtra. This will serve as the entry point for the popularization of BMPs.

Strengthening farmers institutions: As the demand for "Better Cotton" grows and the farmers get linked to market, there would be a need to promote formal organizations of farmers, such as producer companies and cooperatives. Similarly, contract farming could be an option to popularize BMPs, as well as purchase "Better Cotton".

Establishing "outreach" at a large scale will provide the necessary demonstration sites and confidence to WWF-India to effectively engage with the mainstream system. The joint/collaborative agenda, developed among research institutes, universities, and extension departments, can also be implemented at these demonstration sites in the four cotton states.

All of the above may not suffice without the conducive market structure. Markets can influence the uptake of technologies and management practices in a very significant and rapid way. The reverse is also true, that is, if the markets are not favourable, then the chance of uptake of a new practice will remain quite dim. In the emerging scenario, the study team feels that WWF-India should strengthen its relationships with large retailers. Additionally, WWF-India should explore the linkages with the value chain players, so that the entire market chain (production to consumption) becomes sensitized towards the need for BMPs to produce "Better Cotton". For doing this, a mass campaign-based approach will be useful, which can serve both the nodes—markets and mainstream system.

In the long run, mainstreaming would be successful only if there is an increase in the demand for "Better Cotton". Hence, it is also proposed to work at the policy and stakeholder levels to generate demand for "Better Cotton", and, at the same time, facilitate its production at scale through district-focused outreach strategies. The role of WWF-India is envisaged as that of a "facilitating" and "collaborating" institution. Most of the stakeholders expect this role to be played by WWF-India. Below is a short description of how WWF-India can achieve its conservation mandate through scaling up BMPs in the cotton sub-sector.

- As a collaborator: WWF-India collaborates with the policy-makers at the Central and state levels, and brings the issues concerning BMPs to their attention. WWF-India develops a collaborative agenda with universities and research institutes to create pathways for BMP scale up.
- As a facilitator: WWF-India facilitates outreach in the four cotton states through state-level resource organizations and district-level implementing organizations.

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