Integrated Environmental and Social Assessment for Maharashtra Agriculture Competitiveness Project

Final Report

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TECHNOSERVE

Business Solutions to Rural Poverty

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ABBREVIATIONS

ABDF	Agri- Business Development Facility
APMC	Agriculture Produce Market Committee
ATMA	Agricultural Technology Management Agency
BMC	Bulk Milk Coolers
DAPMS	District Agriculture Production and Marketing Strategies
ESG	Environmental and Social Guidelines
ESMF	Environmental and Social Management Framework
FGD	Focus Group Discussion
FMD	Foot and Mouth Disease
GoM	Government of Maharashtra
IESA	Integrated Environmental and Social Assessment
MACP	Multi-State Agricultural Competitiveness Project
MSAMB	Maharashtra State Agriculture Marketing Board
MT	Metric Tonne
NGC	New Generation Cooperatives
NGO	Non Governmental Organization
PIU	Project Implementation Unit
PMU	Project Management unit
RAMETI	Regional Agriculture Management and Training Institute
TNS	TechnoServe
ToR	Terms of Reference
VANANATI	Vasantrao Naik Agricultural Management and Training Institute

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EXECUTIVE SUMMARY

Introduction

Small and marginal farmers often lack proper market access to get a fair price for their produce because of their small marketable surplus and limited bargaining power. In addition, restriction on sale of produce outside regulated market yards limits market access further. Neglected rural markets, poor availability of regulated markets, long distances from production areas and inadequate infrastructure limit their ability to get a proper price for their produce. Other constraints confronting them include multiple intermediaries and exploitation by monopolistic licensees; lack of cleaning, grading, packaging and quality certification facilities; limited access to information on domestic and overseas markets and available marketing opportunities; and fragmented supply chain, poor cold storage facility and high post-harvest losses.

In Maharashtra, the Agriculture Produce Market Committees (APMCs) are having 294 main market yards and 612 sub market yards and all are functioning currently. But these functioning markets have a number of inadequacies in market facilities. For example, covered auction platforms exist in only 2/3rd of the regulated markets; traders module exists in about 60% of the markets; grading facility is available in less than a third of the markets; farmers resting facility is present in only half of the markets; and cold storage facilities are available in less than 10% of the markets.

The Government of Maharashtra (GoM), through its nodal agency for agriculture marketing, Maharashtra State Agriculture Marketing Board (MASMB), has proposed to plan and implement the Maharashtra Agriculture Competitiveness project (MACP) and in this context has approached the World Bank for financial assistance.

The development objective of the proposed MACP is to foster the development of more competitive marketing systems; and improve market access for farmers and livestock producers through enhanced knowledge and more effective producer organizations. It has two major project components:

1. Expanding market infrastructure and increasing farmers' access to market opportunities
2. Facilitating intensification and diversification of production

Integrated Environmental and Social Assessment Study

MSAMB undertook an Integrated Environment and Social Assessment (IESA) study. The main objective was to identify the key environmental and social issues related to the proposed activities. The IESA was expected to both identify opportunities to enhance environmental and social benefits as well as mitigate any potential concerns. The IESA study led to development of an Environmental and Social Management Framework (ESMF) that integrates environmental and social considerations at all stages of the proposed project.

Methodology and Approach

The IESA included collection of both the primary and secondary data/information. The assessment involved a desk review and assessment of the relevant social, environmental and sectoral policies and regulatory framework at the national and state level. Primary data was collected through field visits, covering twenty sites identified for the sub-projects proposed to be implemented in first year of the project. These sub-project sites covered all the four regions of the state – Vidarbha, Marathwada, western Maharashtra and Konkan. Focussed Group Discussions and interviews with the potential stakeholders of the project were conducted to identify and assess the social and environmental implications of the project along with the current levels of occurrence. The study was conducted in close coordination with the MSAMB team including the selection of sample sites for field visit, planning the field visits, stakeholders' consultations and debriefing of the findings.

Policy, Acts and Institutions

The legal and regulatory environment in the State is favourable for the project implementation. Several Acts, rules and policies of the Government of India and the GoM exist that pertain to agricultural marketing initiatives and those that safeguard the physical and social environment. Some of the relevant Acts reviewed by the study team are:

Act/Rule/Policy
I Environmental Acts and Policies
Environment Protection Act (EPA) 1986
Water (prevention of pollution) Act
Air (prevention of pollution) Act
Environmental Impact Assessment (EIA)
Coastal Zone Management (CZM) Notification 2008 (earlier known as Coastal Regulation Zone (CRZ) Notification of 1991)
Hazardous/Biomedical Waste Management, Handling and Disposal Rules
II Other Relevant Acts/Rules/Policies
The Seed Act 1966; Seed Rules 1968; Seeds (Control) Order 1983; Insecticide Act 1968; Insecticide Rules 1971; Insecticide (Control) Order

Act/Rule/Policy
1985; Fertilizer Control Order 1985; Fertilizer Movement Control Order 1973; Essential Commodities Act (Amended - 1986)
III Social acts and policies
National Policy on Resettlement and Rehabilitation (NPRR) of Project Affected Families – 2004
Maharashtra Project Affected Persons Rehabilitation Act, 2001
National Policy on Tribal Development – 1999
The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
Sub plan for Scheduled (tribal) areas
Gender Policy – National Commission of Women
Maharashtra State Women Policy 2002
Child Labor (Prohibition & Regulation) *Act*, 1986
Other issues
HIV/ AIDS prevention related policies
Minimum Wages Act 1948 - Notification from Directorate of Industries, Government of Maharashtra June 2000

Policies Related to Agriculture Marketing

In addition, some of policies related to agriculture marketing were reviewed as briefed below.

a) **Model APMC Act:** This Act was formulated with a view to promote development of competitive marketing infrastructure and bringing professionalism in the management of existing market structures besides safeguarding the interest of farmers. The Act provides space for establishment of Private Markets/yards, Direct Purchase Centers, and Consumer/Farmers Markets for direct sale and promotion of Public Private Partnership.
b) **Maharashtra Agricultural Produce Marketing (regulation) (Amendment) Act 2005**: Based on the model APMC Act, GoM made amendments to the existing APMC Act titled Maharashtra Agricultural Produce Marketing (regulation) (Amendment) Act 2005. This Act stipulates granting of licenses subject to terms and conditions for direct marketing or establishing private markets.

World Bank Safeguard policies: Various World Bank safeguard policies and their implications for this project were reviewed. The applicability of the Bank's safeguard policies to the project is indicated below:

Operational Policies	Applicability
Environmental Assessment (BP/OP 4.01)	Applicable
Forestry (OP 4.36)	Not Applicable
Pest Management (OP 4.09)	Applicable
Indigenous Peoples (OD 4.20)	Applicable
Natural Habitat (OP 4.04)	Not Applicable
Involuntary Resettlement (OP 4.12)	Applicable

Operational Policies	Applicability
Physical and Cultural Properties (OPN 11.03)	Not Applicable
Safety of Dams (OP/BP 4.37)	Not Applicable
Projects in Disputed Areas (OP/BP/GP 7.60)	Not Applicable
Projects on International Waterways (OP/BP/GP 7.50)	Not Applicable

Summary of Findings and recommendations

The overall assessment of the MACP intervention proposals in terms of environmental and social considerations is positive. The assessment shows that while there is very low risk of negative environmental and social impacts, there are high positive social impacts and opportunities to enhance the environmental performance of the project. Summary of the findings are as follows:

Environmental:

1. Majority of the interventions proposed are not new, efforts are to improve the existing practices and consequently spatially and temporally limited impacts may occur. Mitigation measures are proposed in the report to contain/minimize/ reverse any adverse impacts.
2. Sites proposed for infrastructure are in close proximity to the centre of production and accessible through all weather roads.
3. Land required for the project does not come under forestland or protected area and any upgrading of existing marketing facilities will not result in any major land use change or disturb any natural habitat outside the protected areas.
4. Improved markets could witness increased farm produce being traded and management of solid/organic waste could be an issue. Measures have been proposed in the report to address management of solid/organic wastes.
5. Better access to markets could drive on farm practices that increase yields resulting in increased use of fertilizers and pesticides. An INPM strategy has been developed for the project and included as part of ESMF.
6. Opportunities exist to enhance the positive environmental impacts by using alternative and environmentally friendly materials and approaches for conservation of natural resources.

Social:

1. Project interventions do not create issues related to physical displacement and consequently involuntary resettlement. For the first year sub-project sites covered under IESA, the required land is mostly public land (held with line departments/ local government or community bodies) and acquisition of private land is not envisaged for the proposed project interventions. However, for any unanticipated adverse impacts measures have been defined in the report for dealing with the resettlement and rehabilitation (R&R) issues.
2. The project interventions do not result in any adverse impact on the local communities. However, the proposed environmental and social management framework includes measures to help the local population (particularly the vulnerable among them) to access project benefits.
3. Positive indirect effect on health and education status among primary stakeholders

4. The project interventions will have positive impacts in terms of the increased accessibility to the market infrastructure and marketing facilities

But there are a number of issues that need to be addressed under the project to minimise adverse impacts and to ensure enhancing the positive impacts (social and environmental) and that the local communities benefit from the project activities. They are:

1. Sub-projects should be located in public/government land with no encumbrances and thus minimize acquisition of private land
2. The construction design need to incorporate environment friendly measures
3. Adequate waste management practices both for solid and liquid wastes need to be adopted
4. Capability building and awareness on environment friendly practices such as integrated pest management, soil and nutrient management and ground water management to be undertaken for the farmers
5. The project should adequately build the capacities of the farmers group
6. Project should ensure participation of women, tribal and other disadvantaged communities and small scale players. Specific initiatives to involve women particularly in marketing needs to be built in the project design.

Stakeholder Consultations

Extensive stakeholder consultations were undertaken during the study to ensure that it reflected the views and concerns expressed by all participants. The team visited 20 sampled project sites. As many as 150 primary stakeholder interviews (48 farmers, 46 fishermen and 56 livestock farmers) were conducted through a structured questionnaire. Focus group discussions were conducted with women groups, socially and economically marginal sections of the society (including backward castes and tribals), farmer associations/ existing cooperatives. The study team also interacted with the market committees in charge of APMCs proposed for up-gradation of facilities, and local line department officials, a numbers of supply chai participants like petty traders, local commission agents, labourers and 'hammals' in the identified mandis. The information collected from such stakeholder consultations is summarized in appendix B and appendix C. These stakeholder responses were key inputs to the designing of ESMF and recommendations of the study.

Environmental and Social Management Framework

The Environmental and Social Management Framework (ESMF) is developed to incorporate environmental and social concerns into the main project planning, execution and operation. It will be applied to all the sub-projects in different stages of the project cycle. The framework has been developed considering three broad stages of project cycle viz. project preparation, project implementation and project operation. For each stage, potential adverse environmental issues have been identified and mitigation measures proposed that have been integrated with the ESMF implementation process. The ESMF also incorporates key issues pertaining to resettlement and rehabilitation (R&R), gender equity, tribal development, use of pesticides, capacity building and institutional

arrangement. The framework also includes screening process of sub projects and monitoring measures.

Subprojects will be screened for specific attributes listed in the report and based on that their eligibility for support under the project will be decided. Any project activity resulting in physical displacement or significant conversion or degradation of critical natural habitats would be ineligible for support through the project. Schematic screening process has been suggested in report.

Specific Strategies

R&R Entitlement Framework: The project sites identified for the first year implementation neither involve any new land acquisition nor result in physical and economic displacement of the local people. However, an R&R entitlement framework has been prepared considering any future activities that could involve land acquisition and R&R issues. The entitlement framework recognizes all affected people irrespective of their ownership of land and other assets. Besides compensation for land and other assets (at their replacement value), affected people will receive support for their relocation (if physically displaced) and economic rehabilitation (for loss of source of livelihood).

Every subproject shall be screened for their likely adverse impacts, in the Preparatory stage itself. If in a sub-project R&R is triggered, a resettlement plan (RP) will be prepared for that specific sub project at the Planning stage itself. The key considerations in planning and implementing resettlement program under the project are:

1. No sub-project will be taken if it involves physical displacement of local people either from their residences and/or commercial places.
2. The project does not envisage acquisition for private land for the proposed project interventions, however, if any exigencies arise, compensation will be paid at the replacement value.
3. Private land holders and encroachers will be encouraged to *voluntarily surrender* their land required for project interventions. However, no force will be applied for this voluntary surrender.
4. In case the land belongs to the Panchayat or local body, a resolution to that effect should accompany the proposal. Ensure that such lands are free from any encumbrances.
5. Families affected adversely by project interventions, irrespective of the ownership, will get support to mitigate losses.
6. *Support project affected families*: The nature of project interventions does not envisage any land acquisition nor results in adverse impacts. However, if any such eventuality occurs, an R&R Entitlement Framework has been prepared which gives a base to plan mitigation measures for individual affected families. This framework has been developed taking into account the provisions of the Maharashtra Project Affected Persons Rehabilitation (MPAPR) Act, 2001, the

National Policy on Resettlement and Rehabilitation for Project Affected Families (NPRRPAF), 2003 and the experience of implementing R&R activities in the state in various sectors.

R&R Entitlement framework: This includes payment of compensation at replacement value for loss of land and other immovable assets for the proposed project interventions. Besides compensation and support in relocation process, the affected families (depending on the type and extent of loss) will get support to improve or at least restore their pre-project level economic livelihood. This includes, productive assets grant, financial linkages for taking up a productive enterprise and support in skill training. In addition, wage employment to the affected families under the project will be extended on preferential basis.

Gender Development and Strategy:

The focus group discussions with women groups and stakeholders consultation held in different project locations helped to identify gender issues that are relevant to the proposed project and to formulate measures to enhance their participation and access to project benefits along with others.

Key observations from these discussions are:

1. Low/less participation in any development program
2. Women play significant role in agriculture and other related activities, however these are not recognized by communities
3. Ownership of agricultural land is generally in the name of men
4. Women cultivators have problems in accessing markets particularly because of social and economic constraints in reaching nearby markets
5. Wages to women are generally underpaid and are not at par with male workers for the same type of work.

While, it is unrealistic to expect that the project will address all issues and concerns of women, a right approach would be to focus on specific issues that could address those that are most relevant to the project outcome. The approach, therefore, is to formulate specific project interventions focusing on women and supplement them with the existing government programs for the socio-economic benefit of women members. Specific measures under the project could include creating required infrastructure (like resting place, clean sanitation facilities etc) to facilitate women visiting the marts and help them participate in the trading activities. Following this approach, the gender development strategy of the project includes specific activities such as: identifying infrastructure needs and facilities for women members at the market; working with women Self Help Groups (SHGs) and helping them to actively participate in the project activities; involving these SHGs in the construction activities; organizing training for active participation of women members in the market committees; and ensuring that women members attend all meetings of the Market committee or Producer Company.

Tribal Development and Strategy:

There are some sub-projects that are located in areas predominantly inhabited by indigenous peoples (referred locally as tribal). Visit to some of these areas and discussions with tribal communities revealed that they have limited access to market facilities. Further, participation of tribals in most of the development projects is reported to be minimal. This is partly due to cultural differences and more significantly due inadequate efforts to include them in the development process. The key issues and concerns related to tribal vis-à-vis the project are summarized below:

- Tribal communities continue to practice traditional agricultural practices and hence little exposure to improve agricultural practices and use of farm inputs
- Limited exposure to emerging markets
- Limited access to institutional credit, farm inputs and agricultural extension services
- Poor leadership quality and inadequate representation/participation in the decision-making process

The tribal development strategy of the project aims at increasing active participation of tribals and their access to project benefits at par with the rest of the communities. Measures include increased communication with tribal groups to inform them about project opportunities and benefits; increase their participation in the working of the Market Committees and in the decision making process; and skill up-gradation. Specific incentives like waiver of user charges (through linkages with the on-going tribal development schemes), preferential treatment in using storage facilities created by the project for produce brought to the market by the tribal farmers are suggested to promote their participation in project promoted Marts.

Integrated Soil/Nutrient/Pest Management Strategy:

While the project only envisages procurement of limited agricultural chemicals (fertilizers and pesticides etc) for the purpose of demonstration, successful outcomes and the possibilities of better marketing opportunities could drive up use of these in areas where project would be introduced and demonstrations held. An integrated strategy for managing soil/nutrients and pesticides has been included in the report to address concerns related to overuse of agricultural chemicals. The strategy takes into account the broad principles of achieving maximum production with minimum inputs that minimize environmental pollution and manage pests below the economic threshold level. The strategy also includes IPM for the livestock sector. More specifically, the strategy provides a year-wise roadmap for sensitization, awareness building, training, demonstration and capacity building of relevant stakeholders to adopt IPM approach.

Institutional Arrangement:

The project management unit (PMU) of MSAMB needs to take a number of measures to ensure proper implementation of the ESMF including various strategies. This essentially requires a systematic institutional arrangement which is entrusted with the responsibility of ensuring compliance of the project components as per the ESMF.

The findings of IESA have clearly underlined the need to have a separate Environment and Social Cell (ESC) within the PMU. This cell will have one Social expert and one Environmental Specialist and will be responsible to coordinate with the participating Project Implementation Units (PIU). At each of the PIU, there will be a Community Extension worker who will be responsible for community mobilization as well as addressing social and environmental concerns at the sub-project level. Where ever NGOs are involved under the project, they will help in mobilizing communities and help the marginalized groups like tribal and women groups for their active participation in the project implementation.

Training and Capacity Building:

The basic tenet for success of any project is competent and skilled human resource. It is therefore important that the concerned project staff and other project stakeholders are adequately trained and capacitated to undertake project responsibilities. The IESA report includes a broad training plan for different stakeholders (including primary participants, project promoted community institutions and project functionaries. It also identifies a number of training institutions - both local (with in the state) and a few outside the state which can support the capability building efforts under the project.

Conflict resolution mechanism:

There is a need for a well defined conflict resolution mechanism as number of issues may arise around equity, inclusiveness, participation and transparency issues become potential sources of conflicts, especially in context of collective action like the producer company. Community level conflict resolution mechanisms are fairly strong. Each group has both formal structures, like executive committee (office bearers like president, secretary and treasurer) and general body to take a call on conflict situation. The proposed producer companies of the farmer groups will form the cluster level mechanism for conflict resolution. It functions under the ambit of companies act and there are clear cut rules and guidelines laid out for conflict resolution among the shareholders under the act. Table summarizing the process, time period for resolution, and responsibility for different levels of conflict management is suggested as part of the report to help the project management team to create a robust conflict resolution mechanism for the project.

Levels for conflict management	**Process**	**Maximum Time period for resolution**	**Responsibility**
Level I			
Producer Level	1. Conflict resolution to be arbitrated by executive committee and general body of the producer company 2. Formulate a cluster level arbitration committee to address regional or area level conflicts. The cluster committee may include representatives of executive committees of the producer companies 3. In exceptional cases, officials from line departments can be invited for facilitation	Within 15 days from the day of conflict/complaint	Secretary/President of Producer company

Levels for conflict management	Process	Maximum Time period for resolution	Responsibility
Level II			
Sub-project level	1. Formulate an arbitration committee comprising representatives of producer companies/key officials of line departments and market officials. 2. Ensure representation of women and members from disadvantaged sections 3. Nominate member from MSAMB to chair the meeting 4. Number of members should not exceed more than 7	Within 30 days from the day of conflict/complaint	Office bearer of APMC/market committee
Level III			
MASMB	1. Form an arbitration committee comprising representatives of producer companies, member from market officials, members of line departments and member of ESC cell 2. Nominate senior official of MSAMB to chair the committee 3. Number of members should not exceed more than 7	Within 3 months from the day of conflict/complaint	MSAMB/ESC cell

Monitoring and evaluation:

The project will have both internal and external monitoring mechanisms which will also cover ESMF activities under the project. In additions, the project will have provision for a mid-term evaluation of ESMF activities by a third party in collaboration with the project to get an independent validation of the progress, and take corrective measures mid way through the project. The Learning from monitoring and evaluation of indicators should be built into project implementation processes for improving project performance.

CHAPTER I - INTRODUCTION

1.1 Introduction

TechnoServe India (TNS) has been contracted by Maharashtra State Agricultural Marketing Board (MSAMB) to undertake the Integrated Environmental and Social Assessment (IESA) study for the Maharashtra Agricultural Competitiveness Project (MACP) in the state. MSAMB is implementing the MACP in Maharashtra with the support of the Government of Maharashtra (GoM) and the World Bank. Prior to MACP implementation, MSAMB has proposed to carry out an Integrated Environmental and Social Assessment (IESA) study to assess the environmental and social concerns associated with the proposed project interventions and factor in the key learnings in the project planning and implementation.

1.2 About the project

The development objective of the proposed MACP is to foster the development of more competitive marketing systems; and improve market access for farmers and livestock producers through enhanced knowledge and more effective producer organization. Opportunities lie within domestic as well as export markets. The state's nodal agency for agriculture marketing MSAMB is currently in the process of preparing the project implementation plan for the MACP with proposed financing from the World Bank under the MACP.

The two major components of MACP are described in the diagram below:

Components of the MACP

Expanding Market Infrastructure and Increasing Farmer Access to Market Opportunities

Sub-objectives of this component:

- Increasing and upgrading market infrastructure
- Making market management more efficient and responsive to farmers' needs
- Promoting private investment in agribusiness
- Improving the relevance of market information and regulatory framework
- Improving supply chain management

Facilitating Intensification and Diversification of Production

Sub-objectives of this component:

- Making extension and adaptive research more relevant and accessible to farmers
- Encouraging the development and introduction of more effective agricultural production systems
- Reducing risks associated with change, especially for small operators

The proposed project is consistent with the World Bank country assistance strategy that has a focus on accelerating rural growth through scaling of its support for improved rural livelihoods at state level, especially by strengthening community owned initiatives that

translate into social mobilization and community empowerment activities targeted at the poorest and most vulnerable section of the community.

1.3 Project components

The project has two main components:

Component 1: Expanding Market Infrastructure and Increasing Farmer Access to Market Opportunities – *by increasing and upgrading market infrastructure and making market management more efficient and responsive to farmers' needs; promoting private investment in agribusiness; and improving the relevance of market information and regulatory framework and improving supply chain management*

The sub-components include diversifying marketing channels through increased and upgraded market infrastructure, upgrading market access roads, making market management more efficient and responsive to farmer needs, promoting private investment in agribusiness, improving the relevance of market information and regulatory framework and improving supply chain management.

Component 2: Facilitating Intensification and Diversification of Production - *by making extension and adaptive research more relevant and accessible to farmers; encouraging the development and introduction of more effective agricultural production systems; and reducing risks associated with change, especially for small operators.*

The two main sub-components are: (1) making extension system more functional (district agriculture production and marketing strategies, market led extension and production system innovation), and (2) piloting risk management mechanisms.

1.4 Need for IESA

The project includes a number of activities which are small and these could have both the social and environmental adverse impacts that are reversible, if considered at the individual project activity level. However, the cumulative impact of all activities taken together might be significant. Therefore, there is a need to anticipate potential impacts which would help plan measures to avoid them through good project design and where they become inevitable there is a need to develop measures to mitigate them, both during project planning and implementation. Similarly, there is also a need to enhance the positive impacts and social and environmental benefits of the proposed activities of the project could be multiplied. This could be achieved by establishing procedures for enhancement measures. Considering this, the State Government of Maharashtra (GoM) proposes mainstreaming environmental and social concerns in the project planning and implementation.

1.5 Objectives and scope of the study

The main objective of the IESA is to identify the key environmental and social issues related to the proposed activities under the MACP. The IESA is expected to both identify opportunities to enhance environmental and social benefits as well as mitigate any potential concerns.

The study was designed to cover all sub-project components identified and proposed to be implemented in the first year of implementation, which includes four components AgriMarts, Modernization of APMCs, Development of livestock markets and AquaMarts. These locations cover all the four regions within Maharashtra state – that of Vidarbha, Marathwada, western Maharashtra and Konkan. The sampling unit for the study was the sub-project site/location.

The IESA is expected to develop a framework to assess the social and environmental impacts of the proposed project; develop measures to mitigate negative impacts and enhance positive impacts; consult with a variety of stakeholders; and examine the legal, policy and institutional aspects to ensure adequate and effective stakeholder participation in the project activities. Specifically, the IESA has attempted to achieve the following purposes:

- To improve decision making by mainstreaming the environmental and social objectives and safeguards into the planning and implementation of project activities and operation of the concerned institutions.

- To determine key social and environmental issues as relevant to the project objectives of fostering the development of more competitive marketing systems; and improving market access in an environmentally and socially sustainable manner, analyze and quantify the impacts and design project activities in a consultative manner keeping in mind environmental and social impacts.

- To design appropriate safeguards measures to mitigate any adverse impacts of proposed project activities (undertaking identification of stakeholders, assessment of the impacts, analyzing the alternatives and the policy frameworks, preparing the mitigation measures and action plans) and enhancement measures to increase positive impacts.

- To prepare the social and environmental management plans for the first year activities.

- To compile and enhance the relevant knowledge base on social and environmental aspects of the project.

- To help in identifying the additional detailed environmental and social impacts including those that needs to be conducted as part of the project.

- To determine the sustainable and appropriate institutional arrangements to mainstream management of social and environmental issues in the agriculture sector.

- To assess capacity of existing and proposed institutions to manage and enhance environmental and social aspects of project components and related activities.

    - The IESA will specifically identify any adverse impacts if areas selected for sub-projects involve any protected areas, natural habitats, cultural property or

socially sensitive areas. The study visited identified areas for locating the proposed infrastructure and evaluated it against the presence, if any, of natural area/habitat/forest/wetland or any other feature of ecological importance and provided a mitigation plan to eliminate/contain/minimize/reverse the identified adverse impact and conserve the natural feature. IESA assessed the associated social and environmental issues in detail and suggested mitigation or enhancement measures for incorporation in project design and implementation.

1.6 Scope of Work

The scope of IESA included the following specific aspects:

(a) Stakeholder assessment and social analysis: Initiate participation process by identification of stakeholders (including the project beneficiaries, those who can influence the project outcome like NGOs, market committees, market cooperatives, project implementers, affected persons etc.) their concerns, roles and responsibilities in planning, implementing and monitoring project and develop a strategy for continuing this process;

(b) Establishing baselines for key environmental and social parameters including socio-economic conditions, land tenure, existing market practices etc. define the social development outcomes of the project and fix indicators and criteria for the same for monitoring and evaluation at completion.

(c) Preparing mitigation plans: Include ESMF, ESMP or mitigation plans for addressing the adverse environmental and social impacts of the individual sub-projects, particularly those planned during the first year of project implementation.

(d) Identifying the detailed positive and negative social and environmental impacts: Include measures to enhance the positive environmental impacts and to establish a framework for identification of, mitigation response to and monitoring of the adverse impacts as part of the project.

(e) Identifying vulnerable groups and their role in the proposed project: Taking care to ensure their proactive participation in the decision making process for the location, development and management of markets, as well as other opportunities for income generating activities related to agriculture marketing.

(f) Assessment of physical and/or economic displacement caused by the project and the development of RAP including participation of potentially affected groups: The project envisages development and upgrading of market infrastructure, which may result in new land acquisition, physical and/or economic displacement. The issue of encroachments in the existing market infrastructure (that could be upgraded under the project) is an important issue that needs focused attention.

(g) Assessing impacts on vulnerable groups (including tribal groups) and the need to develop Tribal (or Indigenous People's) Development Plan: The project will also cover scheduled tribe (ST) areas and the IESA would define principles and develop framework (complying with Bank OP 4.10) on how to address issues related to tribal groups up-front (including the need for a separate Tribal Development Plan); provide

culturally compatible benefits; and promote transparent consultations and informed choices in decision making.

(h) *Willingness of the community to contribute:* Assess the willingness of the project beneficiaries to contribute to the infrastructure development under the project and ascertain the extent and type of contribution, including the possible resource sharing mechanisms and management of adverse environmental impact at the site of infrastructure development.

(i) *Environmental impacts*: Ascertain potential direct or indirect adverse environmental impacts related to (i) infrastructure development (construction activities like markets, fish ponds, access roads etc); (ii) farm production (excess use of fertilizers); and (iii) working of market infrastructure (generation and management of solid vegetative, animal or trash wastes). Develop mitigation measures, ESMF and EMP and wherever possible should suggest new and novel approaches to manage these impacts.

(j) *Analysis of induced impacts:* Include an analysis of the nature and extent of induced impacts including issues such as any expected increase in pesticide use.

(k) *Development of criteria for selection of sites for development of market sites:* It is important to include environmental, socio-economic and natural resources management criteria as part of the multiple criteria to be used for the selection of the sites for market and other infrastructure development under the project.

(l) *Assessment of the existing policy framework:* Policies that affects the social and environmental aspects of the proposed project activities and outline key enabling policy reforms that would be required in the short, medium and long-term to address these issues.

(m) *Development of an Environmental and Social Management Framework (ESMF):* All the sub-activities of the project have not yet been identified and these will be identified as project implementation progresses. Further, there may be a number of other issues that might emerge during the course of the study and project preparation which will need to also be examined in the IESA. Appropriate management plans to adequately address safeguard issues would have to be developed during the project implementation. For this purpose, develop an ESMF that would provide adequate guidance and management framework during the project implementation for sub-projects triggering social and environmental issues.

(n) *Awareness-building:* There is a need to improve and share knowledge and skills both for the implementing agencies as well as the project communities and beneficiaries in many areas including environmental awareness, social conflict resolution mechanisms, participatory decision-making, monitoring and evaluation, etc. Proposals for the training strategy need to be outlined.

(o) *Information management, Knowledge base Development and Monitoring and Evaluation:* To enhance project design, decision making, stakeholder participation and evaluation, include the development of the social sections of the overall terms of reference for the third party that is expected to be hired to monitor the project.

(p) *Identification of any other studies that need to be done for project implementation* including preparation of a TOR for undertaking strategic SA and EA during the course of project implementation.

(q) *Conflict resolution*: Study and assess the social, economic, institutional and other conflict/risks and the existing resolution systems surrounding the use and management of natural and physical resources in consultation with the community and other stakeholders and apply the findings to see whether such systems would also work for the new assets to be created under the project.

1.7 Study team

Based on the project requirement TechnoServe has engaged a team with a unique combination of resources from diverse background to meet study requirements. TechnoServe leveraged its access to cutting edge knowledge and technologies through its global relationships across the private and development sectors for adding value to this study. The team comprised of

1. Team leader and Social & Institutional Development Expert: Lead consultant with international expertise with more than 10 years of experience in working with social mobilization, socio-economic surveys, and institutional development
2. Team manager and community participation specialist: Expert in participatory planning, implementation and participatory monitoring and learning with 8 years experience
3. Environmental specialist: Ecologist with an understanding of rural infrastructure and rural environmental issues particularly related to agriculture with more than 15 years of experience.
4. Community rights expert: Consultant involved in farmer mobilization and farmer's rights movement with more than 20 tears of experience of working with marginalized community and women.
5. Farm practices and IPM expert: Agriculture and management specialist with more than eight years of experience in working with farmer groups.

TechnoServe ensured that the team included members with adequate experience of working with identified vulnerable groups, especially with indigenous population/ tribal communities, socially marginalized caste groups and women.

Brief profile of the key team members is provided in the Appendix E.

1.8 Reporting

This report is the final report for the IESA study; it has been preceded by the inception report, an interim report and a draft report at different study phases. This report has seven chapters as follows:

Chapter I – Introduction: Describes the project, its objectives, scope and components, the need for the IESA, objectives and scope of IESA, the study team and report description.

Chapter II- Approach and methodology: Covers the methodology of the study, coverage of information collection, stakeholder consultation, tools used and analysis of the data.

Chapter III - Policy and legal framework: This chapter covers the relevant policies and acts of the state and national government which has a bearing on this project, and the World Bank safeguards policies.

Chapter IV – Environmental and social impacts: This chapter covers the stakeholder analysis, socio-economic profile of farmers interviewed, and component wise impacts.

Chapter V – Issues and measures: This chapter identifies the issues and measures identified based on the environmental and social assessment of the project provisions. This forms the basis for the development of the environmental and social management framework for the project.

Chapter VI – Environmental and social management framework: The ESMF describes the framework and different strategies to deal with the issues and measures related to environmental and social aspects of the project.

Chapter VII – ESMF implementation arrangements: This chapter describes the implementation plan on operationalising the ESMF; SMP approval process, funds flow mechanism, M&E, Training and capability building

CHAPTER II – APPROACH AND METHODOLOGY

2.1 Introduction

The study approach and methodology for the IESA study were discussed and finalized in consultation with the MSAMB team and the World Bank social and environmental specialists. The IESA was undertaken as a participative, consultative study combining quantitative data with qualitative analysis.

The study process, depicted in the flowchart below, has four main components:

a) Desk research and secondary information collection
b) Consultation with MACP project team
c) Field visit and field interaction with primary and secondary stakeholders
d) Verification of land records where required

2.2 Desk research and secondary data collection

The study team looked at all relevant documents and reports including

- Preliminary Project Report prepared by MSAMB
- World Bank operational guidelines on environmental and social aspects
- GoI and GoM Acts, Policies and regulations on environmental and social aspects

Secondary data was collected on agricultural commodities production figures, arrivals at APMCs for major commodities, prices realized and marketing practices. Relevant secondary data was also collected from the project sites during the field visit, using templates developed for this purpose.

With respect to the Social Assessment (SA), the IESA adopted a 'four pillar' strategy: (i) identifying key social development and participation issues; (ii) evaluating institutional and social organizational issues; (iii) defining the participation framework; and (iv) establishing social based indicators for monitoring and evaluation. As regards the Environmental Assessment (EA), the assessment adopted an approach that is outlined in the World Bank Operational Policy on EA (4.01). The EA was conducted to develop a framework to ensure that the environmental issues are fully considered and addressed in the project design, preparation, implementation, monitoring and evaluation.

2.3 Stakeholders' consultation

The study design ensured that a range of stakeholders were consulted to draw insights. The study team worked in close coordination with the MACP team. Stakeholders' interactions were carried out as planned, at different stages of the project. Given below are the stakeholders the study team interacted with at each location of a sub-project and at the project level.

At each location	At the project level

▪ **Primary stakeholders**
  ▪ Farmers / fishermen / livestock farmers
  ▪ Members from vulnerable groups including women, marginalized communities and small scale players
  ▪ Producers' cooperatives, SHGs
▪ **Secondary stakeholders** including local traders, commission agents and other participants in the supply chain, civil society and NGOs
▪ **Tertiary stakeholders** like officials of local administration, line department officials in charge of implementation of the project
	▪ **MSAMB core team** – multiple round of discussions and debriefing at inception, interim and after completion of field work
	▪ **Nodal officers** of the line departments – agriculture, marketing and fisheries department officers
	▪ **Subject matter specialists in the World bank** – environment specialist and social sector specialist

After desk review and field visits, a detailed socio-economic and environmental baseline of the area was developed as part of the IESA, and then used to assess the potential project (social and environmental) impacts and opportunities. For this, survey tools like FGD, questionnaires etc were developed, tested and then used to collect relevant data/information.

2.4 Consultation with MACP project team

Through out the study, the IESA team was in close coordination with the project team of MSAMB on activities including the selection of sample sites for field visit, planning for field visits, stakeholders' meetings and consultation and debriefing of the findings. The following Table summarizes the consultation process followed by the study team with the MACP project team.

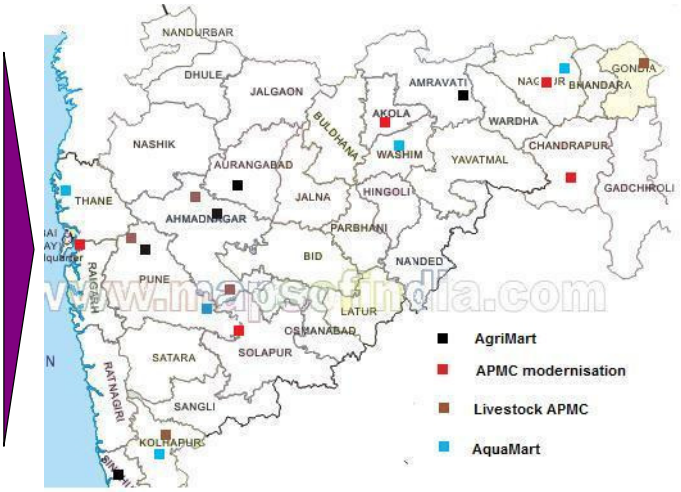
Workshop / Meeting	Date	Participants	Activities
Inception meeting	**21st December 2007**	**Key members of study team and MACP project team**	▪ Introduced study team to the project ▪ Generated consensus on methodology, tools and techniques ▪ Scheduled fieldwork, finalized logistics (e.g. letter of support) ▪ Study team generated and submitted inception report on January 15th 2008
Interim debriefing	**31st January 2008**	**Key members of study team and MACP project team**	▪ Study team gave an update on fieldwork progress ▪ MACP project team gave feedback and suggestions on tools and approach ▪ Study team shared preliminary findings and trends ▪ Study team and MACP project team jointly developed indicators for ESA and ESG
Presentation of draft findings	**14th March 2008**	**All members of study team, MACP project team and officers of line departments**	▪ Study team shared draft findings and key learnings and recommendations ▪ Discussed the ESMF ▪ MACP project team gave feedbacks and suggestions for the draft report ▪ Study team to submit draft report on March 25

2.5 Field visit and interactions

The study envisaged field visits to selected sub-project sites. As per the ToR, the IESA covered all the sub-projects proposed to be implemented in the first year of the project. A list of twenty sites proposed for the first year was shared with the study team and all these sites were covered during the field study[1]. These locations cover all the four regions within Maharashtra state – Vidarbha, Marathwada, western Maharashtra and Konkan. The following Table and diagram illustrate the coverage of the study in the state.

[1] Change in locations: Two locations, namely Badnapur for AgriMart and Dhule for APMC modernisation, which were there in the initial list of sites to be visited, were changed later. Pimpri and Indapur were the included in their respective places.

Component	Locations (District)
AgriMart	1. Narayangaon (Pune) 2. Shingwe Tukai (A' Nagar) 3. Pimpri (Aurangabad) 4. Varud (Amaravati) 5. Deogad (Sindhudurg)
APMC modernisation	1. Nagpur 2. Chandrapur 3. Indapur (Pune) 4. Vashi (Thane) 5. Akola
Livestock APMC	1. Rashim/Karjat (A'nagar) 2. Loni/Rahata (A'nagar) 3. Junnar (Pune) 4. Kathi (Gondia) 5. Peth Wadgaon (Kolhapur)
AquaMart	1. Bhigwan (Pune) 2. Ramtek (Nagpur) 3. Washim 4. Kolhapur 5. Palghar (Thane)



Each project site was visited by at least two core members of the IESA team along with a team of field investigators. Support from the Nodal officers of the line departments and MSAMB was crucial in undertaking the field work successfully. All the different stakeholders were consulted during the field visits.

Participatory group exercise with flower growers of Narayangaon AgriMart

The following Table provides the summary of different stakeholders consulted during the field study. The stakeholder consultations undertaken for each sub-component covered in IESA is detailed out in Appendix A.

Item	Coverage
APMC / MSAMB official	■ Structured interview ■ Three per site
NGO– working with farmers	■ Structured interview, 2 NGOs in the state
Market committee	■ Semi-structured discussion with checklist
Office bearers of local farmers' coop	■ Semi-structured discussion with checklist
Local traders participating in market	■ Structured interview ■ Three per site
Farmers using the market for selling their produce	■ Structured interview, Five per site (minimum three small/marginal farmers)
Women's group at village level	■ Focus Group Discussion
Other vulnerable group at village level	■ Focus Group Discussion (Tribal/socially backward communities) - based on relevance at specific site

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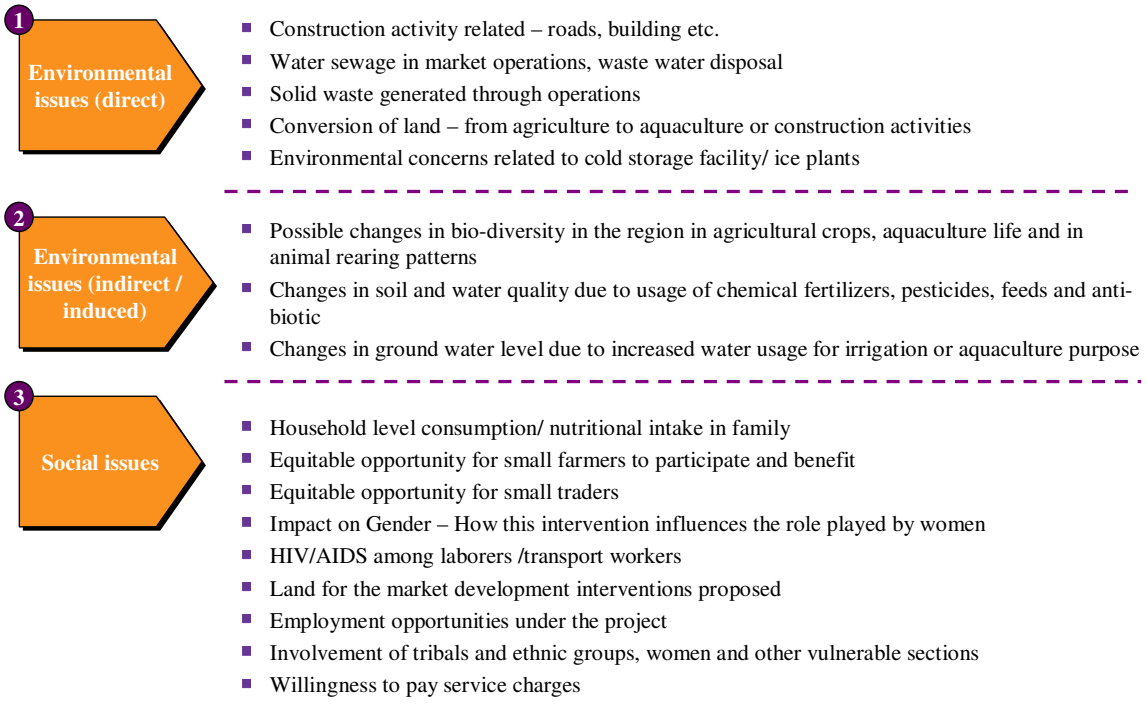
Women's group at village level	■ Focus Group Discussion
Other vulnerable group at village level	■ Focus Group Discussion (Tribal/socially backward communities) - based on relevance at specific site

The stakeholder consultations undertaken for each sub-component covered in IESA is detailed out in Appendix A. The total number of observations completed under IESA is given below:

Tools of observation	Stakeholder	Number
Structured questionnaire	Primary beneficiary – farmers	150
Semi structured interviews	APMC/MSAMB officials/ Line department officials/ NGO representative	41
Focus Group Discussion	Farmer groups, women groups, marginalized communities	15
Consultation Guidelines	Traders, office bearers of farmer coop	20

The type of information collected during the study is summarized in the appendices K and L.

List of issues covered during the consultation process is listed below



2.6 Analysis of data

The structured questionnaires with the farmers were entered in a database. In-depth quantitative analysis was carried out and summary output have been presented in tabular form and enclosed in the appendix B.

In addition, there were qualitative and focus group discussions with farmers, local community members, women groups, and market committees as well as many officials related to project planning and implementation. These discussions were captured and documented and an analysis of this is presented in Appendix C.

2.7 Limitations of the study

During the course of the conduction of this IESA exercise, the team faced a number of limitations which had influence on the outcome of the study. Some of the important limitations of the exercise are presented below.

- Changes in project components: The project design has undergone changes and the extent and scope of some of the proposed components have been changed. For example, the agrimarts and aquamarts have been watered down in terms of the proposed investments and are being now referred as Farmer Common Service Centre (FCSC).

The IESA report should be read with the understanding that the initial briefing to the team on these components was different than the actual implementation strategy.

- Non availability of data: There was lack of secondary/baseline data at the sub-project sites on important but relevant parameters. In the absence of these, general secondary data at the state/district levels has been used.

- Absence of design blueprints and construction plans: The design blue prints for different market infrastructure construction to be carried out under the project were not yet ready. This limited the ability of the IESA to assess the precise social impact of the project activities and at same time it was not clear whether during the construction environment friendly measures are adopted or not.

- Lack of awareness about the project among key stakeholders: Most project stakeholders (including primary stakeholders like farmers, APMC members or even line department officials) were not aware about the project, its objectives and scope and specific activities proposed at the sub-project elevel. The visit by the IESA team was often the first time they heard about the project. Lack of awareness among the key stakeholders was a limiting factor for a meaningful discussion around project impacts - how to enhance the positive impacts and mitigate the negative ones.

CHAPTER III - POLICY AND LEGAL FRAMEWORK

3.1 Introduction

There are various policies and Acts of the Central Government (GoI) as well as GoM dealing with the management of agriculture produce marketing as well addressing environmental and social concerns. The present chapter gives an overview of the policy framework at the national and state levels specific to the agriculture sector relevant for this project and the management of social and environmental issues. In addition, the World Bank safeguards policies are discussed, in order to assess the adequacy of the existing (GoI and GoM) policy regulations. Based on the gaps so identified, suggestions have been made in the existing policies/regulations to comply or to be in conformity with the Bank's requirement on addressing the environmental and social issues of the activities under the proposed project.

3.2.1 Environmental Acts and policies:

Various national Acts like Water (prevention and control of pollution) Act 1974, Air (prevention and control of pollution) Act 1981, Environment (Protection) Act, 1986 and EIA Notification, 1994 exist for the protection of environment. The following Table summarizes the relevance of these on the project.

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
I Environmental Acts and policies		
Environment Protection Act (EPA) 1986	EPA (1986) is an umbrella Act that provides for introduction of various regulations aimed at environmental conservation and protection.	**Applicable** The project may have investments on dairy plants, bulk chillers, fish processing units that may require clearances from the State Pollution Control Boards (SPCB)
Water (prevention of pollution) Act	This Act provides for maintaining or restoring wholesomeness of water, establishment of Boards conferred with powers and assigned with functions relating to prevention and control of water pollution. The Central and State Pollution Control Boards have been set up to implement this Act.	**Applicable** The project may have investments on market infrastructure, livestock market yards, food processing, fish processing units that may increase the sewage emanating from the market. Proper measures as per the requirement of the Act will have to be incorporated.
Air (prevention of pollution) Act	The Central Board has set national ambient air standards, enforces auto emissions	**Applicable** The project may make investments in dairy plants,

Act/Rule/Policy		Relevance to the Project
	standards, and the Central Board and state board are empowered to enforce them.	construction of infrastructure which can result in air pollution, and their clearance may be required by the project.
Environmental Impact Assessment (EIA)	The process of environment clearance is applicable to two categories of projects – the development projects notified as ecologically sensitive/fragile areas under the EPA and the projects in Schedule 1 of EIA Notification. The MoEF, scrutinizes the projects on the basis of EIA reports submitted by the project proponents. The proponents have to obtain site clearance for site specific new projects like mining, pit head, thermal power stations, hydropower and major irrigation projects, ports and harbours and prospecting and exploration of major minerals in areas above 500 ha in extent.	**Not Applicable** The project is not investing in activities that require standalone EIA; nonetheless, the existing procedure for obtaining the environmental clearance on development projects is depicted in Figure 1.
Coastal Zone Management (CZM) Notification 2008 (earlier known as Coastal Regulation Zone (CRZ) Notification of 1991)	A regulatory framework that holds implications for project implementation in coastal areas. It is the principle legislation governing development activities and land use along India's coasts in the area falling within 500 meters of the high tide line and in the inter-tidal zone. Under the notification, all areas within this zone are to be classified as CRZ I (i), I (ii), II, III or IV based on geomorphology and various other criteria, including ecological significance, existing developments and other features.	**Applicable** The CRZ notification is relevant for the project, specifically to the proposed aquamart in Palghar of Thane district. The CZM does not apply to other project investments.
Hazardous/Biomedical Waste Management, Handling and Disposal		**Applicable** Vaccination programs and livestock health

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
Rules		improvement investments may attract provisions of these rules
II Other Relevant Acts/Rules/Policies		
The Seed Act 1966; Seed Rules 1968; Seeds (Control) Order 1983; Insecticide Act 1968; Insecticide Rules 1971; Insecticide (Control) Order 1985; Fertilizer Control Order 1985; Fertilizer Movement Control Order 1973; Essential Commodities Act (Amended - 1986)	The GOI has notified various Acts for the control and prevention of pollution due to pesticides and fertilizers.	**Applicable** As project investments are finalized, provisions of some of these would be relevant

3.2.2 Social Acts and policies:

Various Acts and policies of both the central government as well as the Government of Maharashtra like, National policy on tribal development, Gender policy of national commission of women, Child Labour Act will come into play during the implementation of the project. The following Table summarizes the relevance of these on the project.

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
II Social acts and policies		
National Policy on Resettlement and Rehabilitation (NPRR) of Project Affected Families - 2004	The is a broad guideline to provide executive instructions and is applicable to projects displacing 500 families or more *enmasse* in plain areas and 250 families *enmasse* in hilly areas, Desert Development Program (DDP) blocks, areas mentioned in Schedule V and Schedule VI of the Constitution. This policy ensures that the benefits reach the Project Affected Families, especially resource poor sections including SCs/STs and those below poverty level.	Though this policy is **Not applicable** since the Project is not going to displace any person, however there could some economic displacement. As per the Bank's requirement, even if a single person is displaced or adversely affected (irrespective of the ownership of land lost) support should be extended to restore the loss of livelihood.

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
Maharashtra Project Affected Persons Rehabilitation Act, 2001	This Act extends to all development projects in the State of Maharashtra. The Act provides for resettlement package to be given to the project affected persons and their resettlement.	Though for the first year activities, this Act is **Not applicable,** this might become applicable if in future any project interventions might result in displacement, either physical or economical or both.
National Policy on Tribal Development – 1999	The policy seeks to bring scheduled tribes into the mainstream of society through a multi-pronged approach for their all-round development without disturbing their distinct culture.	**Applicable** The need is to ensure that tribal communities participate in the project activities and there are no adverse impacts on local tribal groups.
Tribal development sub plan	The State has been divided into 24 Tribal sub-plan areas to ensure that there is al round development of tribal communities and they benefit from the development projects.	**Applicable** The project intends to invest in upgrading agriculture marketing infrastructure in different districts. There is a need for working with the Tribal Development Department to ensure project benefits are accessed by the tribal communities.
Gender Policy – National commission of women (1990) and National policy for the Empowerment of Women (2001)	These are intended to create a positive environment for the overall development of women and safeguard the rights and legal entitlements of women	**Applicable** As women constitute an important project beneficiary group. The project needs to ensure participation of women and strengthening their role in the project. Similarly in the wage employment under the project, equal opportunity for women needs to be provided
Maharashtra state women policy 2002	In line with the national policy, this policy aims at ensuring visibility to women in all spheres by strengthening their role, increasing self-confidence and empowering women. There is a State level Commission to safeguard the rights and interests of women provided under the constitution and other laws.	
Child Labor (Prohibition & Regulation) Act, 1986	This Act prohibits the employment of children below the age of 14 in factories, mines	**Applicable** As the project is likely to take up construction activity

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
	and in other forms of hazardous employment including construction, and regulates the working conditions of children in other employment.	for market up-gradation, it needs to ensure that the project or any contractors engaged by the project do not employ child labour.
Minimum Wages Act 1948 & Notification of the Government of Maharashtra (June 2000)	This Act provides for fixing minimum wages to be paid to unskilled temporary workers. It also provides for equal wage payment to men and women labourers for the same work.	**Applicable** As the project is likely to take up construction of market infrastructure, it needs to ensure that the project or any contractors engaged by the project pay wages as per the Act and that there is wage disparity for men and women workers for the same work.
Issues related to HIV/ AIDS	Migrant labour is identified as a high risk group for HIV incidence and advocates preventive measures like awareness building, counseling through NGO partnership and treatment.	**Applicable** As project investments are likely to involve engagement of migrant labour, adequate arrangement is required to be in place to prevent spread of HIV/AIDS and reference for medical treatment.

3.2.3 Policies relevant to agriculture marketing:

There have been recent changes and reforms in the policies related to agriculture marketing. These are summarized below:

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
I Policies relevant to agriculture marketing		
Model APMC Act, 2003	This Act promotes development of competitive marketing environment and brings professionalism in the management of existing market structures besides safeguarding the interest of farmers. It also provides for establishing Private Markets/yards, Direct Purchase Centers and Consumer/Farmers Markets for direct sale and promotion of Public Private Partnership. It prohibits involvement of commission agency in any transaction of agricultural commodities with the producers. It redefines the role of present Agricultural Produce	**Applicable** The model APMC Act is very relevant for the project as the project operation would be governed by it.

Act/Rule/Policy	Brief introduction of the Act/Rule/Policy	Relevance to the Project
	Market Committee and role of State Agricultural Marketing Boards. The salient feature of the Model APMC Act 2003 is in Appendix D.	
Maharashtra Agricultural Produce Marketing (regulation) (Amendment) Act 2005	Based on the model APMC Act, Maharashtra State Government made amendments to the existing APMC Act titled Maharashtra Agricultural Produce Marketing (regulation) (Amendment) Act 2005. The Act stipulates granting licenses for direct marketing or establishing private markets for: a) processing of agricultural produce; b) trade for specific produce; c) export of the produce; and d) grading, packing and transactions in any other way for value addition of the produce. It also provides for representatives from Agriculturists, Traders, State Agricultural Board and *'Hammals'* and weigh men in RMCs.	**Applicable** This provides the basis for the current project operations.

Based on the review of project proposal and the PIP of the MSAMB, it is clear that the project is in line with the model APMC Act.

3.3 World Bank Safeguard policies

Various World Bank safeguard policies and their implications are summarized in the following Table.

Act/Policy	Relevance to the Project	Status
Environmental Assessment (BP/OP 4.01)	Project includes activities for construction, repair, and upgrading (where necessary) of market infrastructure, connecting roads/paths, footbridges etc which may have some environmental implications.	Applicable
Forestry (OP 4.36)	None of the identified project sites fall with in forest range or have any direct impact on forest lands.	Not applicable
Pest Management (OP 4.09)	Project involves demonstration of best-practices for on-farm productivity improvement; diversification and intensification of production may happen in future course due to improved access to markets and may increase use of agrochemicals especially pesticides.	Applicable
Indigenous Peoples (OD 4.20)	While Indigenous people (tribal communities in Indian context) will not get adversely affected by project interventions, often they get left out of the	Applicable

Act/Policy	Relevance to the Project	Status
	development process. This essentially requires a strategy on inclusion of tribal communities in project activities and helping them access project benefits.	
Natural Habitat (OP 4.04)	The project is not likely to support/finance any activity that would entail significant conversion, loss or degradation of natural habitats (directly or indirectly).	Not applicable
Involuntary Resettlement (OP 4.12)	Though presently no land acquisition or physical displacement are likely to result from any specific subproject areas proposed under the project, however, these are not totally ruled out.	Applicable
Physical and Cultural Properties (OPN 11.03)	There is no risk of project activities damaging physical and/or cultural properties	Not applicable
Safety of Dams (OP/BP 4.37)	The project also does not envisage construction of any new dam.	Not applicable
Projects in Disputed Areas (OP/BP/GP 7.60)	There are no disputed areas within the project area.	Not applicable
Projects on International Waterways (OP/BP/GP 7.50)	There are no international waterways in the project area.	Not applicable

3.4 Gaps in existing policy framework and strategies to address these

A review of the existing social and environmental policy framework reveals a need for strengthening the social and environmental safeguards under the proposed project. The following are the specific issues that need attention in this regard:

- Capacity of concerned project staff (and relevant line departments) need to be developed and provided support in implementing and monitoring social and environmental management activities and mitigation plans. At the same time, there should be regular information exchange by the PMU with the proposed Social and Environmental cell at each PIU, and the Directorate of Environment.
- Presently, the CPCB and SPCB have focus on control and abatement of industrial pollution, and not on agricultural activities;
- There is a need for training on social and environmental issues to market committees, traders and functionaries of various line departments;
- The current R&R policy (state and national) does not recognize the encroachers (if affected) as a project affected person and are not eligible for any R&R entitlement
- There are no clear guidelines on inclusion of women, tribals and other marginalized groups in the decision making process in agriculture market committees

The identified gaps in the policy/ legal framework will be addressed under MACP by various strategies and action plans that have been developed as part of Environmental and Social Management Framework (ESMF), and details of which are provided in the chapter on ESMF. The specific strategies and actions plans developed as a part of the ESMF include the following:

- Pest, soil and nutrient management strategy
- Resettlement and Rehabilitation (R&R) Entitlement
- Gender Development Strategy
- Tribal Development Strategy
- Training and Outreach Strategy

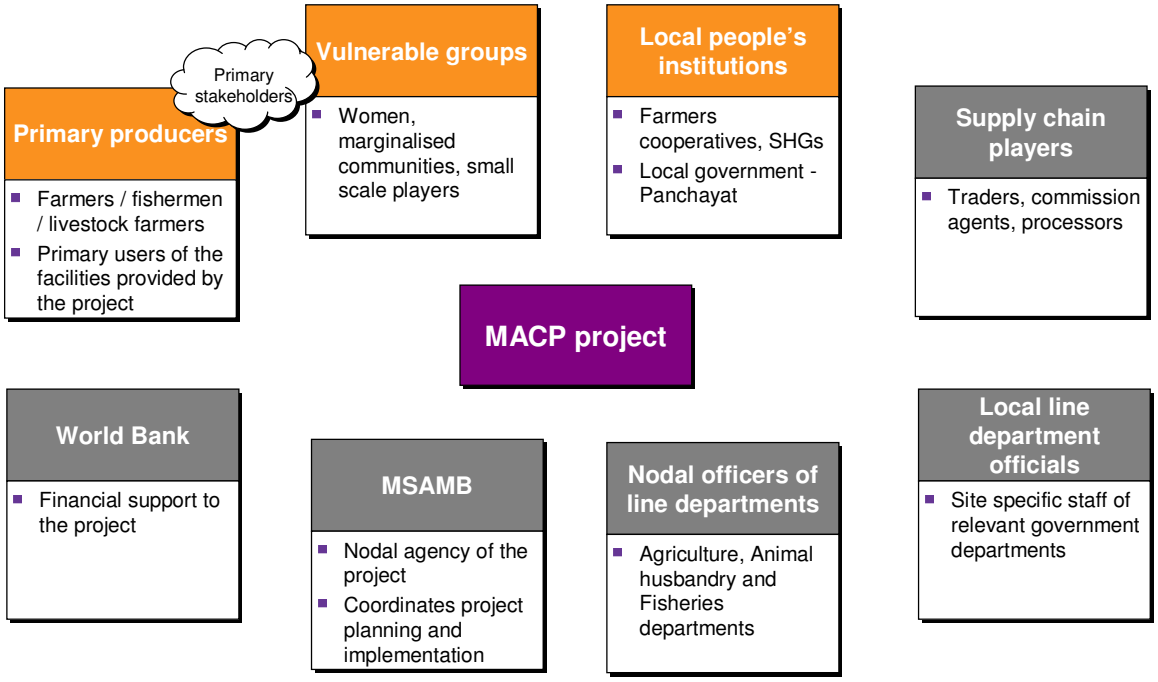
CHAPTER IV – ENVIRONMENTAL AND SOCIAL IMPACT

4.1 Introduction

There are a number of environmental and social impacts that might result from the proposed project interventions and at the same time there are issues that could be anticipated through the implantation of the proposed project interventions. This chapter summarizes these identified and anticipated impacts based on the review of secondary literature, examining proposed interventions and resultant impacts, interaction with key stakeholders and observations during the field visit. The chapter begins with an analysis of different project stakeholders, their roles and responsibilities; profile of the primary stakeholders (farmers and fisherpersons) interviewed during the field study and then provides component wise impacts on the environmental and social aspects. This forms the basis for the issues and related mitigation measures which are discussed in the subsequent chapter.

4.2 Stakeholder Analysis

MACP is a multi-stakeholders project. For the success of the project, it is important to understand the stakes and interests of each of the key stakeholders of the project. At the same time, it is crucial to assess any potential conflicts among the different stakeholders for project benefits. This would help in defining their roles and responsibilities.



4.2.1 Identification of roles and responsibilities

The IESA entailed discussions with all relevant stakeholders at different levels for each project component. The analysis of different stakeholders, their roles, responsibilities and relationships with the project in planning and implementing project interventions is summarized in the Table below. This, however, does not include the macro level stakeholders like the World Bank, the MSAMB and the Nodal officers.

Stakeholders	Roles & responsibility	Relationship
1. Primary producers	Main beneficiaries of the project - as owners & managers of the common market infrastructure - participate in the project activities - take management responsibilities in running the businesses	Synergistic with the project – while the primary producers stand to gain the maximum from the project, the project's success is also critically dependent on the active participation by primary producers
2. Vulnerable groups (i) Women	Play an important role in production, aggregation, preliminary processing and local sales, esp. in fisheries sector, but often marginalized in organized set up	Potentially synergistic if the project makes special provisions to ensure women's participation in the decision making process at the ground level; can turn negative if project institutions are biased against women.
(ii) Marginalized communities	Often landless or subsistence farmers – linkage to markets very weak and very limited role in current supply chain except as labourers.	Stand to gain indirectly from the income increase to the primary producers; potential conflicts if the project supported institutions neglect their representation and/or their interests not addressed.
(iii) Small scale players	Most exploited in the supply chain, have limited access to market and also fail to have a significant say in the current institutional set up.	Stand to benefit the maximum from the project supported market linkages, but need to make special provisions for their equitable participation in the project activities and share in the benefits
3. Supply chain players (i) Traders	Play a critical role in supply chain, provide	Potentially conflicting role as they may see project created

Stakeholders	Roles & responsibility	Relationship
	informal financing to small farmers and take working capital risk.	institutions as rivals.
(ii) Transporters	Critical for the fresh produce to reach market on time, for loss in transit and in providing market access.	Potential conflicting role as infrastructure created by project may eat into their margin.
(iii) Labourers (loading/unloading)	Play significant role both at production center and at market in reducing loss	Potentially conflicting role as project supported infrastructure development may reduce the labour requirement
4. Community based organizations (Farmer groups, cluster groups, producer company, etc.)	Play their role in produce aggregation, storage and preliminary processing and thus could provide bargaining power to the primary producer through collective action.	Synergistic with the project , as the key project component would be implemented through them, the success of many of the interventions critically dependent on the strength of these groups.
5. Local line department officials	Provide guidance and information at ground level, play the role of administrator and key contact point at ground level for accessing various government schemes and funds	Play a critical role to ensure smooth implementation of project interventions. Coordination between the nodal agency and participating line departments at ground level critical for project success.

The stakeholder analysis identified two critical challenges for the project:

1. To ensure equity of participation and benefits to vulnerable groups
2. To incorporate the interests of the supply chain players into the project design so that they become part of / support the project created institution rather than viewing this as a rival

In order to address these challenges, the IESA report includes tribal development strategy, gender development strategy which could be adopted to ensure participation of and sharing of benefits with the marginalised groups. However, the main solution to meet these challenges lies with in the community groups themselves. The example of the farmer groups in Narayangaon (site for the floriculture AgriMart) is a case in point. While initiating the group activity of aggregating, packing and supplying flowers to the Mumbai market, they have ensured to use the same local trader and transporters services

as a group. This also provides incentive to the supply chain player as the loss of margin is compensated by lower risk exposure, greater volume of business and assured business. This kind of model can be replicated across project locations.

4.3 Component wise stakeholders' profile

This section also summarizes the profile of the primary stakeholders interviewed during the IESA. The detailed site wise output is provided in the appendix B.

4.3.1 *Profile of the farmers interviewed in **Livestock market** yard sites*

The study covered 46 farmers in the five locations visited. It should be noted that in a few sites, farmers were not available in the market place (as the market functions only once a week). The team conducted group discussion with farmers in a nearby village (served by the market) and collected their socio-economic profile data from the participant livestock farmers.

General Profile of Livestock Farmers around Intervention sites		
Parameters	**Sub Parameters**	**% Respondent**
Livestock Market Yard		
1. Land Holding	0-1 Ha	52%
	1-2 Ha	35%
	>2 Ha	13%
2. Caste Profile	SC	35%
	ST	13%
	OBC	39%
	General	13%
3. Size of livestock holding	< five animals	65%
	Between 5 to 10 animals	28%
	> 10 animals	7%
4. Livestock rearing as a occupation	Primary – full time	9%
	Supplementary – part time	91%

The five most frequently stated problems related to livestock markets are:

- Inadequate infrastructure (internal roads, cattle sheds, ramps etc) facilities in livestock market yard (75%)
- Lack of transparency in pricing (60%)
- Hygiene and sanitation facility in the market (45%)
- Lack of quality assurance mechanism for livestock (40%)
- Lack of auxiliary services at market (breeding, feeding, vet care) (25%)

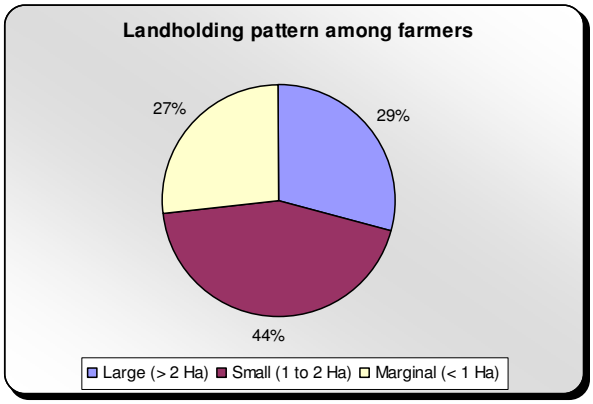
4.3.2 *Profile of the farmers interviewed in **AgriMart** sites*

The study covered 48 farmers across five sites through individual interviews. This section provides a brief description of their socio-economic profile. It is important to note

that the sample is not intended to be statistically significant but to provide a general trend or characteristics of the participants in the program.

Caste profile of the farmers interviewed

Religion		Numbers	Percentage
Hindu	General	17	35%
	SC	13	27%
	ST	2	4%
	OBC	14	29%
Muslim		2	4%



More than 90% of the farmers (46 of the 48 interviewed) reported the Agri Mart for the specific crop should be located where that particular crop is the most important crop that they grow. This indicates that already the Agri Mart crop is the most significant crop in the location and the project would not result in any significant change in agricultural bio-diversity in the region.

General Profile of Respondents		
Parameters	**Sub Parameters**	**% Respondent**
Agrimart		
1. Land Holding	0-1 Ha	25
	1-2 Ha	33
	>2 Ha	42
2. Caste Profile	SC	27
	ST	4
	OBC	29
	General	40
3. No. of Crops	Single	44
	Double	50
	> 2	6

The five most frequently reported problems in Marketing are:

- Inadequate or no storage facility (45%)
- Uncertainty or lack of transportation facility (30%)
- Fluctuation or low prices (40%)
- Absence of processing or value added services (20%)
- Absence of grading and packaging facility (15%)

4.3.3 *Profile of the fishermen interviewed in **AquaMart** sites*

The study covered 56 fishermen across five sites through individual interviews. This section provides a brief description of their socio-economic profile. It is important to

note that the sample is not intended to be statistically significant but to provide a general trend or characteristics of the participants in the program.

It is interesting to note that the traditional fishermen communities at different locations in the state come under different caste groups. There are communities like the 'bhoi samaj' classified as OBC, 'dhivar' classified as scheduled castes and 'gonds' and 'vanjari' classified as scheduled tribes.

General Profile of Respondents		
Parameters	**Sub Parameters**	**% Respondent**
Aquamart		
1. Nature of Aquaculture (water resource used for aquaculture)	Public Irrigation Tank through Cooperative	52
	Private Fishing Tank	0
	Not owner, pays commission to use others facility	48
2. Caste Profile	SC	55
	ST	16
	OBC	21
	General	0
3. No. of Fishing days/year	< 30 days	13
	Between 30 to 90 days	16
	> 90 days	71
4. Aquaculture as a Source of Income	Primary	75
	Secondary	25

For three-fourth of the respondents, fishing was the primary occupation, some times supplemented by labour or agriculture. All of them were members of the village level fisheries cooperative. In most cases, the fisheries cooperative has the fishing rights of a water body (irrigation tank, village pond, large natural water body like lake) leased to it. This lease allows the society members to fish in the water body and a small fee/commission on the sales is collected by the cooperative. The Aqua Mart project component is expected to work with such fisheries cooperatives and create a producers' company for its business operations. No inland aquaculture farmers are there – so issues around creation of new water bodies, or conversion of agriculture land into aquaculture do not arise in this case. Also, most water bodies (irrigation tanks and lakes) are relatively large water bodies and as such there are no supplementary feeding or anti-biotic usage by the fishermen in the fish production process.

4.4 Component wise impacts

The following section provides component wise summary of the project activities and observations based on the environmental and social assessment. This section also

provides a broad summary of each of the components covered under IESA. A full list of issues and measures identified from the social and environmental concerns point of view for each component is listed in the next chapter Based on this, a detailed list of issues and measures for IESA for each of the project components have been developed and are included in the next chapter.

4.5 Component I – Modernizing functioning and operations of APMC:

Intervention description

Infrastructure development at APMCs is proposed with a view to modernize its operations. The objective of this component is to introduce modern facilities at select APMCs in the state so that the value addition due to market modernization could be demonstrated more broadly. The modernization is also expected to bring in total transparency in the process of auction of perishables i.e. fruits and vegetables; value addition through grading and packing translating to better price realization by farmer; reduction in non value adding cost like manual auctioning process (which will be replaced by electronic auctioning in select APMCs); better acceptance for farmers' produce in market place and help setting up demonstration units.

During the first stage, the facilities proposed to be provided in this component are -

- Electronic auction hall: This would cover trading operations for fruits and vegetables with display hall, trader's shops, weighing scales, ripening chambers, crates, furniture, etc.
- Modernization of perishable product trading section: This would cover the fruits and vegetables washing, cleaning, grading and packing units with pack-house.
- Modernization of food grain trading section: This would include food grains cleaning grading packing units. Two APMCs (at Amravati and Baramati) have already shown the success of food grain cleaning and grading units, a larger acceptance of such facilities is envisaged through this project.

Only two APMCs i.e. Mumbai and Nagpur are selected as pilots for the investment electronic auction system with in the selected APMCs for the MACP project. The grading and packing centers for perishable product are proposed for other 18 centers (of which three in the pilot year). The last component, that of food grain grading and packing unit would be implemented in all selected APMCs under MACP. The APMCs are selected base on the production areas for the crops, linkages with up country and distant markets, land availability with in existing APMC premises, operations of traders from distant markets and high arrivals.

4.5.1 *Discussion on environmental issues*

1. **Construction:** The actual blue print plan for the construction activities are yet to be finalized. The study team assessed the impacts based on the common plan that was provided as a part of the ToR for the study. As all APMCs visited had well organized premises with approach road, and existing water and electricity connections – hence no new installations need to be made. Thus the environmental concern from construction is minimized. However specific plans for controlling air and water pollution during the construction process (the report includes issues and proposed mitigation measures during construction process in the next chapter) and minimizing impact to the community living in the vicinity of the construction sites needs to be put in place.

Feasible measures to improve the physical environment include the following

- *Use eco-friendly materials like fly ash brick, hollow cement blocks, etc. for construction.*
- *Provide for roof rain water harvesting while constructing new buildings.*
- *Specific measures to reduce water consumption, like toilet pan with greater slope, should be used*
- *Proper disposal of waste water – connecting to existing drainage systems, use of septic tanks, soak pits etc.*

2. **Waste management and disposal:** A large amount of solid and liquid waste is generated in the current APMC operations – e.g. Nagpur APMC reported solid wastes in excess of 1 MT per day. Current practice for solid waste management is to engage a contractor to collect the waste materials on a daily basis and dump it in identified dumping yard of the municipality. It is estimated that with the new modernized operations like cleaning, grading and sorting; as well as pack houses for both perishable products and food grains, the solid waste generation is likely to increase in the range of 10-20% of current levels. Similarly liquid waste generated is likely to increase with increased water usage for the cleaning activity. Fortunately most of the waste generated would be completely bio-degradable and excellent input for composting. It is advisable that the infrastructure development proposal should include vermin composting facilities with in or in the vicinity of the APMC. This can also enable the APMC to provide low cost good quality organic manure to farmers which can contribute towards lowering the usage of chemical fertilizer.

   Suitable measures to improve the physical environment include the following

   - Provide for vermi-composting units for better utilization of the bio degradable solid waste
   - Provide specific pits for solid waste dumping in the market yard, ensure separation of bio-degradable and non bio-degradable waste at source

3. **Drainage system:** The current APMC premises have good drainage facilities geared to meet the rain water drainage. With the new constructions a well coordinated

drainage facilities should be created in sync with the existing system. The water drained from APMC is connected with the main drainage system of the municipality. The municipality does treat its sewage through existing water treatment plant, and also ensures that the waste water does not get mixed with drinking water sources with in the municipality. With the new facilities, the water usage may increase (the drainage system may need to be upgraded to cope with it) and provisioning of preliminary filtration equipment before the water is drained out to municipality sewage maybe required.

Activities to be included to address environmental issues are:

- Upgrade the existing drainage system in market yards for higher water usage during cleaning, grading, and packing processes to be installed in this intervention.
- Install preliminary filtration to separate solid waste and water before draining the water to municipality sewage and use the solid waste for composting purpose

4. **Agricultural bio-diversity:** Discussion with primary stakeholder reveals that the agricultural bio-diversity is unlikely to change in any significant manner due the APMC facility up gradation – as farmers' decision for growing a particular crop is based on a number of factors. In fact better handling and marketing facilities at APMCs for both food grains as well as perishable products (like fruits and vegetable) would facilitate mixed and diversified cropping practices by farmers. None the less it would be useful for the project to monitor the crop diversity in the region and take corrective measures if required.

   Suggestion of the study team

   - Monitor cropping diversity in the region. Data on area under food and commercial crops could be obtained through secondary sources like the Agriculture Department.

4.5.2 Discussion on social issues

Improvement of infrastructure at APMC and modernization of operations is expected to have a positive impact in the entire agricultural value chain and help farmers to get a better price. But the degree to which this can be realized is dependent on the market system and efficiency of the supply chain. For the sites covered under IESA, the study team found that there is no requirement of land acquisition for this component, and therefore, there are no significant negative/adverse social impacts, neither physical nor economic displacement. However, there are issues (discussed below) that could be focused to ensure that the positive social impacts of the proposed measures are enhanced.

1. **Land:** Modernization of APMC infrastructure as proposed in the MACP would require between one to two acres of land (depending on which component is implemented in the APMC). Each of the visited APMC had adequate area with in

their own existing premises for the proposed market modernization program, so no new land needs to be acquired for this intervention.

Suggestion of the study team

- Identify the exact plot with in the APMC premises which will be utilized for the modernization purpose and demarcate it for the construction purpose.

2. **Participation by smaller farmers:** Small farmers find it difficult to bring their produce to the APMC as the transaction time and transportation costs do not work out well for them. But the numbers of small farmers who do bring their produce to APMC need to sell their produce as quickly as possible so that they can get back to their village. In such a case additional processing like grading and sorting or packing may be difficult for the small farmers to take advantage of – hence there is a need to incorporate measures for making small farmers to take advantage of the facilities. There could be specific operational guideline on how much time would be required to clean, grade or pack specific commodities.

   Suggestion of the study team

   - In peak season, small farmers should be given priority in getting their produce graded/packed, so that they need not stay in the market yard for a longer time
   - Ensure small farmer have a say in the operations of the market facility and decision making process by having their representatives on the executive committee

3. **Stakeholder consultation and awareness creation on specific facilities:** There is a need for awareness around the provision under this intervention at the ground level especially on electronic auction system so that the farmers are encouraged to take advantage of the facilities. Discussion with farmers, traders and even APMC officials during the field visits revealed that they did not have much information on the facilities being provided under the project and how useful the new facilities would be for them. However, there was a keen interest to know more and to take advantage of the value addition opportunities through the facilities, once the study team explained it to the respondents.

   Suggestion of the study team

   - Awareness creation and demonstration program should be arranged and should precede the installation of new facilities at the location

4. **Impact on supply chain players:** Many of the supply chain players (like loading unloading labourers, weigh men and commission agents) expressed their concerns about their role once the modernization of the APMC comes in place. A careful analysis of the activities proposed under this component reveals that most activities would only facilitate the work being done by these supply chain players rather than

displacing them. Only in case of electronic auction chambers (in the two large APMCs), there is a possibility of reduction in the role played by commission agents. In this case also, the proportion of arrivals being marketed through this channel vis-à-vis the commission agents would be small. Once the facility is functional, it would be available for use by the commission agents (who also run trading enterprises) as well as by the farmers. Hence the agents will be more than compensated for their loss of procurement from the farmers by better marketing of their stock in distant markets through the electronic auction system. However, it is important to note that the project implementation could get hampered if these stakeholders remain hostile to the project interventions. It is, therefore, important for the project to create awareness among these stakeholders about their roles and benefits from the interventions so that their misconceptions or apprehensions are cleared. In fact, the work environment for the labourers or '*hamaal*' would be improved if the new and clean auction platforms are developed and grading and sorting space is created with in APMC premises.

Suggestion of the study team

- Awareness creation and demonstration program should be arranged and these should precede the installation of new facilities at the proposed locations

4.6 Component II – Development of livestock market yard in APMCs

Strengthening of existing cattle markets of APMCs is one component of the MACP project to be implemented in Maharashtra. The proposal is to strengthen the cattle markets by creation of infrastructural facilities. These facilities are expected to help the upkeep of the animals in the cattle markets and to generate additional revenue to the farmers. In each of these markets, the following infrastructure are proposed to be constructed / improved upon -

- Cattle Sheds - 800 Sq. feet. for 40 animals; depending on the number of animals, number of sheds to be decided
- Loading unloading platform
- Water troughs – number to be decided based on number of animals
- Administrative building with veterinary dispensary, office computer room - ~ 2500 sq.feet.
- Auction platform - ~ 15m x 8m x 2 nos
- Dormitory for farmers - ~ 5000 sq. feet.
- Compound wall
- Roads with watchman cabin
- Street light and electricity
- Waste treatment

- Godown

4.6.1 *Discussion on environmental issues*

1. **Construction:** In all the locations visited, a clear plan and design for constructing various facilities were not available to the study team to present any specific assessment of potential impacts. The study team assessed the impacts based on the common plan that was provided as a part of the ToR for the study.

   Suggestion of the study team

   - The plan and design of new construction should ensure that natural resources like water are conserved and thus have minimal negative impacts on environment.
   - Use eco-friendly materials like fly ash brick, hollow cement blocks, etc. for construction.
   - Provide for roof rain water harvesting while creating new infrastructure.
   - Specific measures that reduce water consumption, like toilet pan with greater slope, should be used in public facilities

2. **Water supply:** In each of the locations visited, there is a bore well, reported to have ample water availability through out the year. From this, water is pumped up to an overhead tank, from which water is supplied through pipes to adjoining water troughs for the cattle. In Rashin there is only one water trough, located in the centre of the market space, of around 15 feet by 10 feet size, with 4 feet height. In Junnar and Kathi there are three water troughs in the present market location. Water troughs will have to be built when the market is relocated to the new place.

   Suggestions of the study team

   - It is suggested that at least 4 water troughs are constructed, in different locations of the market. In Junnar, even though there are 3 water troughs, all of them are close to each other and not distributed across the site.
   - The height of 4 feet for a water trough, as in Rashin, is on the higher side. While this is suitable for large cattle, small animals like sheep and goat will not be able to use this. The height should be around 2.5 feet, such that all animals can use the trough.
   - It is suggested to erect a separate trough for small animals.

3. **Drainage and hygiene:** In all the markets visited, the lands where animals stand are left as earthen, without any concreting. Concrete floors are not comfortable for the animals to walk on. Also, concrete floors get heated up during the summer making it uncomfortable for the animals. As the land is kept without any concreting, liquid

wastes like urine percolates in to the soil in normal conditions. In Loni, the site has been developed for the purpose of tying and displaying the animals – a number of rows of raised earthen platforms have been constructed. However, it has been reported that the soil being of a clayey nature, there is a problem of water logging during the rainy season. Further, the Rashin site is uneven and the problem of stagnation of surface water is greater.

Stagnant water at Rahata (Loni) Livestock market yard

Further, in all locations, sanitation around cattle trough is presently unhygienic with water stagnating around troughs. At the site in Rashin, since the trough is located in the centre of the site, waste water is diverted by means of an earthen drain. This meets up with another storm water drain running across the lower part of the site, which is also an uncovered earthen drain. Water is getting stagnated in the drains at present. This poses a risk of contamination of bore well water. There is need to construct proper lined drainage channels to divert the water outside.

Suggestions of the study team

- On the earthen site, coarse aggregates (locally known as murum) can be spread over the surface to ensure that the land doesn't get mushy during rainy season.

- There is need to determine the drainage pattern of the site, especially when it is uneven like in case of Rashin, and design a drainage system to take surplus water outside the site.

- Drainage design should incorporate leach pits / percolation pits so that excess surface water during rainy season is collected and percolated in to the soil and not permitted to flow outside the campus.

- In Junnar, the proposed site is surrounded by residential area. Hence care should be taken to maintain clean and hygienic conditions.

4. **Waste management and disposal:** Waste material generated in the cattle market is comprised of animal dung /droppings litter, and waste feed materials. In all sites, collection and disposal of waste material is contracted out to a private contractor. On the same day or a day after the market the contractor employs local wage laborers to collect the waste and arranges to transport it outside the site. The contractor can then decide how to dispose it off.

   Non biodegradable wastes also get accumulated in the market, even though of smaller quantities. For example, in Rashin market, on the market day (Tuesday) a number of

temporary shops are set up to serve tea and snacks to the farmers and traders. This is likely to generate litter like polythene bags, milk packets, paper, etc.

Suggestions of the study team

- Collection of waste material needs to be done after each market day.
- The possibility of collection of this waste and composting it scientifically using properly designed compost pits within the site should be explored.
- This can be sold off to local farmers as organic manure and thus can earn some revenue to the market
- Alternatively, local women may be organized into SHG's (or use existing SHGs) and be entrusted with the responsibility of collecting and composting / disposing off the waste in place of the contractor. This can become an economic activity for the women's group.
- Non-biodegradable waste should be collected and disposed off separately through the municipal system. Even though this is not anticipated to be of significant quantities, care should be taken. It is suggested to install bins for non biodegradable wastes in different places in the market.

5. **Spread of communicable diseases:** At present there is no screening of cattle when they are brought to the market and there are no veterinary services available in the market premises. Study team's discussion with a private veterinary practitioner revealed that there is possibility of spread of Foot and Mouth Disease (FMD) through common cattle troughs and crowding of animals close to each other. Present system cannot ensure that all animals brought in to the market are vaccinated against FMD.

   Suggestions of the study team

   - It is suggested to hire services of qualified veterinary practitioners to conduct mandatory health checkups and screening of animals.
   - Based on need, they can provide first aid as well – there is possibility for this to be made a paid service.
   - There should be provision for vaccination of animals in the market area – this would ensure the coverage of a large number of animals for most common diseases at one location.
   - Further, if a veterinary practitioner is available in the market, the buyers of animals can get the animals tested for diseases, pregnancy, productivity, etc. – this can be a paid service.

- APMC can either tie up with a private veterinary practitioner or else the possibility of tying with veterinary department to utilize the services of local veterinary doctor can be explored.

6. Other issues:

- Agricultural biodiversity - Discussions with livestock farmers reveal that indigenous breeds of cattle, especially of cows are becoming extinct. This as such might not have a negative environmental impact, as cross-breeding of local variety cattle with high yielding varieties is done maintaining the level of blood at a healthy proportion. It is also noted that in case of bullocks, farmers are still using local breeds.

- Fodder quality and quantity – With the development of livestock markets, there is a possibility that some farmers, especially landless or marginal farmers, may take up livestock activities resulting in increased demand for quality fodder. This could result in enhanced incidences of open grazing leading to further degradation of pastures and grasslands.

- It is suggested by the study team that transport conditions of animals be monitored and ensured that it is as per accepted standards.

4.6.2 *Discussion of social impacts*

Livestock market yards are typically located at sub-market yards of APMCs. These are located at paces traditionally used as livestock market. Some of good practices observed by IESA team at Junnar and Rashin APMCs currently are highlighted below. These could also be applied and followed in other APMCs, wherever it is relevant.

1. **Land:** The study team visited the sites proposed to be developed for livestock markets. In all the locations visited, APMCs have their own land. The proposed interventions are around upgrading the existing facilities rather than creating new facility. There is no issue around land acquisition, as the land required for the proposed interventions is owned by the APMC. There is no issue of encroachment as the sites are well protected with a compound wall. These sites are currently used as livestock market yard on a weekly basis.

   In Junnar, the cattle market is functioning in a present location from where this is going to be relocated to a new site with in APMC market yard. In Rashin, Kathi, Peth Vadgaon and Loni, the existing cattle market will be improved through additional infrastructure creation listed above. In Junnar, they have about 2 acres of land in the proposed site. All these sites are located on the main road and hence no plans for construction of approach roads. There is no internal road presently with in the sites.

   In Rashin, the existing site for the livestock market is open to sky and cattle are tied in open. The APMC proposes to erect tin-roofed cattle sheds to protect the farmers

and animals from rain and sun. But, due to the vastness of the area and large number of cattle, this appears to be not be a feasible idea.

Suggestions of the study team

- While designing the livestock mart, care should be taken not to destroy trees existing on the proposed site. When the cattle are kept in the open condition, these trees would provide shade.

- In sites where there are no plants, rows of shade trees with medium canopy such as neem can be planted. This will have positive environmental impacts and at the same time while offering protection from sun to the animals and farmers. Medium canopy will allow sufficient sunlight to keep the area clean and dry.

- There is a need to build internal road within the site- especially from entrance to the loading platforms – this can be earthen roads (called '*murram*' in local language).

2. **Participation by all social groups:** Small ruminants are reared mainly by small landholders and landless families. Female goats are retained for their milk for domestic consumption and for production of kids. At the end of their lifecycle, when they are less productive, they are sold off for meat. Males are reared mainly for meat purpose and are disposed off when they are around 1 year old. This provides for regular cash income through out the year for small landholders and landless families. Sheep are reared by the nomadic shepherd community, known as *Dhangar*. They are also mostly landless and belong to poorer sections of the society.

   Further, women have greater say in the management and sale of small ruminants. There is space for all income groups to avail the facilities created by the APMC – as a result, small and marginal farmers and landless who are dependent on small ruminants like sheep and goat can transact in the market.

3. **Differential rates for small and big animals:** In Junnar market, the entry fees for small ruminants are less compared to other animals. While the fee for cattle, buffalo, bullocks, horses, donkeys, etc. is Rs. 3, it is Rs.2 for sheep and goat. In Rashin market, the commission charged also is differentiated according to the type of animal transacted. For big animals, the commission is 1 percent where as for small animals it is Rs. 3.10 per animal which works out to about 0.1 per ecnt.

   In both the cases, there is a clear intention to positively differentiate the vulnerable group like landless and smallholders from others.

4. **Conflict resolution:** There are different systems for conflict resolution adopted in the markets. For example, in Junnar, names of both buyer and seller and sale amounts are recorded for each transaction and accordingly a receipt is issued. This is in the interest of both buyer and the seller, helping them to sort out any conflicts at a later date. This practice could also be followed in other markets.

5. **Other issues:** The IESA study team reiterates its earlier suggestion to involve women's groups in waste management and disposal in these markets, converting it to an economic activity for these groups. As mentioned earlier there is a great opportunity to use localized markets for such ventures.

   Similarly any misconception about potential impact of the project on supply chain players like petty traders need to be cleared through concerted awareness building measures by the project before starting the infrastructure building process.

4.7 Component III –Farmers common service center (AgriMart):

Intervention description

Farmers Common Service Centers (FCSC) earlier called as AgriMarts are envisaged as aggregation-cum-market linkage facilities to be set up in rural areas. The aim of setting up FCSC is to achieve higher returns to the farmers by aggregating their produce, enabling larger scale buyers to directly purchase from them in the rural areas, and/or take products up to the value chain level. The infrastructure of these FCSC are likely be constructed through MACP project and operated by a local entrepreneur, possibly in conjunction with producer groups in the surrounding area.

FCSC are conceived as having basic market infrastructure, built around farmers' organizations and located in the production areas. Investment in FCSC under the project for enhancing infrastructure is proposed to be in stages, depending on the these FCSCs reach certain predetermined milestones in terms of participation by the farmers, volume of business and the way business is conducted, whether accounts and records are properly kept, whether the facility is maintained neat and clean, etc.

In the first stage, the following facilities are proposed to be provided at FCSC:

- Electronic weighing balance
- Display board
- Moisture meter
- Debris cleaner
- Small pack house

In the second stage of the development of the FCSC, there will be an investment where the following infrastructure will be provided;

- Chain linked fencing
- Auction platform with cover
- Crates
- Covered storage place - to store produce for a day or two
- Cleaning, grading, sorting and packing table with machinery

- Drying platform
- Administrative office with computer, furniture, telephone, internet facility, fax and other office equipments
- Input suppliers shops
- Electronic weigh bridge
- Fruits and vegetables shed
- Electricity fittings
- Drinking water facility
- Toilet block

4.7.1 *Discussion on environmental issues*

1. **Construction:** In all the locations visited, a clear plan and design for constructing the AgriMart facility was not available to the study team to present any specific assessment of potential impact. The study team assessed the impacts based on the common plan that was provided as a part of the ToR for the study.

   Suggestion of the study team

   - Plan and design of new construction should ensure that natural resources like water are conserved and thus have minimal negative impacts on environment.
   - Use eco-friendly materials like fly ash brick, hollow cement blocks, etc. for construction.
   - Provide for roof rain water harvesting while constructing new buildings.
   - Specific measures that reduce water consumption, like toilet pan with greater slope, should be used

2. **Waste management and disposal:** With aggregation happening at the AgriMart facility, and that too of perishable commodities like fruits, vegetables and flowers, there will be some amount of solid waste generated. The total product handling planned at agri mart level is about 3 MT per day, and the estimated amount of waste which will be generated in these locations when the AgriMart is fully functional is about 3-5 quintals per day (approximately 10% of wastage plus packing material wastes). In Deogad and Narayangaon, the farmers group has taken the responsibility to compost the biodegradable waste. They have already accessed funds from Zilla Parishad through a scheme to build low cost compost pits. Similar schemes exist in all districts and by collaborating with the appropriate local authorities; the project can address this issue with out necessarily making additional investment.

   Suggestion of the study team

- Provision should be made to compost the biodegradable wastes generated out of AgriMart operations
- Schemes like the Zilla Parishad scheme for building low cost compost pits, where ever applicable, should be leveraged for this purpose.

3. **Agricultural biodiversity:** In all the locations visited, the proposed AgriMart crop is the existing major crop. Farmers may shift some portion of their land to the AgriMart crop, if they are provided with better market opportunities. But the increase will not be significant. Based on our interactions with various stakeholders at the field, we conclude that there will be only marginal difference in the agricultural biodiversity of the area attributable to the project.

   One major point to be noted here is that almost all the farmers mentioned that they will maintain the area under food crops. Even if they fetch a better market price, they won't shift from food crops to cash crops, beyond a certain proportion. In Shingve-Tukai, farmers would shift from sugar cane to the AgriMart crop(s), i.e. vegetables. This has positive environmental impacts. Sugar cane monoculture is a high input cultivation. During the last few years, when sugar prices have been low, farmers faced the brunt and they would now prefer to shift from sugar cane.

   Suggestion of the study team

   - Area under AgriMart crop vis-a-vis other crops needs to be monitored.
   - Area under food crops need to be monitored

4. **Excessive use of chemicals**: In all the locations visited, farmers were found to be aware of optimal use of chemical – fertilizers and pesticides. Even when they mentioned that chemicals are essential ingredient in cultivation, they don't use them excessively. Further, they were aware that the returns won't increase beyond a certain point even when higher amounts of fertilizer are used.

   In both Varud and Shingve-Tukai, the farmers have been getting their soil samples tested and use recommended dose of fertilizer to improve the soil fertility. They were found to be in close and regular contact with agriculture department personnel to get information about various farming practices, including optimal use of chemicals.

   Suggestion of the study team

   - Promote organic farming wherever possible
   - Educative measures should be taken / continued by the agriculture department about optimal use of chemicals
   - Use of fertilizers and pesticides need to be monitored
   - Implement pest, soil and nutrient management strategies to reduce use of agri- chemicals

5. **Irrigation and ground water use:** Study team doesn't think setting up of AgriMart in any of the locations visited will have significant impact on the ground water resources. In most places agri mart crop is already the most important crop in the region and possibility of enhanced production of the crop because of better market linkage is less. Also the alternative crops in these regions are water intensive crops like sugar cane or irrigation dependent ones like cotton, which also consume large amount of water. In fact, in many locations the agri mart crop (mostly horticultural crops in the locations visited) consumed lesser water than these. During the group discussions farmers brought out certain positive impact on water usage if agrimart project were to be implemented such as usage of drip irrigation in water deficient location like Pimpri.

   In Shingve-Tukai, the farmers have collectively and individually constructed water storage tanks. These are basically above-ground, earthen storage tanks with plastic lining. During rainy season, water is lifted from overflowing borewells and dugwells and stored in these tanks. This water is then used for irrigation during summer season using drip and sprinkler system. This initiative has helped the village to become self-sufficient in water, where as earlier it was a 'tanker village' (there was not enough water even to meet the drinking water requirement and water had to be bought).

4.7.2 *Discussion of social impacts*

1. **Land**: FCSC (AgriMart) facility, as proposed, would require about one to two acres of land. The land for FCSC is proposed to be provided by the agriculture department /APMC/ local village authority. The IESA team visited the identified / short listed sites in each of the five locations for physical observations and discussions with the relevant stakeholders. No issues around displacement (both physical and economic) of any person/community through land acquisition are foreseen in any of the locations visited. The following table provides an analysis of the current land use and ownership of the plots identified at each location visited by the study team:

Location Visited	Ownership	Status	Current land use
Narayangaon	Gram Panchayat	Plot identified, GP needs to pass resolution to allot land for FCSC	Fallow land and free of encumbrances. Informally used by farmers' group for crop produce aggregation.
Shingwe Tukai	GoM	Plot identified, acquired by Govt for a proposed food park, with in which the FCSC will be located	Fenced fallow land and thus free of any encumbrances
Pimpri	Farmers' group	Plot identified, group resolution needs to be passed	Used as (temporary) storage space with out any infrastructure

			for farm produce
Varud	APMC Varud	Plot identified, APMC committed to allot it for AgriMart	Fallow land with in APMC compound and thus free of any encumbrances
Deogad	Farmers' Coop	Plot identified, group resolution needs to be passed	Used as storage space with out any infrastructure for mango in peak season only

The IESA study suggests that for all future FCSC (agri marts), wherever line department land is available; it should be selected for the proposed service center. Community contribution can in some cases create issues around future usage of the land and also what is the source of the land – hence community contribution should be discouraged at all sites. The requisite resolutions by the Gram Panchayat or Farmers' coop or APMC (as the case may be) needs to be passed before implementation of the project can start.

Suggestions of the study team

- Following the experience in Narayangaon, efforts may be made to generate consensus among the farmers' group, the local Gram Panchayat authority and concerned line department about the land contribution.

- Land with Line department, where ever available, should be the first choice for the proposed service centers.

2. **Participation of small farmers:** Participation of small farmers needs to be ensured in the FCSCs, not only during construction/development but also at the operational, managerial and decision making levels

Suggestions of the study team

- There should be incentives to the community organization for providing facilities, on priority basis, to the small and marginal farmers to participate in the project

- The executive committee of the community organization should have at least a third of the members who have small and marginal landholding

3. **Participation of marginalized sections:** In the locations visited, the IESA team did not see any special provision to ensure participation of the people from vulnerable sections like the scheduled caste, tribes or women. Special provisions need to be made for future FCSCs, to be located in districts with significant tribal population (e.g. Chandrapur, Gadchiruli, Thane etc.) to include tribal communities in the FCSC activities and marketing channels.

Suggestions of the study team

- It would be essential to include members representing these groups in the management committee and other decision making bodies of the proposed producer companies, so that the benefits of the intervention is equitably shared.

4. Other social issues

- Capability of the existing groups to manage the producers' company is limited in a few locations. Enhancing group capability would be a key to ensuring long term sustainability of the venture. The project has to invest in group capability building to ensure success of the project.

- Other supply chain players like small village level traders, commission agents and others might become hostile to the proposed interventions. The farmers' group, however, can benefit from these players by involving them in the functioning of FCSC and use their (already built up) local knowledge and expertise on the business. The group in Narayangaon is a case in point, where while initiating the group activity of aggregating, packing and supplying flowers to the Mumbai market, the group decided to use the same local trader and transport services. This also provides incentive to the supply chain player as the loss of margin is compensated by lower risk exposure, greater volume of business and assured business. This kind of model can be replicated across project locations. This can be a win-win situation for all concerned.

4.8 Component IV – Farmers common service center – fisheries (Aquamart):

Intervention description

FCSC for fisheries (referred as AquaMarts) are envisaged as aggregation cum market linkage platform for small scale fishermen or fish farmers. The aim is to enhance development of more competitive marketing system for fisheries and improving market access to fish farmers / producers to get a better price for their catch. The infrastructure of these AquaMarts are likely be constructed through MACP project by the department of fisheries development and operated by a local entrepreneur, possibly in conjunction with producer groups and fisheries cooperatives in the surrounding area

AquaMarts are conceived as having basic market infrastructure, built around fishermen's organizations and located in the production areas. Investment in AquaMarts by the project for enhancing infrastructure is proposed to be in stages.

The facilities to be provided in AquaMarts are as follows:

- Auction platform with shade 62.5'x20'
- Clearing / washing tank 10'x15'X5' size – 2 tanks
- Retail shops 10'x10' size – 10 shops

- Store office / Rest Room (Retiring room) - 2
- Insulated Tank 10' x 10' size – 2 tanks
- Toilet / Bath with water and electricity
- Fencing and approach road
- Utility Van
- Equipment furniture and fixture

In addition, wholesale fish markets are proposed to be set up in two large urban centers (Nagpur and Pune) where the existing markets are unorganised and unhygienic. The wholesale market like aqumart will be owned and operated by fish Producers Company registered for this purpose. The project will build up the infrastructure required for running the markets.

The facilities to be provided in the wholesale fish markets are:

- Auction shed of 5000sq.feet
- Cleaning, washing tank and platform- 3 units each of 500 sq.feet.
- Fish retail shops with electricity, water, deep freezer, furniture's & fixtures (10 shops each of 200 sq. feet)
- Weigh bridge with 5 mt capacity & electronic operation
- Fishermen guest house, office/ stores with necessary amenities 2000 sq.feet
- Common toilet & bathroom 4 units each of 50 sq.feet
- Compound wall
- Internal roads
- Diesel Generator set of 125 KV
- Packing house - 500 sq.feet
- Water supply & electric installation arrangements
- Cold storage at wholesale market 5 MT capacity
- Cold storage at collection centre 30 MT capacity
- Ice factory 15 MT per day capacity
- One Refer Van 8 M.T. capacity and one Utility Van 4 M.T.
- Ten Fish Collection Centers (400 sq.feet. with shade)

4.8.1 *Discussion on environmental issues*

1. **Construction:** As is the case with the other components, the project is yet to develop a clear blue print of the constructions plan. The study team assessed the impacts based on the common plan that was provided as a part of the ToR for the study.

   Suggestion of the study team

   - Plan and design of new construction should ensure that natural resources like water are conserved and thus have minimal negative impacts on environment.
   - Use eco-friendly materials like fly ash brick, hollow cement blocks, etc. for construction.
   - Provide for roof rain water harvesting while constructing new buildings.

2. **Water supply, drainage and hygiene:** The sites identified had adequate water supply source, being close to water bodies. But there was no clear water disposal plan identified. It is important that the drain water is treated for preliminary filtration before being drained out – as it would go into the natural water body.

   Suggestion of the study team

   - Specific measures that reduce water consumption, like toilet pan with greater slope, should be used
   - Plan for and install preliminary filtration units before letting out drain water

3. **Waste management and disposal:** Solid waste generation is likely to be low and in fact with the introduction of insulated storage chamber, the quantity of fish getting rotten and wasted would come down significantly. But if value addition operations like cutting and cleaning of the fish is carried out, then the amount of solid waste would be high. In any case, the project should provide for waste disposal measures. The quantum of waste generated in a location like Bhigwan was about 50 kgs per day on a regular day, and increased up to 400 kgs per day on few days in summer when ice availability was limited. As majority of waste generated would be fish waste, there is an opportunity to utilize the waste generated for supply as input to animal and fish feed units, and as fertilizer input.

   Suggestion of the study team

   - Solid waste generated should be collected in pre-specified spots, with separation of non-biodegradable waste and degradable fish waste.
   - Linkages should be established for fish waste utilization, non biodegradable waste should be linked to municipality waste disposal mechanism.

4. **Aquaculture biodiversity:** The major fish species grown in the tank at Bhigwan aquamart site are the Indian major crops like Rohu, Katla and Mrigal. These species grow alongside natural local species, e.g. Vam, Maral. There is no indication of any significant change in the aquaculture bio-diversity of the tank in future because of the

project intervention. But the project should monitor that carnivorous species like Bhakur (which has been banned by Government of India) is not introduced in the tank.

Suggestion of the study team

- Develop a management plan – stocking, feeding, harvesting for each water body
- Monitoring mechanism should be set up to check species diversity of the catch and for new seedlings released in the tank to avoid any future problems
- Disallow introduction of other invasive fish species, particularly alien species
- Monitor water quality in reservoir/tanks
- Monitor fishing practices to ensure that destructive practices are not used (use of dynamite).

5. **Use of chemical feed and medicines:** Reservoir is the main source of fish stock for the aquamart. The aquaculture practice in the selected locations does not have any feeding operation – the natural food available in the tank is adequate for the aquaculture. Similarly discussion with fishermen revealed that they do not use any medicines or anti-biotic for disease control (as the tank is very large – more than 700 Ha water body, thus many targeted medicine application impossible).

Suggestion of the study team

- Training and education program for the fishermen for best practices of aquaculture should be conducted

4.8.2 Discussion on social issues

1. **Land:** Land requirement for setting up an AquaMart is 0.5 acres and for a wholesale market it is about 2 acres. The site visited for the proposed AquaMart is reported to have adequate land available for the development of the market. For example, in case of the proposed Bhigwan market, the APMC premises have land with in the Fisheries Department's seed production center in the suburbs of Pune city for the wholesale fish market. AquaMart site, while being close to the production center is at a safe distance from the water body. Similarly, the site for the proposed wholesale fish market is close to the city but at a safe distance from the residential area. Both sites were close to the main road and had good quality approach roads to it. Both sides are designated commercial sites, so there are no issues around conversion of agricultural land for commercial purpose. The sites are very well suited for the project purpose and also from the environmental considerations. The IESA team verified the land records at each site and found that either the APMC has already passed a resolution to allow the identified plot to be used for aquamart, or has indicated its willingness to do so in near future. The following table provides an analysis of the current land use and ownership of the plots identified at each location visited by the study team:

Market	Ownership	Present status	Current land use

Location			
Bhigwan	APMC Indapur	Plot identified, APMC resolution already passed to allot the plot for AquaMart	Fenced fallow land
Ramtek	APMC Ramtek	Plot identified, APMC has expressed readiness to allot the plot, formal resolution awaited	Fallow land with in APMC compound
Washim	APMC Washim	Plot identified, APMC has expressed readiness to allot the plot, formal resolution awaited	Fallow land with in APMC compound
Kolhapur	Dept. of Fisheries	Department has already allotted the plot for AquaMart	Fenced fallow land
Palghar	APMC Palghar	Plot identified, APMC has expressed readiness to allot the plot, formal resolution awaited	Fallow land with in APMC compound

Sample copies of the resolution passed by the APMC Indapur and the Revenue Records collected in Kolhapur on the use of land for the AquaMart purpose are attached as Appendix F.

2. **Participation by all social groups:** Fisheries activity is limited to the members of the traditional fishing community (bhoi samaj) in the region. With in the community, there are large and small fishermen – those who have larger boats or catamarans vis-à-vis those who catch fish with a make shift '*chappu*'. The proposed design of handing the operation and management of the aquamart to the local fisheries cooperative, can potentially make the larger players and traders (who dominate the fisheries cooperative societies) to get a greater say in the running of aquamart which will be at the cost of the smaller players. Provisions, therefore, should be made to include smaller players and workers in the supply chain a part of the decision making body.

   Similarly, the Palghar location in Thane district comes with in a taluk that has relatively higher tribal population. Discussions with the tribal communities revealed that fisheries as an economic activity is not a traditional occupation for the community. Also, there is no tribal hamlet with in ten kilometer distance from the location of the AquaMart site. Therefore, it is unlikely that the proposed AquaMart would have any impact on the local tribal groups. But for any future AquaMart planned under the project in such sites where there is relatively high tribal population, special provision needs to be incorporated in the implementation plan to ensure equitable opportunities for participation for the community in the intervention.

3. **Use of solid waste:** Solid waste generation is likely to be low and in fact with the introduction of insulated storage chamber, the quantity of fish getting rotten and wasted would come down significantly. But if value addition operations like cutting and cleaning of the fish is carried out, then the amount of solid waste would be high. In any case, the project should provide for waste disposal measures. As majority of waste generated would be fish waste, there is an opportunity to utilize the waste generated for supply as input to animal and fish feed units, and as fertilizer input

   Suggestion of the study team

   - Ensure smaller players to be part of the decision making bodies and get a fair share benefits of aquamart.

4. **Differential service charges:** The smaller fishermen bringing small quantities of fish to the aquamart may not need the full range of services (esp. the insulated storage chamber), whereas the larger fishermen and traders would be utilizing the full range of services offered in aquamart. So the services charges should be differential and based on the services used.

   Suggestion of the study team

   - Institute small player friendly service charges or variable service charges based on the range of services used at aquamart.

CHAPTER V – ENVIRONMENTAL AND SOCIAL ISSUES AND MITIGATION MEASURES

A number of issues and concerns emerge from the discussions in the previous chapter both on environmental and social aspects. It is important for the project to list the issues and discuss the mitigation measures for these aspects. The project needs to plan this into the design process. This chapter describes the issues and proposed measures for mitigation of adverse impacts.

Overall assessment

The overall assessment of the MACP intervention proposals in Maharashtra in terms of environmental and social impacts is positive. The assessment shows that while there is very low risk of negative environmental impact, potential for social impact is high both for positive as well as possible negative impacts. Legal and policy environment in the state favours the project – for example, adoption of model APMC Act and thriving agribusiness scenario of the state. The strengths of and challenges faced by the project are briefly presented below.

Strengths:

Environmental	Social
▪ Interventions proposed build on existing infrastructure and operations, no new or exotic activity introduced – only limited environmental impact anticipated that could be easily mitigated ▪ Location / sites for infrastructure proposed are in close proximity to center of production and with road linkage ▪ Interventions proposed are in dispersed location, negating chances of concentrated adverse impact ▪ Land required for the project doesn't come under forest land or protected area or natural habitat of any endangered species / plants	▪ Intervention doesn't require land acquisition – land exists with line department/APMC or community ready to contribute land ▪ The project doesn't result in any displacement of the community – no R&R provision required ▪ Opportunity for primary producer level value addition and increase in income ▪ Positive indirect effect on health and education status among primary stakeholders ▪ No displacement of any individual/family or community ▪ Vibrant community – can be easily connected to the market

But there are a number of issues that need to be highlighted and addressed. The project is at a preliminary level and detailed plans for project execution are yet to be finalised. Stakeholder consultation in project planning and awareness on project provisions is low at present and needs improvement. Monitoring and evaluation systems and plans are yet to emerge and these need to incorporate findings from IESA. Adequate provision for waste management practices needs to be planned in project planning. The current waste management practice adopted in different project sites and agri-marketing activities in general is poor.

Challenges:

Environmental	Social
▪ Environment friendly measures need to be incorporated into the construction design ▪ Lack of provision for adequate waste management practices – both for solid and liquid wastes generated ▪ Farmer education required around integrated pest management practices and appropriate ground water management	▪ Equity - Provision for ensuring equitable participation of vulnerable groups – women, marginalised groups, small scale players required ▪ Group capacity - Success of the project critically dependent on group strength – not all places have strong pre-existing groups. ▪ Transparency – System to ensure project operations are managed transparently ▪ Women involvement - Current plans do not address the role played by women in marketing efforts, specifically applicable for AgriMart and AquaMart

Specific issues and measures

Issues and measures are discussed separately for the social and environmental aspects and are presented in two sections below. The first section lists the general issues across all components – many of these deals with preparation and implementation phase. The second section lists social and environmental issues specific to each component, mostly related to operational aspects of the interventions.

Part I - Potential environmental impacts and mitigation measures

Environmental issues identified during IESA and the required measures are presented below. The first section lists most of the planning and implementation level issues, which are common to all proposed interventions. The second section lists more of operational level issues unique to each intervention separately.

Table 1a: Preparation phase (construction of the structure)

Issues	Observations	Potential impact	Suggested measures
Table 1a: Preparatory Phase			
Site selection – Suitability	The sites visited are well suited for the intervention – based on the agricultural production in the region. The sites are close to the center of production.	▪ Disruption to the natural drainage pattern ▪ Encroachment of forestland ▪ Changes in the land use ▪ Inadequate area for parking, loading etc	▪ Develop guidelines for site selection ▪ Do not develop site on agricultural farms, dry river/stream beds etc instead identify wasteland, as far as possible, for constructing markets ▪ Select sites close to the center of production ▪ Site should be suitable for construction activity, with proper drainage, space for traffic movement etc.
Table 1b: Implementation phase (construction of the structure)			

Issues	Observations	Potential impact	Suggested measures
Construction: Negative impact of construction activities, debris disposal, approach roads etc on agriculture land or water bodies.	The construction activity generates pollution and wastes in the local environment. This is especially important as in most cases the agrimart and aquamart sites are adjacent to agricultural land or water bodies like irrigation tanks.	▪ Any dumping of debris and construction material can lead to land and water pollution ▪ Dust blow from construction site could result in respiratory disorders ▪ Habitat fragmentation due to approach road building ▪ Extraction of firewood from local sources by construction workers	▪ Identify debris disposal sites/systems to prevent land and water pollution and ensure that construction/civil contract has debris and waste disposal clause in the tender ▪ Ensure regularly monitoring of debris disposal ▪ Ensure that water sprays are used when construction site is close to habitation and schools; provide safety masks to workers at site, enclose the area with screens ▪ As far as possible choose alignments for approach road that does not cut across natural habitats, wetlands and that it results in adverse impact on livelihood of the local etc ▪ Encourage contractors to provide LPG at construction camps ▪ Dispose of waste water and sewage from construction camps in hygienic manner
Threat to natural resources (flora, fauna, water bodies) at the construction sites	Identified sites have a number of trees (especially the livestock market yards) and adjacent to water bodies (Aqua Marts).	▪ Tree felling at site ▪ Lopping for firewood ▪ Poaching of small mammals by construction workers ▪ Oil/fuel spillage and pollution of water bodies	▪ Design facility to minimize tree felling ▪ Plant trees in the ratio of 1:5 (one felled; five planted) to enhance environmental gains ▪ Use native fruit trees with large canopies ▪ Provide LPG facility to construction workers ▪ Monitor closely for poaching incidences ▪ Develop plan for containing oil spills ▪ Undertake site visit and prepare assessment report for each area along with detailed construction plan
Possibilities for enhancing environmental performance of project			
Use of environmentally friendly construction material	The project presents opportunities to enhance the environmental performance by incorporating in the design elements that support the sustainable	Number of environmentally friendly construction material can be used and both materials and measures can be demonstrated to the	▪ Use of eco-friendly materials during construction. For example - ash brick, hollow cement blocks, etc need to be promoted. ▪ For shade use large canopy trees in

Issues	Observations	Potential impact	Suggested measures
	development approach	community for adoption in their own works	place of tin sheets
Roof rainwater harvesting structure	Many of the interventions are being taken up in water scarce Vidharva and Marathwada region. Water conservation measures are not currently planned in any structures being proposed.	Demand for water is high for the operations and processing activities in each component. It is important to create water conservation mechanism in the structures. It can also act as demonstration model for the community.	▪ Create roof rainwater harvesting structure in each building constructed by the project. A rough sketch of a common model with underground sump is provided in Appendix I. ▪ Rainwater harvesting could also be done on sheds, open fields etc by diverting and storing water in tanks or recharge wells.
Table 1c: Component I: Promotion of AgriMart			
Operation			
Waste disposal and management of solid waste	At full operation AgriMarts are expected to generate wastes of about 0.5 to 0.7 tons per day. No systematic plan on waste management done in intervention planning. Most AgriMart sites are close to agriculture lands.	▪ Dumping of waste can damage land and create pollution ▪ Rotting organic waste could be health hazard	▪ MSAMB to prepare guidelines on waste segregation and disposal ▪ Provide training to workers at agrimarts for separating bio-degradable and non-bio degradable wastes at source MSAMB in collaboration with MEDA to explore possibilities and pilot biomass based gasifier for electricity generation ▪ Provide enough space for vermin-composting using bio-degradable mandi waste Involving local SHGs to take this as a micro enterprise will provide additional revenues and gainful employment.
Sewage treatment and liquid waste	AgriMart operations is likely to use large quantity of water for cleaning and processing purpose, the drainage system allows the water to run off to nearby fields and/or water bodies	▪ Sewage flow from AgriMarts located adjacent to agricultural fields can cause problems. ▪ Sewage/outflow could also pollute nearby water bodies and wetlands	▪ Install systems for primary treatment of water and wherever possible, ensure treated wastewater is recycled for other useful purposes including irrigation ▪ Do not allow outflow to fall in natural wetlands
Agriculture bio diversity in the area	The primary agri mart crop is usually a cash crop. The farmers cultivate it in part of their land and rest of the land is used for staple food production. Farmers reported that their cropping pattern would not change with AgriMart intervention.	▪ Better price realization can influence farmers to shift from staple food to more cash crops – this can have a impact on household level food security	▪ Land utilization and cropping pattern in the agrimart area is to be monitored closely. ▪ MSAMB to survey and document use of any traditional varieties and land races of main crops and/or other crops to preserve genetic diversity

Issues	Observations	Potential impact	Suggested measures
Use of chemical fertilizer and pesticides	Current usage levels of fertilizer and pesticides are high (figures to be provided based on analysis).	▪ Increased marketing opportunity is likely to influence farmer to intensify production – this can lead to even higher increase in the use of chemical fertilizer and pesticides ▪ Increased use of pesticides/ fertilizers could lead to issues related to storage, handling, applying and disposal ▪ Chances of pesticides and fertilizers entering in food chain posing a health risk	▪ Training and awareness programs and demonstrations on IPM/INM to be built in to the training plan for the project ▪ MSAMB to develop a sustainable agriculture strategy, including elements of crop planning, balanced use of nutrients and use of organic fertilizers; minimizing the use of chemicals, improvement of extension services, etc. ▪ Train farmers on IPM and discourage use of chemical pesticides; provide relevant training in storing, handling, applying and disposing fertilizers and pesticides ▪ Test soil and crops for presence of residual pesticides
Impact on ground water usage and recharging	Ground water is the main source of irrigation for most of the farmers in AgriMart area. Most locations reported depletion of ground water and lowering of water tables in the last few years	▪ Increased production and better markets could enhance extraction of groundwater ▪ Possibility of pollution of groundwater sources due to excessive use of fertilizers and pesticides	▪ Encourage farmers to opt for special measures like drip irrigation systems, crop management practices to reduce the groundwater usage. ▪ Encourage shifting from water intensive crops like sugarcane and cotton to horticultural crops with better marketing facility ▪ Do not allow polluted waters to reach recharge points and aquifer
Table 1d: Component II – Modernizing functioning and operations of APMCs			
Operation			
Handling extra packing material	Currently the APMCs use mostly gunny bags and in some cases cardboard cartons – both are bio-degradable. But with the improved infrastructure for grains as well as fresh fruits and vegetable section, it is likely that new packing material of different grades, including PVC cartons will be used.	▪ Issues related to disposal of packing material, especially non-bio degradable. ▪ Current system of waste management does not have any separation of organic and inorganic wastes.	▪ Follow guidelines on waste disposal – both for organic and inorganic waste. ▪ Institutionalize separation of bio-degradable and non-bio degradable wastes at source. ▪ For the APMCs in larger cities like Mumbai and Nagpur, appoint waste handling agencies who collect the waste for a fee and take it to designated waste management facilities. ▪ In market yards close to farmlands, use bio-degradable waste for vermin-composting ▪ Allocate area for construction of vermin-compost pits
Other solid waste – fresh food and grain section	With increased handling capacity and facilities like grading and sorting, the bio-degradable waste generated is likely to double from current levels of 1 to 2 MTs in different APMCs.	▪ Dumping of bio degradable wastes in non-designated area could pollute land and water resources ▪ Carelessly thrown solid waste create unhygienic	

Issues	Observations	Potential impact	Suggested measures
		conditions in market yards.	▪ Involving local SHGs to composting as a micro enterprise will provide additional revenues and gainful employment.
Drainage and waste water management	Drainage facilities in the APMCs release the drain water to the municipal sewage system without any treatment. Water usage is likely to double with new facilities.	▪ Mixing of sewage with other sources, particularly during monsoons. Creating health hazard for users.	▪ In large market yards ensure preparation of proper drainage system and set up primary treatment facility before letting out sewage. ▪
Table 1e: Component III – Development of livestock market yard			
Operation			
Fodder	Presently there is no policy and actions for increasing fodder production. In absence of inadequate quality fodder, animals are left for open grazing degrading the already stressed pastures, fallow land and farmland	▪ Increase in incidence of open grazing ▪ Further degradation of common pastures and grasslands ▪ Threat to nearby forest or natural habitats due to increased grazing	▪ Encourage stall feeding of milch cattle ▪ Encourage farmers to reduce unproductive cattle ▪ Provide assistance to farmers for fodder production ▪ Dovetail with other schemes that support fodder production by planting native grasses on farm bunds, common fallow, waste and pasturelands
Communicable animal diseases (common with social assessment – as it is an issue for both environmental and social implication)	There is no screening mechanism and vet care facilities in the livestock market yards. With increased volume of trade because of better facilities, the vulnerability to communicable disease outbreak is likely to increase.	▪ Out break of any communicable disease or infection will make the entire region vulnerable.	▪ Set up veterinary care facilities at each market yard. ▪ Animal husbandry department has schemes to provide vaccination as well as treatment services at very reasonable rates –the project need to invest in these. It should just create the facility for the use by AHD. ▪ Make animal screening mandatory at entry points (along with the entry fee).
Drainage and hygiene	Livestock market yards visited hardly had any drainage facilities – pictorial evidence included in the report.	▪ Lack of hygiene creates vulnerability to health hazards for participants in the market yard. ▪ Problem of bad odor and stench.	▪ Ensure that livestock market has improvement of drainage network as standard item ▪ Ensure that livestock sheds have proper air circulation and ventilation
Waste management and disposal	While a large amount of generated organic waste is sold, contractors do not clean the market yard – they only collect the useful waste.	▪ Large amount of wastes generated in the form of dung, feed and fodder on the market day could rot and form unhygienic	▪ Current practice of auctioning the wastes to a contractor to be streamlined ▪ Add a clause in the contract for waste collection on cleaning of the market

Issues	Observations	Potential impact	Suggested measures
		conditions.	▪ Opportunity to convert the useful waste to energy or bio-fertilizer/ vermi-compost be exploited; since both feed and dung is available.
Bio-medical wastes	Currently there is no generation of bio-medical wastes and if there is any, it is disposed off along with other wastes.	▪ With the inclusion of vet care and breeding services there is likely to be generation of bio medical waste. ▪ If not segregated at source this is likely to create complication in waste management and could be a potential health risk for the workers.	▪ Follow the guidelines on segregation and disposal of bio-medical waste as per the government regulation. ▪ Give responsibility for monitoring of biomedical waste disposal to a member of the market committee.
Table 1f: Component IV – Promotion of Aqua Mart			
Operation			
Usage and disposal of fisheries allied equipments – nets and hooks, especially at the harvesting sites and waterbodies	Most of fisheries related equipment is plastic material. The team observed that after usage these materials are just dumped by the bank of the water body. While, there is an opportunity to recycle or re-use the waste material for repair purposes in organized fisheries set up like aqua mart, currently it is not being exploited.	▪ There is threat of pollution of water bodies because of such dumping. ▪ Nets and hooks could be a potential threat for ground nesting birds and other small mammals as well as humans ▪ Use of plastic bags and wrapping papers in the markets (most would be carried away by customers)	▪ Create facilities for input providers like net and fishing gears at the aqua mart. ▪ Local craftsmen who do repair work should be facilitated to set up stall in the vicinity. ▪ Aqua Mart vendors should be encouraged to dump their non-degradable waste material in the designated area – from where the repair men can take out the useful material and the rest can be disposed safely. ▪ Dump plastic non-degradable waste material in the designated area and regularly dispose safely or recycle
Fish processing waste (solid stream)	Fish processing (de-gilling and de-gutting of fish) and activities create a large amount of organic waste including: intestine, gills, scales, fins and bones.	▪ Usually there are lots of flies and insects attracted to this and it creates a health hazard. ▪ Bad odor and stench is a problem for workers and visitors alike	▪ Solid waste need to be separated and processed depends on its grade, used for making fertilizer and fish meal as an ingredient for formulated feed for animals.
Water supply, drainage and hygiene	Current practice of disposing untreated wastewater from fish markets creates health hazard for the community living adjacent to fish markets. Presently, the opportunity to	▪ Prioblem of stench from untreated wastewater ▪ Stagnated untreated water could be	▪ Create systematic drainage facilities for generated wastewater ▪ In a large aquamart, develop primary wastewater treatment facility.

Issues	Observations	Potential impact	Suggested measures
	treat and recycle wastewater remains untapped.	breeding grounds for flies, mosquitoes and other small organisms ▪ Chances of mixing of untreated wastewater with other sources of water leading to contamination	▪ After treatment, recycle the water for cleaning purposes and other potential use.
Use of chemical feed and medicines	Current practices at the aqua mart sites visited shows that there is no usage of additional feeding or medicines.	▪ Excess or overuse of chemical feed and medicines in tanks could lead to land and water pollution as the same tanks are also used for irrigation purpose in summer months.	▪ Potential future usage of chemicals needs to be regulated ▪ Fishing rights provided to fishermen groups need to have clear guideline on usage of any additional chemical component.
Maintenance of biodiversity in water bodies	In large water bodies, stocking is not done on a regular basis. The fishermen were not aware of management plan for the water body.	▪ Imbalance in mix of species, decline in numbers of carps, increase in fast growing species like tilapia	▪ Management plan to be developed – to include stocking, feeding and harvesting – to be implemented

Part II - Anticipated social Impacts and mitigation measures

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
Tab 2a: Preparatory Phase			
LA might result in displacement (physical and/or economic) of local people	The team visited identified sites for the intervention in the four components. The observation on the land ownership, current status and usage is part of the main chapter on preliminary findings. No displacement of any person or communities is anticipated in the land acquisition process, and there was no encroachment in the sites identified for pilot.	Current sites do not involve possibility of any displacement. There is no LA for the modernization of APMCs or livestock market yard, where existing structures will be improved.	Develop guidelines for site identification for all future AgriMart or Aqua Mart which should include 1. Clear ownership title (copy of ownership title should be provided to project steering committee). 2. Site to be free of encroachment 3. Prepare mitigation plan, if any adverse impact, for each of the potential affected family as suggested in the ESMF. 4. Provide specific support based on the R&R entitlement framework agreed for the project 5. No construction will be initiated unless compensation for the land and other assets lost for the project is paid and R&R entitlements are extended to the identified PAFs. 6. Guidelines for R&R entitlement framework are being provided in the report, for any future exigency where land acquisition and or encroachment might be their on identified site.

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
Stakeholder consultation in the project	As a part of stakeholder consultation process under IESA, GDs were conducted among the farmers/ potential beneficiaries. Also one-on-one interaction was carried out with project staff, line department officials, local PRI members[2]. The discussions reveal that many primary stakeholders did not have much information about the project.	Finalizing project approach and implementation design, with out full involvement of the primary stakeholder can lead to lack of ownership and reduced impact. *It is envisaged that the ISEA Report and ESMF would be discussed with the stakeholders and it would be made available to the public for their feedback.*	*Project should organize (i) a state level stakeholders' consultation workshop and (ii)* a pre – launch workshop at each project locations involving all stakeholders. The project details should be shared and discussed with the key stakeholders, and consensus generated on the project approaches. Apart from building consensus during the launch, the project should continue the process of stakeholder consultation through the implementation and operation stages with: • Annual review meeting at each project site, where project steering committee meets with all local stakeholder • Bi-annual workshop at state/project level where stakeholder representatives including line departments, service providers and primary stakeholders • Newsletter published in local language and circulated widely through all active farmers cooperative in the project implementation area • Periodic project review and evaluation, as well as regular project monitoring system
Addressing gender concerns in project implementation and sharing of benefits	FGD with women's' groups and farmers at project location shows that women's participation in agriculture marketing related activities is very low. Few women hold the ownership of productive assets, there is differential wage rate for women and men labourers.	Project should take up gender specific activities to alleviate the existing differential access to project benefits and to ensure that women become real partners to enhance its impact. The AquaMart intervention has a large potential to involve small scale women fish traders and processors involved, and add value to	The locations visited had a number of strong SHGs which were entrepreneurial and could serve as a good base to involve women in the project. APMCs and cooperatives already have provision for nominal membership of women; targeted capability building intervention can enhance the scope of participation of the women members and their share in the benefits of the project. For facilitating participation by women farmers specific facilities like (resting place, sanitation measures like clean toilets for ladies) in the Marts should be built to meet the requirement for women among market users.

[2] A summary

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
		their stock.	
Involvement of tribal community in project activities and tribal development in project area	Few of the project intervention districts like Chandrapur, Thane and Ahmednagar have relatively high tribal population. Though the tribal community is not in the immediate vicinity of the project intervention, they are an important stakeholder as they often are vulnerable to being left out because of their socio-economic disadvantages.	If project benefits are not accessible to tribal communities it would further imbalance the socio-economic disadvantages faced by them.	Specific measures like waiver of user charges for tribal farmers, training and capability building of tribal groups can help the project to reach out to tribal communities in the district where it is operational. The project can create linkages with tribal welfare schemes of the government to secure their participation and reimbursement of the membership fee or any service charges for the community. The project should take up market information dissemination initiatives, as well as information about project components and benefits specifically in tribal villages and habitation, to create awareness in the tribal community for participation.
Equitable opportunity for small and marginal farmers to participate	Farmers' group at each site visited included small and marginal farmers. Maharashtra has a number of vibrant farmers' organization in the form of cooperatives and informal groups. FGDs also revealed that there is no restriction for the small farmers to participate in group activities, but the decision making process is usually dominated by larger farmers. Current design does not have any special provision to ensure participation of small and marginal farmers.	Participation in decision making is critical to the functioning of market organizations. In its absence, the decision making process, might be dominated by large farmers, which could affect the vulnerable sections.	• The project needs to encourage participation of small and marginal farmers through special measures like • Reduced membership fee for small and marginal farmers • Ensure at least 50% of the executive committee members from small and marginal farmers categories • Provide market information/prices in local language to facilitate awareness to small and marginal farmers • Preference to small and marginal farmers in the storage of produce by keeping 30% of the capacity reserved for them
Coordination with local bodies – Gram panchayat, local farmers' cooperatives	The farmer group in each site have good coordination with local bodies. In fact in two sites the local bodies have agreed to provide the land for the Agri Mart. However local bodies did not have a good idea of the details of the provisions in the project, like how the	Improved coordination with local bodies will result in a number of positives for the smooth project implementation, use of common resources, resolving conflicts etc.	The project should plan a one day workshop at each project location, involving representatives of the local bodies to create awareness on project measures and expected impact. At the same time it is important to preserve the autonomy of the Marts as a farmer organization, and the involvement of the PRI should be on a completely advisory basis.

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
	producer company will be created, what is the criteria for membership, how much will be the service charge etc.	Awareness creation on project measures is important to avoid any future confusion.	
Tab 2b: Implementation phase (construction of the structure)			
Employment creation during construction phase – opportunity for local labourers.	The construction phase is expected to create employment opportunities for at least 50 labourers for a period of 3-6 months. Labour availability is high in all project locations. But construction skill – but most of these should be unskilled or jobs with local skills - might become an issue to employ local labourers.	Wage employment for local labour will directly impact income of the landless households and will create good will for the project.	The contractors taking up construction contract should be directed to use local labourers as far as possible. The contract should specify with a clause to ensure at least 505 of the labourers hired by the contractors hire local labourers. This should be monitored by the project steering committee.
HIV/AIDS - Presence of large floating/migrant population (Construction workers and transport contractors at site)	Presence of relatively large migrant workers, transporters etc. may lead to high risk for HIV/AIDS and other infections.	There is potential for increase in high risk behavior for HIV infection in the community.	Preventive measures including awareness building should be planned by the project. There are a number of NGOs with HIV prevention schemes and awareness campaigns, building linkages with such NGOs can help the project to mitigate the potential negative impact. Ensure availability of counselors on a specified day at the camp sites. The construction contract clause should include prevention measures for HIV/AIDS among the construction workers. The Market Committees should facilitate linkages with NGOs working on HIV/AIDs (a list of such NGOs including those working with migrant labourers is provided as Appendix J). Also it should ensure dissemination of knowledge through handout and other education material.
Tab 2c: Component I – Promotion of Agri Mart			
Operation (Group formation and operation of the AgriMart)			
Membership requirement – fee, service charges may be a constraint for some participants	The membership fee and user charges have not yet been worked out in the project plan. Current markets do not have a membership fee, but levy a user charge of 1% of the transaction to the buyer – which	Any service charge higher than currently paid by the farmers would be a barrier for entry, especially for small and marginal farmers. But in	Project needs to look at current service charges at APMCs or other cooperatives while fixing the rates. Graded membership fee and service charges can be considered for large, smaller and marginal farmers. In the membership fee, the small and marginal farmers could be provided a 50% subsidy; while the service charges can be

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
	in turn is passed on to the farmer. How ever, commercial viability of the interventions requires revenue generation in the form of service charges and membership fee.	the primary data collected it is revealed that the people are ready to pay higher fee.	uniform based on the range of services used. Hence a farmer using only the sales platform gets charged less compared to one using grading, sorting, storing services as well as the sales platform.
Livelihood security of the supply chain players • Small traders • Commission agents • Transporters • Farm labourers • Processors	Agriculture value chain has a number of intermediaries playing useful and value adding roles. At each site, the team also interviewed a number of supply chain players and their participation in the agri mart intervention. At each site, the supply chain players are working with the farmers groups and aggregation by farmer groups is beneficial for the supply chain players as they get larger volumes.	Other supply chain players like small village level traders, commission agents might become hostile to the intervention. But the farmers' group can benefit by involving these players as they have built up local knowledge and expertise on the business. Similarly interest of the wage labourers, service providers like commission agents need to be kept in mind	Project needs to monitor the local wage rates in the Agri Mart areas. Farmer groups need to be provided with training in negotiating with traders and other service providers. Success stories like the Narayangaon experience described in the report needs to be documented and disseminated. It is important that while engaging with the traders and agents, the agri mart ensures that the rights of the small and marginal farmers, especially of members of the socially and economically backward sections are protected. The most vulnerable among all supply chain players are the labourers – as they are unskilled and have no social security back up. AgriMart during its operation should ensure that all labour requirement of the mart operation is met out by giving first priority to local labourers.
Capability building of the groups to be able to manage operations and become viable and vibrant producer companies	Farmer groups at different locations had varying degree of business skills and group strength. Whereas the group in Narayangaon was already doing business, groups in Pimpri and Varud were yet to initiate any group activities	Project's success depends critically on how capable the groups are in managing the business as a producer company. Capacity building of the groups would have a direct impact on the project output. One of the major issues is how the members of the group work united – team building. A suggested list of the training program for different players	A systematic capability building plan addressing the needs of each group at different locations with identified resource agency should be built by the project. A list of identified resource agencies which can be accessed for the capability building program is attached as Appendix K A group strength assessment exercise should be done on a periodic basis – Appendix L provides the details of group strength exercise. It should be a key component of the monitoring system of the project. Indicators and monitoring framework for this is attached as part of the ESMF.

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
		is provided as part of the ESMF	
Business development services for the AgriMart – to create the required market linkages	Farmer groups identified the gap in market linkages as the most critical need. This is a service that the can facilitate for the groups on a medium term basis and gradually build the capacity of the group to take up this role over a 2-3 year time frame.	The impact of increased income at household level is directly linked to the market linkages created and consequently prices of the agri commodities obtained	Project needs to plan for business development support services for the groups for the medium term – this should include creating market linkages for the produce, financial linkages with banks for financing the operations on a long term basis. The new project has identified a business development service provider (MITCON) who will work with each grass root organizations and help facilitate market linkages. Similarly for the first two years of its creation each agri mart would be supported by a local service provider who will help run the operations and build the capacity of the primary stakeholders to run the operations by themselves after two years.
Tab 2d: Component II – Modernizing functioning and operations of APMCs			
Operation			
Ensuring supply chain players like commission agents and transporters are on board for the project.	Modernization intervention like the electronic auction hall can potentially affect local commission agent adversely. Their involvement in project planning is presently low.	The support and ownership be critical to usage of infrastructure created by APMC modernization.	Proposed activities under this component will facilitate the work being done by the supply chain players. Make available the facilities to the commission agents as well, those who add value to their commodity through the cleaning and grading facility.
Livelihood security of labourers like 1. Licensed Hammals 2. Informal labourers	Modernization projects often result in labour replacing technologies, which will directly impact the livelihood of the labourers, both licensed and informal.	Reduced labour usage will lead to loss of income for the wage labourers and their role in the supply chain may get reduced.	Skill training for the unskilled labourers – to create grading and sorting machine operators. Ensure current labour force get gainful employment in the APMC premises through larger arrival, better cleaning practices, and more value adding activities being taken up at the APMC. It is important to note that while the proposed intervention is creating greater mechanization, it is also creating additional facilities. So processes like packaging, grading and sorting which are not there currently are being introduced and thus additional labour requirements are added. Based on the interaction with the market committee and project officials it is assessed that total number of labour requirement will have a net increase, but it is essential to ensure that the increased skill requirements are addressed through training the current labour

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
			force (both silenced mammals and informal labourers appointed by commission agents)
Effect of service charges on current users	Currently farmers pay very nominal service charges for the mammals and weighing services. But with value added services like grading and sorting, the service charges is likely to be higher. Small scale farmers may find it difficult to pay this.	If the services charges become prohibitive for the small farmers to use the facility the objective of value creation for small and marginal farmers would be lost.	Project should start with nominal services charges. Once the value add proposition is clear to the farmers and they get better price for their produce, the service charges can be increased. Also linking up with farmer groups or cooperatives can be considered for service charge recovery rather than charging the farmers directly. Based on the usage of the facilities by the small and marginal farmers, additional incentives like lower user fee and priority service to small and marginal farmers can be provided.
Tab 2e: Component III – Development of livestock market yard			
Operation			
Potential for allied services like animal feed and fodder, breeding services, veterinary care, animal insurance	Cost of service delivery for allied services is high due to dispersed nature of cattle holding. Although there is demand for the services, access is low.	Livestock market yard offers a great opportunity to be a center for allied services for animal rearing. Cost of service delivery would be low, as large number of animals congregate in the area	Provide space to allied services providers to operate with in or in the vicinity of the livestock market yard. Use the market yard as a one stop facility for all livestock related services.
Service charge for small ruminant farmers	Small ruminant farmers pay lower entry fee and commission for animal trade in line with their margin	Higher service charges will prevent small ruminant farmers from using the facilities and infrastructure created.	Differential rates for small and large ruminants (as already is the practice in Rashin and Junnar). This provision should be applicable to other locations as well wherever livestock market yards are operational.
Animal screening for communicable diseases	Incidence of infection in FMD, HSBQ have been on the rise. There are no facilities to test and screen animals entering the market. This increases the vulnerability of all animals	Any disease outbreak in the area will severely impact the livestock farmers	Set up animal screening at entry points Ensure mandatory health check up for all animal Create market yard as a hub for vaccination services by the Animal husbandry department. Also, provide necessary guidelines for the farmers visiting markets about the requirement of health check up through qualified government veterinarian otherwise they could be exploited in the markets. Linkages with the animal husbandry department should be created for such facility – during the interaction with government veterinary officers in different locations they were ready to extend such support to the market yard.
Scope for bio mass gasification unit	The market yard is likely to produce more than 1 Ton of dung and other additional bio mass waste – like fodder	There is potential for using the waste to create both energy and bio-fertilizer.	Involve local entrepreneurs and women groups (SHG) to create demonstration unit. Increase awareness and capability in these areas.

Issues	Observation and possible scenario	Potential future impact	Mitigation measure suggested
	and feed. No use of these wastes are planned in the project	There are entrepreneurial women groups in the area who can take these activities forward	A suitable SHG should be chosen based on competitive bid, and involving local government (like PRI) in the selection process. They should be provided with the skill training for operations. The BDS provider MITCON and local service provider should be involved in creating the financial linkages for the local group to set up the micro gasification unit.
Tab 2f: Component IV – Promotion of Aqua Mart			
Operation			
Ownership to non-boat owning labourers or fishing crew	The poorest among the fishing communities are often asset less and work as labourer or fishing crew.	AquaMart design does not have any special provision for ownership rights of fishing crew – unless they are member of fishing coop.	There should not be any restriction on membership of aquamart and thus share ownership in the producer company for the non-boat owning members of the fishing community. Priority should be given to involve them in the AquaMart creation and operations.
Small fishermen (chappu owners) may not need full range of services being offered by aqua mart.	As the unit catch of individual traditional fishermen (‘*chappu’* owners) is small they easily dispose of their catch in the market in small time. Facilities like storage; value addition etc. won’t be used by them.	Equal service charges would be prohibitive to these small scale players to take the services of aqua mart.	➢ Create menu of services and specify service charges. ➢ Offer differential/variable service charges for small/marginal farmers as per their usage ➢ Fishermen not using the storage, or value addition get charged less vis-à-vis larger fishermen with bigger surplus of product ➢ Aquamart provides better price to the small fishermen through directly linking them to large traders and thus better price for the fresh fish itself form a transparent auction system
Participation of women fish vendors in local market	Local trade in fish is mostly dominated by women vendors who sell fresh and dried fish in local market or door to door in near by villages. Their share can potentially get affected by aqua mart operation	Women door step vendors may lose volumes as more fish arrive in aqua mart.	Provide stake to women groups and vendors in the aqua mart management. Ensure that at least 30% of the volume of fish auctioned in the aquamart goes to the women vendors, by having a separate auction mechanism for them
Potential for labour intensive value addition	There is huge scope for value addition (through labour intensive activities like cleaning, de-gilling, de-heading etc).	Such value addition oriented enterprises can create additional employment and income for fishing community	Facilitate such value adding enterprises through local women groups and fish vendors in the community. Institute training and capability building program for such enterprises. Groups of women vendors should be trained to run such facilities with in the aquamart premises.

CHAPTER VI – ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

The ESMF is a road map to be adopted by MSAMB and its project management unit (PMU) for incorporation of environmental and social safeguards into the main project planning, execution and operation. It lays down a step-by-step methodology for activities that have to be undertaken.

ESMF has been developed to incorporate environmental and social safeguards into the main project planning, execution and operation. It will be applied to all the sub-projects under MACP in different stages of the sub-project cycle. The ESMF also incorporates key issues pertaining to Pest, soil and nutrient management, gender equity, tribal development, capability building and institutional arrangement. The framework also includes screening process of sub projects and monitoring measures. The framework has been developed considering three broad stages of project cycle. They are:

1. **Preparation** – This relates to the planning and designing of subprojects. Key project activities in this stage are:
    a. Surveys and Database
    b. Consultation with Stakeholders
    c. Preparation of Sub Project Plan
    d. Submission of Sub Plan to Environment and Social Cell
2. **Implementation** – The second stage refers to actual implementation of the project plan and construction design developed in stage one. Key activities in this stage are:
    a. Award of contracts
    b. Work Execution and Supervision
    c. Quality Control
3. **Operation –** This stage refers to actual operation of all the project components**.** Key activities in this stage are:
    a. Strengthening Producer company and inclusion of disadvantaged sections
    b. Solid Waste disposal and maintaining hygiene of the area:
    c. Monitoring and Evaluation

The ESMF activities and expected outcome in the different stages of sub-project have been proposed in the Table given below. These activities describe the broad summary of ESMF in the above stated three stages. A more detailed matrix has been prepared, covering the issues and mitigation measures and defining responsibilities for the actions to be taken and this is provided later sections in this chapter.

Stages	ESMF Activities	Outcome
Preparation	A. Surveys and Database: Initial surveys to focus on: • Site selection and assessing clear title of the land • Presence and creating database on functioning of farmers collective	1. Identification of sub projects with detailed baseline database on social and environmental

Stages	ESMF Activities	Outcome
	• Baseline data collection as per the indicators mentioned in the report (Appendix G) • Identification of various stakeholders including women, SC/ST, small and marginal farmers • Developing construction design blueprints using eco-friendly materials and incorporation of waste disposals and rain water harvesting measures • Assessment of logistics involved in construction – materials/contractors/labours etc B. Consultation with Stakeholders: This should focus on: • Workshop with local farmers collective to assess group strength and identify gaps for skill up-gradation and capability building • Sharing of project component and building consensus on the project component through a pre-designed workshop • Ensure participation of women, SC/ST and small and marginalized farmers beside supply chain participants like traders, transporters etc. Incorporate the suggestions C. Preparation of Sub Project Plan: Sub project plan should include detailed report on the following components: • Selected site and overview of project benefits and activities. This should include copy of title of the land • Detailed plan for inclusion of women, small and marginal farmers and SC/STs of the area in the various stages of the project activities. • Capability building plan for skill up-gradation and capacities of the farmers collective	indicators 2. Identification and agreement from the stakeholders on their support and participation in the project 3. Finalized sub-project and detailed implementation plan
Implementation	A. Award of contracts: • Procurement documents, procedures followed, contracts awarded & equipment procured B. Work Execution and Supervision: • Periodic monitoring to ascertain adherence of ESMF especially in conservation of flora and fauna, appropriate measures for waste disposals and construction debris • Ensure employment of local people for construction related activities • Ensure measures/linkages for spread of communicable disease. Establish linkages with local NGO having expertise in HIV prevention and control C. Quality Control: • Ensure monitoring of day to day work through involving members of producer company/farmers collective and regular visit to the site by members of line departments • Progress report and discussion on the site specific issues on a monthly basis	1. Implementation and monitoring of social and environmental management plans 2. Enhanced relationship among the officials of line departments and producer company members resulting in active participation in the sub-project implementation 3. Report of the results of social and environmental mitigation measures. This should include record of information like compensation paid, trees fell/planted during implementation, employment provided to SC/ST, women etc

Stages	ESMF Activities	Outcome
Operation	A. Strengthening Producer company and inclusion of disadvantaged sections: • Ensure representation of all section of societies in the executive committee • Execution of capability building plan to upgrade the skills of various stakeholders • Ensure operationalization of menu of services including graded service charges for disadvantaged sections, women, small and marginal farmers • Undertake periodic group strength assessment to assess the functioning and capability building needs of the group B. Solid Waste disposal and maintaining hygiene of the area: • Build linkages with organizations/companies that can reuse the wastes generated out of operations • Assess the efficiency of the waste disposal system and ensure separation of degradable and non degradable waste • Ensure proper maintenance and utilization of water harvested through rain water harvesting systems C. Monitoring and Evaluation: • Monitor key social and environmental indicators during the course of operation as indicated in Appendix G • Document key learning's and incorporate the same for future sub-projects	• Report on the assessment of the farmers collective/producer companies • Report on the skill building programs • Practices on waste disposal in place resulting in clean and hygienic environment at the site • Completion of sub project activities in conformity with ESMF

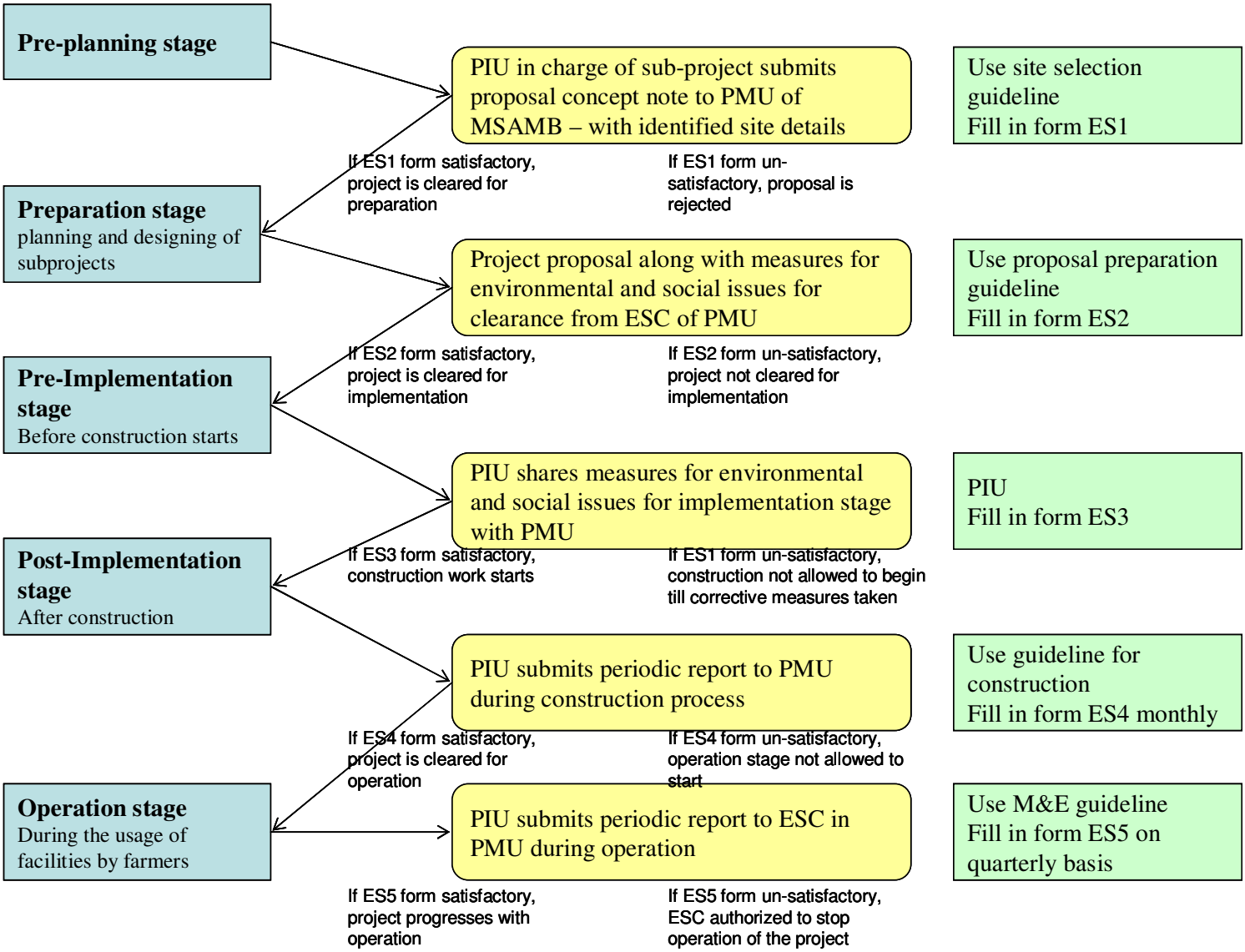
The ESMF contains relevant formats and checklists which will be used to ensure that all relevant issues are addressed in each scheme / sub-project. It also contains strategies for various key issues like Pest, soil nutrient management, tribal development, resettlement, gender equity etc.

6.1 Screening process

The PMU will be responsible to screen any new intervention proposal to be supported under this project. There would be clear guidelines on the scope of the project and what can be supported in the project.

The basic screening process to be followed at the project level is shown in the chart below. The screening forms for pre-planning, preparation, implementation and operation stage covering environmental and social aspects are enclosed in Appendix H.

Screening process



Subprojects with any of the attributes listed below will be ineligible for support under the proposed project. Any project activity with the potential for significant conversion or degradation of critical natural habitats would be ineligible for support through the project. Including, but not limited to, any activity within:

- Declared Forest Reserves or any Wildlife Reserves; National Parks and Sanctuaries;
- CRZ I or any CRZ zone where activities are not allowable in accordance with the CRZ Notification.
- Any project that is not consistent with applicable laws and regulations of the state.
- Any project with the potential for significant damages to cultural property.
- Any project that is not consistent with the project description at time of project negotiations, unless subsequently agreed to with the Bank along with the appropriate level of environmental and social management.
- Any project or activity involving the procurement of pesticides not allowable under Bank guidelines
- Any project, that would result in physical displacement of any person/family/household in selecting the site for implementing the project

The following Tables of checklists are prepared to guide the project management unit in taking proper measures for the environmental and social issues and concerns during preparation, implementation and operation activities process in a step by step process.

Table ES Ia – Preparation level environmental assessment:

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcomes
Site selection – Suitability	- PMU to develop guidelines for site selection - Do not develop site on agricultural farms, dry river beds etc, instead identify existing market land as far as possible, for constructing markets - Select sites close to the center of production - Site should be suitable for construction activity	Environmental and Social Cell of PMU	- Check if the guidelines on suitability of land for specific sub-project proposal is shared with implementation units and other stakeholder - Implement provisions of Table no 1a in previous chapter	- Clarity on site selection criteria to all stakeholders **(use of form ES1)** - Suitable sites selected for the sub-projects
Ecological impacts due to disruption and disturbance to vegetation, eco-system and bio-diversity	- Avoidance of eco-sensitive areas - Take up measures to protect Bio-diversity - Avoidance of disruption to grasslands, wetlands and other riparian areas - Compensatory planting should be done.	Contractor/ Environmental and Social Cell of PMU	- Any sub-project proposal must define the exact plot where the intervention will happen - The environment specialist form ESC visit the site and provide clearance or flag issues - In case of issues flagged, the contractor must	- Clear assessment of the potential ecological assessment and any environmental disruption before the planning of the project - Mitigation measures included in contractor's ToR – the implementation monitored by ESC

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcomes
			incorporate action plan for mitigation measures in work plan	
Ecological impacts due to cutting of shrubs, reeds, trees	- While planning, ensure minimal damage to trees and vegetation - Compensatory planting of trees - Plant double the number of trees cut - Coordinate with forest department for assistance regarding saplings and care to be taken	ID/ Env. Consultant/ Contractor	- Assessment of the number of trees to be cut and the numbers to be planted - Plan prepared by contractor and submitted to ESC - Clearance provided and work monitored closely	- Loss of vegetation avoided or well compensated for
Assessment of waste management and drainage system requirements	- Assess the quantum and regularity of solid and liquid waste to be generated in the sub-project - Estimate whether these are bio-degradable or not - Assess drainage requirements for the site	Environment consultant/ PIU and contractor	- PIU should include clause in the contract for making waste management systems - Contractors to be responsible for implementation - Use measures in Table 5b	- Appropriate waste management planning and system put in place during the project planning

Table ES Ib – Preparation level social assessment:

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
Land acquisition	Guidelines for site identification in future should include - Clear ownership title (copy of ownership title should be provided to project steering committee). - Avoid areas with encroachments - Provide specific entitlements based on the R&R entitlement framework agreed for the project - No deprivation of land unless compensation for the land and other assets lost for the project is paid - No construction will be initiated unless R&R entitlements are extended to the identified project affected families	PMU	- Check project proposal for requirement of LA - If LA is required, trigger the R&R strategy of the project will guide the acquisition process - Identify encroachers, if any - Monitor the implementation of the provisions of R&R strategy followed The ESC ensures each new proposal consistent with the guidelines, before sanction	- Suitable land identified and appropriate measures for land acquisition taken (**use of form ES1 and ES2**)
Stakeholder consultation in the project	- The project details should be shared and discussed with the key stakeholders, and consensus generated	PMU and PIU	- Organize pre – launch workshops at each project locations involving	- Adequate stakeholder consultation measures undertaken by the project

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
	on the project approaches. - The project should continue the process of stakeholder consultation through the implementation and operation stages		all stakeholders - The proposed activities, expected benefits should be discussed in detail - Mitigation measures planned to mitigate any adverse social impact should be shared - Mass awareness campaign (loud speaker advertisement) about the project should be taken up in near by villages	- Voice of the primary stakeholder noted and made part of planning measures
Loss of land/livelihood	- Avoid any new project proposal which can cause loss of land/livelihoods to the community - Prepare RAP ensue compensation and R&R entitlements - Prepare mitigation plans for tribal/ vulnerable groups	Environment & Social Cell of PMU	- Social expert in ESC to assess any possibility for loss of livelihood - If there is loss of livelihood for any group, trigger R&R strategy and prepare mitigation (RAP) measures - Monitor the implementation of the provisions of RAP	- Clear system for triggering R&R measures and RAP provisions set up - Adequate measures provided in case of need for each project - Prepare monitoring reports
Participation	- Participation of women, SC/ST, landless, tribal, vulnerable sections should be encouraged at all levels and activities in concordance with the consultations conducted at pre-planning stage - Project preparation plans in specific sites in districts with higher tribal population (e.g. Chandrapur, Gadchiruli etc) will include special measures for ensuring participation of the tribal community in market activities as well as the decision making process at the markets	PIU/ farmers committee/ PMU	- PMU assesses whether the sub-project proposal includes measures taken to include marginalized groups – women, SC/ST community and small scale farmers - Check if the provisions follow the strategies suggested in the IESA report for gender and tribal development	- Active participation of all stakeholder ensured - Special measures for inclusion of marginalized groups – tribals, women, backward communities and small and marginal farmers provided in project planning

Table ES II a – Implementation level environmental assessment:

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
Disturbance to the general public and vehicle movements, with particular reference to works near habitations	▪ Plan for actions to divert and regulate traffic in consultation with citizens and market committees in advance ▪ While planning alternate route care should be taken to minimize impact at sensitive locations such as schools, hospitals, religious places and zoological parks ▪ Plan for signals and signs of diversion should be provided	ID/ Consultant/ Contractor/ MC/ GP	- Contractor prepares action plan and submit to MC/ GP - MC approves the plan after assessment by Environmental Consultant of implementing line department - MC authorized with suggesting changes and monitoring progress on this issue to the contractor - Use Form ES3 and ES4	- Clear plan of action available to minimize disturbance - Measures proposed in plan implemented by contractor (as part of the ToR) and monitored by local institutions
Storage of materials causing disturbance to agricultural activities, public and traffic	▪ Suitable sites should be identified for storage of construction materials causing nil or minimum disturbance ▪ Ensure compensation if private land is involved	ID/ Contractor	- Contractor identifies the site for storage and informs the ID - Officer in charge of the implementing line department approves or suggests any changes to the contractor - Based on that the site is finalized and used appropriately	- No disturbances to local agricultural activities, public and traffic due to storage of material
Emergencies and other issues	▪ Make and maintain arrangements where labour and plant outside normal working hours can be called to carry out any work needed for environment emergency ▪ Acquaint employees with any relevant local arrangements, which are in existence for dealing with emergencies ▪ Implement a well-planned program of human resource development aimed at increasing the competence and capabilities of technical and administrative personnel at all levels	ID/ Contractor/ Consultants	- Contractors takes the necessary mitigation measures and informs to implementing line department - Environmental consultant appointed by the PIU assesses the measures and provides suggestions - Necessary actions are taken based on the feedback - Implementing line department authorizes the contractor to start work after satisfactory measures taken	- Adequate plan to meet with any emergency situation during construction phase is available
Water stagnation	▪ Close all pits dug for construction purposes	Contractor/ ID	- Contractor identifies the water	- No water stagnation at the project sites

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
leading to mosquito breeding and public health problems and surface water pollution	▪ Dress the sites properly allowing for proper and unobstructed drainage of water		pits, close it and dress it; intimates the officer in charge of line department. - Officer in charge of the implementing line department approves or suggests any changes to the contractor	
Site clearance	▪ Adequate precaution against damage to existing structures, utilities and other infrastructural services. ▪ The area is covered with tropical dry vegetation. Site clearance to be done only in the area required for the project.	Contractor/ Sup. Consultants/ ID	- Contractor to prepare the planned measures and intimate ID - Consultant appointed by ID assess and provide approval/ suggest changes - ID monitors the necessary action taken by the contractor	- Existing structures, utilities and other infrastructural services adequately protected during construction process
Increased air pollution, vibrations and Noise Levels during Construction due to drilling, blasting, etc.	▪ Noisy construction operations near habitations and in particular near sensitive areas should be restricted between 7.30.a.m. to 6.00 p.m. ▪ Fixing of generators and concrete mixers near habitations: Where residences are located within 200m from construction sites and in sensitive areas like hospitals, schools, religious places, zoological parks, etc, noisy construction work shall be undertaken during day time only (7.30 a.m. to 6.00 p.m.) ▪ Avoiding construction activities during nights ▪ Preventive maintenance of equipment and vehicles to meet emission standards and noise control. ▪ Provision of personal protective equipment, ear muffs, etc. for the construction labour. ▪ Sound barriers in inhabited areas shall be installed during the	Contractor/ ID/ Market committees/ Farmers association	- The ToR for Contractor includes a clause making the contractor responsible to adhering to the mitigation measures - MC and farmer association monitor the adherence to the measures - Any deviation is reported to ID - Officer in charge of ID authorized with stopping implementation if the mitigation measures are not followed satisfactorily	- Adequate measures for minimization of air and noise pollution taken during the construction phase

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
	construction phase. ▪ During night, material transport should be uniformly distributed to minimize noise impacts. ▪ Prior information to be provided if blasting is significant and to be in accordance with the Explosives Act and Rules			
Noise levels at the construction sites (only during construction period)	Works unlikely in busy residential/ commercial areas or near sensitive noise receptors. No significant impacts are foreseen. Need not monitor.	Market committee/ contractor	MC to report in case significant noise levels generated	- Same as above
Domestic sewage and refuse management at the labour camps and construction sites	Check for adequacy of sanitation arrangements at the labour camps	ID Once a week.	Officer in charge of the line department to monitor and ensure corrective measures taken by the contractor	- The domestic sewage and refuse from the labour camps are treated properly

Table ES II b – Implementation level social assessment:

Issues	▪ Mitigation measures	Responsible agencies	Actions to be taken	Outcome
Site access and cleanliness and upkeep of facilities	▪ Ensure least disturbance - arrange for construction, maintenance and afterwards removal and reinstatement of access points in connection with the execution of the works. ▪ Reinstatement will include complete restoration to at least the degree of security, safety, stability, drainage, etc., that existed originally ▪ Proper and timely upkeep and maintenance of the site and the works. ▪ Labour camp to be located after consultation with the market committee ▪ Store and stack the construction materials and equipments in an orderly manner.	Contractor/ Market committee/ Implementing Line Dept	- Weekly monitoring by market committee on the measures suggested - Any disparity triggers penalty clause in the contractors ToR - Market committee empowered to direct the contractors to take corrective measures	- The site remains accessible, clean and the facilities are maintained for the local community - The construction phase does not cause inconvenience to local community living adjacent to the construction site

Issues	▪ Mitigation measures	Responsible agencies	Actions to be taken	Outcome
Disturbance to traffic and general public near and in inhabited areas	▪ Divert and regulate traffic in consultation with citizens in advance through market committee ▪ While planning alternate routes, care should be taken to minimize impact at sensitive locations such as schools, hospitals, religious places, etc. ▪ Signals and signs of diversion should be provided	Contractos/ GP/ MCs	- Contractors prepare the plan and submit to market committee for approval - MC shares plan with all stakeholder – including community members and local GP - Concerns are discussed with contractors and corrective measures taken	- The disturbance to traffic in the local area is minimized
Planning of Labour Camps	▪ The Contractor shall set up labour camps with adequate facilities before the start of construction to minimize stress on the natural resources and infrastructure of the surrounding locality. ▪ The facilities, in conformity with Indian Labour Laws, to be provided into such camps should consist of (a) Semi permanent structures with adequate ventilation for the labourers, (b) Electric supply, water supply, drainage and community latrines, (c) Dispensary with First Aid Facilities specially for treating water related diseases ▪ Ensure that all safety and welfare measures required by law are complied with, in particular the Maharashtra and/or United Nations International Labour Standards. ▪ Do not allow Child labour ▪ Equal wages for men and women	Implementing line department/ Social and Environmental Cell of PMU	- Market committee monitors the labour on a weekly basis and reports to Line department - Assessment of adequate measures planned for labour camps done by line department - If any disparity is reported penalty clauses stated in the contractors ToR are triggered - Contractors responsible for taking timely corrective measures - Use formES3 and ES4 provided at Appendix H in addition to the measures provided in this table	- Well planned labour camps with appropriate facilities available at the construction site
Social disruption	▪ Minimize interruptions to utility services through proper planning and scheduling of activities and inter-departmental co-ordination. ▪ Construction of temporary road/access and diversion of traffic. ▪ Preference to local labour/skilled persons during construction,	Contractor/ Market committee	- Contractors to report measures taken to market committee - Any disruption is reported to the committee and it is empowered to direct the contractors to initiate corrective measures	- There is minimal social disruption due to the construction phase

Issues	▪ Mitigation measures	Responsible agencies	Actions to be taken	Outcome
	operation and maintenance.			
Employment (Short term to local population)	▪ Ensure interested local people get employment during construction on preferential basis ▪ Ensure wages at least at prevailing minimum wage rate to all sections of population including tribal and vulnerable groups ▪ Ensure equal wages for equal work – no discrimination in wages paid to women ▪ Ensure no child labor is involved in the construction/project activities	Contractor/ Market committee	- Contractors submit the list of hired wage laborers and wage payment report to Market committee - Market committee assess whether interested local labour gets wage employment and if they are receiving fair wages - Corrective measures taken in consultation with the community - **Use form ES3 and ES4** provided in Appendix H	- Jobs and wage employment opportunities generated during the construction phase go to the local communities
Other items	▪ Implement a well-planned program of human resource development aimed at increasing the competence and capabilities of technical and administrative personnel at all levels	ID/ Supervision Consultants	- **Use form ES3 and ES4** provided in Appendix H	- Well planned human resource development program in place to build capacity of the personnel involved

Table ES III a – Operation level strategy for environmental assessment:

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
Ground Water Quality Monitoring	Groundwater levels	ID	Monitoring frequency to be twice an year before and after monsoons at predetermined locations along the head, middle and tail reaches Take corrective actions in coordination with contributing departments.	- Ground water quality monitored on a regular basis and corrective measures undertaken in case of depletion of quality detected
Fertilizers and Pesticides	Random testing of residual Fertilizers and Pesticides in crops	ID/ ESC	Monitoring from Agricultural department – Once in six months. Promote organic farming, IPM practices	- Adequate measures as per pest, soil and nutrient management strategy taken up
Waste disposal and management of solid waste	▪ Prepare guidelines on waste segregation and disposal ▪ Training to workers at agrimarts for separating bio-degradable and non-bio degradable wastes at source MSAMB in collaboration with MEDA to explore possibilities and pilot biomass based gasifier for electricity generation ▪ Provide enough space for vermin-composting using bio-degradable *mandi* waste Involving local SHGs to take this as a micro enterprise will provide additional revenues and gainful employment	PMU for guidelines/ ID and MCs at the site	Guideline to be ready before the launch of operation Periodic training for the workers on waste disposal handling – frequency once in six months Selection of suitable SHG group Skill training for the selected group to take up waste management as an income generation activity Periodic review of the operations and performance – frequency annual Use formES5 in addition to the measures provided in this Table	- There is adequate measures of solid waste management available at project site - Locally owned and managed solid waste management system functional
Sewage treatment and liquid waste	▪ Prepare guidelines for primary treatment and disposal of water. ▪ Wherever possible, ensure wastewater is treated and recycled for other useful	Market committee/ PIU	Set up primary treatment facility before launching operations Monitoring of the outflow – o a	- There is proper treatment of sewage and liquid waste

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
	purposes including irrigation ▪ Do not allow outflow to fall in natural wetlands		quarterly basis	
Impact on ground water usage and recharging	▪ Encourage farmers to opt for special measures like drip irrigation systems, crop management practices to reduce the groundwater usage. ▪ Encourage shifting from water intensive crops like sugarcane and cotton to horticultural crops with better marketing facility ▪ Do not allow polluted waters to reach recharge points and aquifer	PIU with help from extension services of ATMA	Conduct training and awareness campaign with help of ATMA – periodic training program with a six monthly frequency Gather irrigation and water usage data from irrigation department on a monthly basis PIU analyses the irrigation patterns and devise training and awareness program accordingly Monitor water outflow twice a year (rabi and kharief season)	- Ground water usage in the area monitored regularly - Adequate training and awareness campaigns taken up to ensure appropriate irrigation pattern adopted by local farmers
Handling extra packing material Other solid waste – fresh food and grain section	▪ Follow guidelines on waste disposal – both for organic and inorganic waste. ▪ Institutionalize separation of bio-degradable and non-bio degradable wastes at source. ▪ For the APMCs in larger cities like Mumbai and Nagpur, appoint waste handling agencies who collect the waste for a fee and take it to designated waste management facilities. ▪ In market yards close to farmlands, use bio-degradable waste for vermin-composting ▪ Allocate area for construction of vermin-compost pits ▪ Involving local SHGs to composting as a micro enterprise will provide additional revenues and gainful employment.	MCs/ IDs	▪ Monitoring of separation of bio-degradable and non-bio degradable wastes at source – on a monthly basis ▪ Review performance of contracted agencies for waste disposal on a six monthly basis – link payment to satisfactory performance ▪ In case of vermin composting unit ensure skill building training to the SHG group involved in waste handling. ▪ Test quality of the compost – annually and provide test	- Packing material and solid waste resulting through it properly disposed

Issues	Mitigation measures	Responsible agencies	Actions to be taken	Outcome
			results to farmers to spread awareness on the benefit of vermin compost ▪ Include awareness creation on benefits of vermin compost among local farmers to increase adoption	
Bio-medical wastes	▪ Follow the guidelines on segregation and disposal of bio-medical waste as per the government regulation. ▪ Give responsibility for monitoring of biomedical waste disposal to a member of the market committee.	ESC and PIU	- Coordinate with local veterinary surgeon for the preparation of guideline for handling bio-medical waste on sites with veterinary clinic/ outposts - Market committee to monitor adherence to guidelines and report to PIU on a quarterly basis	- Bio-medical waste generated (if any) are properly treated as per defined government standards
Ensuring water quality and adequate species diversity in fish ponds	▪ Collect data on water quality every quarter – coordinate with irrigation department to get the data if collected already by them ▪ Measures for stocking adequate fish variety (both local and Indian major species and other aquaculture species) provided	Implementing line department / PIU	▪ Conduct an annual assessment of type and population of different aquaculture species in the pond ▪ Ensure supply of fish seedlings based on the relative abundance / scarcity	- Aquaculture bio diversity maintained

Table ES III b – Operation level strategy for social assessment:

Use the form ES5 provided in Appendix H in addition to the measures suggested in the following table.

Issues	▪ Mitigation measures	Responsible agencies	Actions to be taken	Outcome
Gender	▪ Ensure participation of women in decision making process at markets ▪ Elimination of wage disparity by providing equal wages	Market Committee / Implementing line department	- Ensure at least a third of the seats in the Market executive committee to be reserved for women farmers - Create facilities (like clean bathrooms, sanitation facility) to facilitate women members to come to market place and attend meetings - Create clause in the contract for construction on equal wage payment to men and women for the same work - Market committees to monitor the process on a monthly basis	- Economic strength of women improved through participation in the project and its decision making process - Equal wage for equal work ensured for men and women employed by the project
Participation of tribals and other marginalized communities	▪ Incentivize marginalized communities and small scale farmers ▪ Take special efforts to encourage active participation of tribal communities in the project activities (tribal development strategy) ▪ Provide incentives like waiving or subsidizing fee and/or service charges ▪ preference in storage space and grading sorting facility etc for produce brought by tribal farmers	PIU / Implementing line department	- Monitor the profile of the users of the facility on a quarterly basis - Work with participants from tribal community, small and marginal farmers and women members to ensure their active involvement - Check usage records of storage facilities to see if it is being utilized by marginalized communities - Trigger corrective actions in case short fall in reaching out to marginalized communities is reported	- Adequate participation of tribal community and other marginalized sections in the day to day activities of the project as well as in the decision making process
Employment and supplementary	▪ Equal opportunities of employment for all sections especially women, tribal, vulnerable groups,	PIU/ MCs	- Monitor employment generated by the project and profile	- Equal opportunity provided to women, tribals, backward

Issues	▪ Mitigation measures	Responsible agencies	Actions to be taken	Outcome
income	SC/STs under the project ▪ Supplement household income through was employment under project		of persons employed on a six monthly basis - Market committee to monitor the wage payment it on a monthly basis - Trigger corrective actions if disparity is reported	communities and other vulnerable section of the society in all project activities - Local community avails wage employment opportunities y created by the project
Other items	▪ Implement a well-planned program of human resource development aimed at increasing the competence and capabilities of technical and administrative personnel at all levels in tacking the salinity, water logging, etc. ▪ Implement Communication campaigns for awareness in the community about the benefits of participating, etc.	MCs/ PIU	- Conduct annual review of HR needs and training needs - Design training and HR development plans accordingly	- Adequate training and capacity development plans undertaken for project personnel and other stakeholder involved in project

6.2 Strategies developed for the project:

6.2.1 Pest, soil and nutrient management strategy:

Use of IPM has become imperative as continuous and indiscriminate use of agricultural chemicals leads to development of resistance in target insects, resurgence of pests, destruction of useful insects, pesticidal residues, secondary outbreak of pests, health hazards and environmental pollution. The project intervention can potentially lead to great intensification of agricultural production process. Thus the project needs to have a well thought out strategy to address pest, soil and nutrient management issues.

IPM concept is picking up and was introduced in some regions of Maharashtra (especially in western Maharashtra region), but its implementation remained partial. During field visits it became clear that IPM implementation has suffered due to lack of knowledge regarding complete package of practices and often poor follow up by extension workers after demonstrations. While visiting agrimart sites like Narayangaon, Pimpri, Varud, Shingwe Tukai and Deogad no IPM based practices were observed. Since MACP would encourage farmers to take up better farm practices through demonstrations etc for improving farm-based productivity, it would be crucial to introduce IPM at an early stage to not only introduce but also build upon the opportunities that these demonstrations would provide. There exists a good scope for implementing IPM in the state, as many farmers are considering cash crops by bringing more area under vegetables,

which often is associated with rise in the use of fertilizers as key inputs. Effective implementation of IPM will also reduce the risk of water pollution through leaching of chemicals from farmlands to water sources, both surface and sub-surface. A detailed strategy for implementing IPM is given in Appendix M.

6.2.2 R&R strategy:

The project sites identified for IESA neither involved any acquisition of land nor any physical displacement. Project sites identified are encumbrance free. No encroachment has been observed in these sites. However, there is a need to define the process of land acquisition and appropriation procedures for land required for developing any future market infrastructure under the project. In addition, there is a need to develop a social management framework to be applied during the project implementation to address any resettlement and rehabilitation (R&R) issues resulting from the proposed project interventions. Following the screening process (described under ESMF), the requirement or otherwise of a Resettlement Plan (RP) shall be established. This will be based on the type and extent of impacts and the measures required to mitigate them. The R&R framework below will help in categorizing the impacts and the type/extent of support that would be extended to the project affected families (PAF) in their R&R process. This framework has been developed taking into account the provisions of the Maharashtra Project Affected Persons Rehabilitation (MPAPR) Act, 2001 and the National Policy on Resettlement and Rehabilitation for Project Affected Families (NPRRPAF), 2003. In addition, experiences of implementing R&R component under the two Bank funded projects (Mumbai Urban Transport Project and Maharashtra Water Sector Improvement Project) and the feedback from the stakeholders' consultation have provided input into preparing the R&R entitlement framework.

Principles in addressing R&R issues: The following guiding principles will be adopted to address any eventuality of R&R issues under the project.

i) No sub-project will be taken if it involves physical displacement of local people either from their residences and/or commercial places.

ii) The project does not envisage acquisition for private land for the proposed project interventions, however, if any exigencies arise, compensation will be paid at the replacement value.

iii) Encroachers, if adversely affected by project interventions, will get support to mitigate losses.

iv) Efforts will be made to encourage private land holders and encroachers to *voluntarily surrender* their land required for project interventions. However, no force will be applied for this voluntary surrender.

v) The affected families will be consulted throughout the planning, implementing and monitoring of the R& R activities.

vi) Adequate resources including physical, financial, and human will be made available to implement R & R activities under the project.

vii) Affected families will be given preference wage employment under the project.

viii) Loss of common properties (religious structures, grazing land. etc) will either be replaced or the affected community is compensated appropriately.

ix) Every subproject shall be screened for their likely adverse impacts, in the Preparatory stage itself. If in a sub-project R&R is triggered, a resettlement plan (RP) will be prepared for that specific sub project at the Planning stage itself.

Implementation Guidelines

Voluntary surrender of land: Donation of land (required for project interventions) by willing titleholders and surrender of encroached land should be properly documented through consent letters. Such 'voluntary surrender letter' would be signed by the person surrendering/donating land, an authorized person from the market committee, the concerned Gram Panchayat representative, and the concerned revenue staff. Land surrendered or donated lands should be free of any encumbrances. However, all steps should be taken to ensure that such persons (donating/surrendering land) benefit from the project. Any grievances by the people will be resolved at the Market Committee and Gram Panchayat level and if unresolved the same will be referred to MSAMB.

Compensating land: Where ever acquisition of private land becomes inevitable, compensation norms will be fixed in consultation with the land losers failing which it will be fixed as per the provisions of the Land Acquisition Act, 1894. Compensation so fixed along with rehabilitation assistance will ensure replacement value of the land. In case alternate land is provided, occupancy price will be deducted from the compensation.

Compensating loss of trees and crops: These will be compensated based on the productivity as assessed by the departments of agriculture/horticulture/forest.

R&R assistance to affected families: In addition to the compensation, the affected families will get (i) a one time productive asset grant (up to Rs 25,000) for taking up Income Generation Activity (IGA); (ii) where required, skill training will be organized; (iii) support to access institutional credit and government schemes; and (iv) preference for wage employment under the project. However, the assistance to individual affected family will be based on the extent of impacts and this is spelt out in the following R&R Entitlement framework for economic rehabilitation.

Entitlement for economic rehabilitation: Based on the type and extent of adverse impacts resulting from the proposed project interventions, an entitlement framework for the economic rehabilitation of the project affected families (PAF) has been developed. Based on this framework, the affected families will be receiving their entitlements to improve, if not at least, restore their economic livelihood. The entitlement framework has been presented in Table 6 below.

Table 6: Entitlement Framework for the Economic Rehabilitation of PAFs

Type of Impact	Unit of entitlement	Entitlement
1. Loss of **Agricultural land** with valid title/ customary or usufruct rights	Titleholders family and tribal with customary rights	The affected families will have option to choose any one from the following. Option 1: Cash compensation as fixed by LA authorities + alternate land at occupancy price fixed by Govt. The extent of land to be allotted will be as per the Part III* of the Schedule of MPAPR Act 2001 + Registration charges. Option 2: Cash compensation as fixed by LA authorities + Rehabilitation assistance equal to minimum agricultural wages of (a) 750 days for families losing entire land, (b) 500 days for families losing part land and becoming marginal farmer and (c) 375 days for families losing part land and after loss becoming small farmers. Option 3: Cash compensation as fixed by LA authorities + Option for IGA of equivalent amount for regular income.
(ii) tenants, share croppers and lease holders	Family	Reimbursement for unexpired lease
(iii) encroachers	Family Family	These families are not eligible for any compensation. However, vulnerable among them, if become landless, will be eligible for support to take up IGA for regular income.
b**. Loss of any other immobile asset**	Owner	Cash compensation as fixed by authorities
3. Loss of access to Common Property Resources/ facilities		
a. Rural common property resources b. Civic amenities and services	Community Community	Replacement/augmentation of common property resources Replacement/access to equivalent amenities/services
4. Loss of standing crops/trees a. With valid title b. Tenant/lessee	Family cultivating land	For either category, only the cultivator will get compensation at market rate for crops and fruit bearing trees

Note: The relevant pages of Maharashtra Project Affected Persons Resettlement Act are scanned and presented in Appendix N.

Institutional set up: All sub projects shall be screened for their likely adverse (R&R) impacts in the Preparatory Stage itself. This will be reflected in SC Form 1.The Social expert from PMU will be responsible for guiding and supervising the preparation and implementation of RP. At the field level, the concerned implementing agency will be responsible for planning and implementing RP at the sub-project level. At the field level, the Gram Panchayat/Market Committee will be responsible for addressing grievances related to RP.

6.2.3 Gender Development and Project Strategy:

Detailed discussions were held with women members/groups in the selected sub-project areas. These discussions were through specific structured interviews, FGDs and stakeholders consultations. The aim of these discussion/consultations were to identify

gender issues that are relevant to the proposed project and to formulate measures to enhance their participation and at the same time help them access project benefits along with others. Important observations from the FGDs and other consultations held with women groups in the project locations are presented below.

1. Low women participation in development programs: In almost all discussions held with women groups in the sub-projects covered under IESA, it came out clearly that women do not participate in the social and community activities at the village level. As a result, they are confined to their houses and are considered as caretakers of home. Due to less/no participation in the development programs, gender concerns are not adequately addressed and hence women are often deprived of benefits from the development activities.
2. Role of women in Agriculture and other economic activities: While women play significant role in agriculture and other economic activities besides performing household work, their contributions are often not credited. Most often it is not considered productive. It was observed that women get lesser wage rates as compared to men in case of agricultural activities.
3. Ownership of agricultural land: The IESA team observed team that in most cases land ownership lies with men and in only some exceptional cases, it is held by women. As a result, there is relatively very little land holding among women of the project area.
4. Access to market: Women cultivators have problems in accessing markets particularly because of social and economic constraints in reaching nearby markets. Women have to carry produce on foot or use local transport especially bus services to reach the market. Also, due to smaller quantities, women face problems in sourcing markets and thus encounter social constrains. Their role is limited in the value addition process and hardly any in marketing aspects.

Approach: From the above, it is clear that there a number of issues that relate to women's participation in the proposed project activities. While, it would be unrealistic to expect the project to address all issues and concerns of women, however a right approach would be to focus on specific issues that could be tackled under the project. The approach, therefore, is to formulate sub-project specific interventions focusing on women. Efforts are required to be made to dovetail the existing relevant government programs for the socio-economic benefit of the women members. Following this approach, the proposed project level gender development strategy is presented below. This strategy will be followed to address issues and remove constraints in women participation at each stage of the project cycle - preparation, implementation and operation.

Stages	Procedures	Activities	Outcome
Preparation	Identify gender concerns/issues in relation to the project activities through PRA exercises	• List issues and prioritize • Special attention should be made to identify infrastructure needs and facilities for women members at the market	• Identify issues that could be addressed under the project

Stages	Procedures	Activities	Outcome
	Inform about the project activities and benefits	• Organize women stakeholders meeting	• No. of consultations • Minutes of the meetings signed by participants. • Feedback from these consultations
	Sensitize other stakeholders on gender concerns/issues	• Organize workshops on gender sensitization	• No. of meetings held • No. of participants
	Identify key areas of constraints that impact women's involvement in the project	• Organize workshops meetings with women of the sub-project area	• List concerns and constraints
Implementation	Ensure women participation in project activities	• Work with women SHG • Help SHGs to actively participation in the project activities	• Monitor women representation in Market committee • Record no. of women involved in construction activities
	Ensure equal wages for equal work in all construction related works under the project	• Maintain a Wage register at the site and ensure it is filled on a daily basis. • Monitor wage payment • Try involve local SHGs in the construction activities	• Actual wages paid to women • No. of complaints on wage payment
	Ensure no women harassment under the project	• Constitute an Anti harassment cell comprising of members from Market committee, PRIs and line departments to address women harassment issues. • Complaint register to be maintained at the market level and to be checked periodically by the Market Monitoring Committee. • Ensure quick redressal of women abuse related issues	• No. of meetings of Anti-harassment Cell • No. of complaints registered • No. of cases resolved
Operation	Ensure women participation in the working of the market	• Organize training for active participation of women members in the committee • Ensure that women members attend all meetings of the Market committee or Producer Company	• Monitor that women producers get a fair share of their price
	Capacity building of women members and skill up-gradation	• Training calendar to be prepared and accordingly training to be organized	• No. of trainings undertaken • Number of women members trained
	Employment generation for women in sub project activities	• Involve SHGs • Source out some of the activities to women	• No. of women members employed • No. of activities undertaken by SHGs

The **institutional arrangement** envisaged for assessing and addressing resettlement/tribal development issues will also be responsible for implementing the gender development strategy of the project.

6.2.4 Tribal Development and Project Strategy:

The study also attempted to identify issues that may constrain participation of indigenous population falling in the project locations and suggest measures that would allow them to reap the benefits of the project. Participation of tribals in most of the development projects has been minimal. This is partially due to cultural differences and inadequate attempt to include them while designing of the development projects. In Maharashtra, nearly one-tenth of the state's population is constituted by Scheduled Tribes. They are largely concentrated in the western hilly Districts of Dhule, Nandurbar, Jalgaon, Nashik and Thane and the eastern forests Districts of Chandrapur, Gadchiroli, Bhandara, Gondia, Nagpur, Amravati and Yavatmal. The study team observed following key issues and concerns related to tribal:

- Tribal communities continue to practice traditional agricultural practices and hence not deriving maximum benefits from modern technological advancements
- Limited exposure to emerging markets
- Limited access to institutional credit, farm inputs and agricultural extension services
- Poor leadership quality and inadequate representation/participation in decision-making

Approach: It would again be unrealistic to assume that the project would address all the key issues and concerns. However, attempts can be made towards achieving active participation of tribals and they have access to project benefits at par with rest of communities. The focused strategy therefore would be to suggest measures that are high impact and takes into consideration of major challenges pertaining to information, decision making and skill up-gradation. The strategy proposed for inclusion of tribal communities is:

Stages	Procedures	Activities & Outcome
Preparation	Identify concerns/issues in relation to the project activities through PRA exercises	List issues
	Organize consultation with tribals to inform about the project activities and benefits	Number of consultations held
	Identify key areas of constraints that may be improved through the project and develop detailed plan for tribal development	List areas of constraints Number of consultations & signed minutes List of activities specifically targeting tribal development
Implementation	Ensure equal participation of tribals in monitoring	Representation of members from tribal communities in monitoring committee
	Employment to members from tribal community in carrying out actual construction work	Number of tribal employed
Operation	Ensure representation of tribal members in decision making body of the producer company	Number of tribal members in the executive committee
	Capability building of tribal members and skill up-gradation	Training calendar to be prepared Number of trainings undertaken Number of tribal members trained
	Employment generation for tribal in related sub project activities	Number of women members employed undertaking various activities
	Help build linkages with major government schemes for tribal development particularly skill enhancement and technology up-gradation	Number of projects linked in the sub project locations

6.2.5 Training and Skill up-gradation:

The basic tenant for success of any project is competent and skilled human resource. It is desirable and therefore proposed that the concerned officials of line departments and other stakeholders of the project are adequately trained and capacitated to undertake project responsibilities. Following are the indicative lists of skills and competence requirements at sub project level.

Stakeholders	Competence and Skill requirement
Officials of MSAMB	• Identification, documentation and planning of Social and Environmental indicators at sub project level • Monitoring and evaluation of social and environmental indicators • Training in documentation and data management • Ability to solve problems on a day to day basis
Field employees and officials of line departments	• Effective communication to build and develop relationships with stakeholders particularly women and tribals • Institutional analysis and knowledge on relevant laws

Stakeholders	Competence and Skill requirement
	• Training on documentation and data management • Training on solid waste disposals and management of rain water harvesting systems • Extension skills • Ability to solve problems on a day to day basis
Executive members of producer companies	• Awareness on social and environmental indicators and its impact • Awareness on rules and regulations of the company • Leadership and ability to operate in a democratic and transparent way • Relevant business and management skills • Knowledge on accounting and other administrative functions of the company
Beneficiaries and community members including women and tribal	• Improved farm management practices, sustainable use of water, integrated pest management measures etc • Importance of better sanitation and hygiene including health of animals/cattle • Addressing environmental and social issues and its mitigation measures

6.2.6 Institutional analysis

The project interventions would be owned and managed by community based organizations (CBO). For example, the farmers' collective / Producers Company for AgriMart, fishermen cooperative federation owned Producer Company in case of AquaMart and the farmer owned APMCs in case of modernization of APMCs and development of livestock market. The State has a rich history of collective action and cooperation and this social capital is being leveraged for the project's institutional arrangement. At each project site, it aims to work with existing CBO rather than creating new parallel structures.

This approach also means that the project's success and benefits are critically dependent on the strength of the CBOs that the project is working with. The producer groups are not of uniform strength at different sites. With current capabilities, many of the groups would not be in a position to effectively manage the project intervention on a sustainable basis. In many cases, groups are still dominated by the larger farmers or few community leaders. Hence, there is a need to assess the capability of these organizations and for augmenting their capability before handing over the intervention to the groups. Groups should meet pre-defined group indicators before taking up the ownership of the project intervention. This approach would ensure equity of participation and share in benefits for women, marginalized groups and small scale players.

Thus, various institutions providing support services like training and capacity building to the community organization play a critical role in the success of the project. These would include extension arms of government departments like ATMA, local line departments and service providers facilitating the local institutional building process.

6.2.7 Conflict resolution mechanism:

There are gaps and conflicts in resource accessing at the village, community and individual level. Poor and marginalized groups are often sidelined and are under represented in decision-making processes, which in turn affect them the most. Consequently, equity, inclusiveness, participation and transparency issues become potential sources of conflicts, especially in context of collective action like the producer company.

Farmers' groups in Maharashtra have a long tradition of collective action and cooperative movement. Community level conflict resolution mechanisms are fairly strong. Each group has both formal structures, like executive committee (office bearers like president, secretary and treasurer) and general body to take a call on conflict situation. These are particularly effective in case of local cooperatives taking the lead on implementing the intervention. Many communities also have local caste groups and opinion leaders, but these informal mechanisms may not help the poorest player to get a fair say in the decision making.

The proposed producer companies of the farmer groups will form the cluster level mechanism for conflict resolution. It functions under the ambit of companies act and there are clear cut rules and guidelines laid out for conflict resolution among the shareholders under the act. However farmers' awareness levels on these measures is rather low as they have no experience of operating in a producer company framework. The project needs to facilitate the awareness creation on functioning of the producer company and the different conflict resolution mechanism within it. SEMF proposes a framework for management of conflict at three different levels. The framework is given below:

CHAPTER VII – ESMF IMPLEMENTATION ARRANGEMENT

The project management unit of MSAMB needs to take a number of measures to ensure proper implementation of the ESMF and the strategies outlined there. It needs a systematic institutional arrangement which is entrusted with the responsibility of ensuring compliance of the project components as per the ESMF.

7.1 Environmental and social cell

The findings of IESA have clearly underlined the need to have a separate Environment and Social Cell (ESC) within the project. This cell should be located in the Project Directorate. The ESC should include social and environmental experts reporting directly to the Project Director (from the nodal implementing agency, MSAMB). This Cell shall work closely with the PIUs of the respective line departments (involved in the project implementation) and ensure that the project interventions are consistent with the agreed ESMF described in the earlier chapter and that all the project activities (planning, implementing and operation) are in conformity with the agreed strategies of the project including Pest, soil and nutrient management, R&R, gender and tribal development, stakeholders consultation and participation, etc.

At the individual PIU (project implementation unit) level, there should be a dedicated resource person focusing on environmental and social issues related to the project. There is a need to involve local NGOs in mobilization of communities and also to spread awareness to project communities, particularly marginalized groups like tribal and women.

Ensure that concerns raised in the IESA are incorporated	Assess the capacity building requirements and create mechanism to facilitate this	Prepare guidelines and build mechanism for dissemination of these
▪ Depute personnel to visit project sites during execution to ensure compliance of the project activities with the existing legal and policy environment, including the safe guard policies of the World Bank ▪ Monitor that the ESGs are duly implemented during sub-project execution and that project interventions do not have negative impact on project areas ▪ Ensure community involvement at planning, implementing and management stages	▪ Drawing a capability building plan for project staff and other stakeholders to ensure that the project benefits are shared by all in a transparent way ▪ Facilitating linkages with relevant stakeholders including line departments, community institutions, services providers, training institutions etc.	▪ Prepare guidelines for any new project activities that may be taken up in future ▪ Document environment and social assessment related activities and monitoring efforts ▪ Prepare dissemination material to ensure awareness at all levels

7.2 Monitoring and evaluation

As a part of the assessment, the study team has developed indicators for each sub-project component covered in the study for the environmental and social assessment. These indicators were shared with the MSAMB team and a consensus was generated after discussion on the indicators for the project. These indicators are attached as Appendix G. Core indicators include, among others, changes in land use; equity in participation and benefits to women, marginalized community groups and small scale players; waste management. This was done during the debriefing with the project team. The project needs to develop a baseline (pre -project status) for each indicator. These indicators need to be monitored internally on a periodic basis and reviewed by the ESC.

Moreover the project plan should have the provision for a mid-term evaluation by a third party in collaboration with the project directorate. This would provide an opportunity for the project to get a third party validation of the progress, and take corrective measures mid way through the project.

The Learning from monitoring and evaluation of indicators should be built into project implementation processes for improving project performance. The environmental and social cell needs to facilitate this. A participatory monitoring system should be developed for the project, and this should be facilitated by the environmental and social cell of the Project Directorate in collaboration with the community.

7.3 Concluding remarks

MACP aims to benefit farmers and primary producers by providing them new platform and channels for marketing their agri-produce. There is also greater benefit to the consumer as the quality of the final product is likely to improve through better processing, cleaning, grading and sorting and better packaging. There would be an overall improvement in the supply chain through creation of new infrastructure and better facilities at ground level. Most supply chain players stand to benefit through integrating their activities with the project implementation and working with the farmer groups rather than countering it. It is important for the project to address any misconception in the minds of few supply chain players (as revealed in discussions during the study) through a well organized awareness creation program. The project would create positive social impact and would function well with in the current legal and regulatory environment if the guidelines provided in the social and environmental management framework suggested as part of the study are adhered to.

The findings of the study were shared in the debriefing workshop with MSAMB. There was a consensus generated on recommendations made in the report. Suggestions from all stakeholders were sought and have been included in the final report. MSAMB has started the process of incorporating the suggestions of the report in to the project implementation plan.