



Project Director MDPU &lt;mdputn@gmail.com&gt;

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## February Mission Aide Memoire

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Thu, Mar 15, 2007 at 8:38 PM

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Dear Vibhu,

Attached please find the aide-memoire for the February 2007 mission carried out by the Co-task Leader Harshadeep with Financial management Specialist Mohan Gopalakrishnan. Please take action on all the identified issues immediately. We need to send out the Eol for M&E. Please note that the Eol was cleared by GoTN long ago and in our opinion a new clearance for Eol is not necessary. We would like this to be published globally on Monday the 19th at the latest. This could be done while you are awaiting the official clearance for the TOR and RFP from GoTN.

(See attached file: Mission\_AM\_Feb 20\_07.doc)

Best regards

Raj

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# Tamil Nadu Irrigated Agriculture Modernization and Waterbodies Restoration and Management (IAMWARM) Project

## Project Implementation Support Initiation Mission

(Jan 29-Feb18, 2007)

### *Aide Memoire*

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A World Bank mission<sup>1</sup> consisting of S. Rajagopal (Task Team Leader and Lead Water Resources Specialist, The World Bank), N. Harshadeep (Co-Task Team Leader and Sr. Environmental Specialist, The World Bank) and Mohan Gopalakrishnan (Sr. Financial Management Specialist, The World Bank) visited Tamil Nadu to support the initiation of project implementation immediately following Board approval for the \$485m IDA/IBRD project on Jan 23, 2007. The mission met with officials in the Government of Tamil Nadu (GoTN), including Mr. Gyanadesikan, Secretary (Finance), Mr. Rajarethinam, Secretary (PWD), Mr. Rajagopalan (Secretary, Environment), Multi-Disciplinary Project Unit or MDPU staff (including Mr. Vibhu Nayar, Project Director IAMWARM and Head, MDPU, and various MDPU multi-disciplinary specialists), and Water Resources Organization or WRO staff (Mr. Gupta, Engineer in Chief, PWD, various Chief Engineers, and other staff at WRO). The mission wrapped up with the Secretary, PWD on the key findings of this mission on February 2, 2007. The mission thanks the GoTN for its hospitality and cooperation during this mission.

At the Signing Ceremony for the project on Feb 12, 2007, the Bank was represented by Praful Patel (VP, SAR), supported by S. Rajagopal (TTL, IAMWARM) and other senior Bank staff from the region. The GoI was represented by Mr. Chidambaram (Finance Minister, GoI) supported by senior staff from the Department of Economic Affairs (DEA) and Ministry of Water Resources (MoWR). The GoTN was represented by Mr. Durai Murugan (Minister, Public Works Department) and senior Secretaries and staff of the GoTN.



### **Key Issues:**

The following key issues were identified by the mission:

- The project needs careful attention in these early months of implementation to ensure that the proposed implementation schedule and quality are maintained. This would require close supervision and facilitation from all key departments and levels at GoTN, particularly to facilitate the first-year procurement and capacity-building activities.
- Institutional issues need to be addressed to facilitate implementation, including the setting up and strengthening of specialized cells, as well as initial IT/office equipment and staffing/consultants (especially financial management, environment, and communications/documentation).
- The project operations manual has been updated and all efforts must be made to follow it.
- Coom sub-basin work needs to be initiated with a strong multi-disciplinary focus.

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<sup>1</sup> Mr. Rajagopal visited Chennai from Feb 16 to 18, Mr. Harshadeep from Jan 29-Feb 4, and Mr. Gopalakrishnan from Jan 30-Feb 1, 2007. Mr. Rajagopal also participated in the signing ceremony for the project in New Delhi on February 12, 2007.

## Detailed Discussion on Key Issues:

### Institutional Arrangements for Implementation

- Moving to Project Effectiveness: The IAMWARM project has been approved by the Bank Board on Jan 23, 2007 and signed on Feb 12, 2007. The GoI and GOTN have assured the Bank that given the high priority they accord to this project, they would quickly move to make the project effective after obtaining the necessary clearances.
- Institutional:
  - Water Resources Organization (WRO): The GoTN updated the mission on the critical steps agreed at Negotiations to continue steps to complete staff assignments to the bifurcated WRO and Buildings PWD departments. The mission was informed that a GO had been issued (see *Annex A*) to call for final options and the process was expected to be completed in March, 2007. The mission reiterated the critical need to complete this activity as scheduled to ensure that project institutional investments are sustainable. The GoTN at the highest levels assured the Bank that this activity was proceeding as scheduled.
  - There is a need to set up the specialized cells as planned (IAMWARM, PIM, IT, Training, Environment & Social Development) in the WRO Engineer-in-Chief's office and strengthen these cells and existing ones (e.g. Environment/Social Cells at Regional CEs).
  - All Line Agencies: The IAMWARM cells need to be fully set up, staffed (with at least a nodal officer, technical/finance/procurement/documentation officers and an information and monitoring officer consultant), equipped and strengthened in the other project line agencies as proposed.
  - Multi-Disciplinary Project Unit (MDPU): The mission discussed the structure and staffing of the MDPU as it moves from preparation to implementation of the IAMWARM. The structure and initial staffing proposed, and the brief TORs for the key units and staff are indicated in *Annex B*. The staff proposed are similar to those agreed upon in the GO that set up MDPU and it is essential to hire staff from outside on contract basis if qualified staff are not available in the government. The need for experts on financial management, information systems, training, communication, environment, and documentation are the most critical.
- Initiation of Key Activities: The mission also discussed with MDPU the need to focus on the following activities to ensure smooth project implementation.
  - Project Operational Manual: With the support of the mission, the MDPU updated the Project Operational Manual, in particular to clarify the roles of various implementing agencies during various phases of the sub-basin plan preparation and implementation. The overall summary for this plan is attached as *Annex C*. Individual line agency Operational Manual drafts are being finalized and are to be in place by project effectiveness. The mission agreed with MDPU that detailed project schedules for each sub-basin would be developed with appropriate standard project management software (MS Project or equivalent).
  - Procurement: The mission discussed the criticality of the first year procurement proceeding as per schedule. The mission was assured by GoTN that the 70 civil works packages for the first-year sub-basins were being processed expeditiously

by the government. The mission also stressed the need for the key project consultancies (Topographic Surveys, Monitoring & Evaluation, Information Management Systems, Basin Planning, Marketing, NGOs, etc.) to be processed expeditiously.

- The mission assisted the MDPU with the critical Monitoring and Evaluation (M&E) TOR. In order to determine first-year project baselines (essential for IDA reporting) while the M&E consultant is being procured, the mission agreed with MDPU to entrust this task to the Tamil Nadu Agricultural University (TNAU), that is one of the implementing agencies. The mission agreed that the M&E TOR and the scope of the TNAU 1<sup>st</sup> year Baseline work would be submitted for approval to the World Bank by February 28, 2007.
- To ensure a smooth start to the project activities, it is also essential that a few critical IT/office equipment items and contract staff (information and monitoring officer) be procured to facilitate work of MDPU and the various cells at WRO and the IAMWARM project cells at the other implementing agencies. These items include laptops/desktops with office software (for MDPU and Cell specialists, including M&E, finance, and procurement), broadband internet/local LAN connectivity, Photocopier, Fax, LCD/DLP Projector, B/W Laser and Color printers, key software, especially at MDPU (Project Management, GIS, statistical, and other), conferencing, office furniture and furnishing, etc. that should be packaged and procured with the appropriate Bank procedures at the earliest to facilitate project implementation and monitoring/reporting.
- Capacity-Building/Training: The mission also advised the MDPU to initiate activities (under retroactive financing initially) activities to build awareness and capacity to support project implementation. A study tour to Australia's Murray-Darling Basin, that is considered worldwide to have good practice in water management, has been organized with Bank assistance from Feb 26-Mar 9 to provide senior and technical-level multi-disciplinary project personnel with insights on how water is managed in another water-scarce region. The MDPU informed the mission plans to initiate training activities for farmers, especially in the formation and strengthening of Water User Associations (WUAs). The mission also discussed the need to initiate change management activities at the WRO (building upon the paradigm of recent successful efforts in the TWAD Board) to help lay the foundation for a modern and effective irrigation service delivery organization after the recent bifurcation of the PWD. The mission also discussed with MDPU the need to initiate workshops in areas such as marketing, market intelligence, IT kiosks, basin planning, etc. The mission also requested MDPU to substantially strengthen the development and deployment of an IAMWARM project website.
- WRO Building: The mission requested the GoTN to initiate work on the WRO/MDPU building so that this could be completed in a timely fashion. The Secretary, PWD indicated that he would work with the WRO to initiate the design work (by engaging a good architect) over the next few days when they had chosen from a couple of possible locations.
- State Water Resources Management Agency (SWaRMA): The Bank also requested the GoTN to initiate work on creating a State Water Resources Management Agency as proposed under the IAMWARM project. The GoTN indicated that this would be processed over the next few weeks initially by amalgamating the staff and work of two existing WRO agencies (the Institute for Water Studies and the adjacent State Surface and Groundwater Data Center).

## Financial Management

- Budget Lines: The mission reviewed the budget lines to be created under the project w.e.f the financial year 2006-07. This was discussed and confirmed with the Finance Dept. It was agreed that the MDPU would send the approved codes to Finance for inclusion in next year's budget along with the break up of proposed budget by Object Codes latest by February 7, 2007. The list of proposed codes is attached in *Annex-D*. The mission agreed that all steps would be taken to ensure accountability and reporting by project sub-basin and separately for tank and non-tank related expenditures (given the 25% GoI grant financing for tank-related activities).
- Finance Staffing: Currently the MDPU has one Accounts Officer from the the Treasury & Accounts service on 'part time' basis. With the project close to effectiveness it is important that the MDPU finance staff is deputed on a full time basis (as envisaged in the MDPU staffing structure). Critical positions which need to be filled in immediately are the Senior Accounts Officer (from Treasury & Accounts Service) and a Superintendent from the WRO.
- MOU with TNAU: since the funds transferred to MDPU will be treated as advance for project purposes, it may be ensured that a suitable clause on quarterly financial reporting and audit of the annual financial statements by the State AG be incorporated in the MOU with TNAU.
- GOI Grant: The mission had separate discussions with the DEA and MoWR to resolve outstanding issues on finalizing the mechanism of transfer of the GoI grant for work on the restoration and revival of water bodies.

## Environmental Management

- Institutional: The mission agreed with MDPU that a suitable nodal officer would be appointed at MDPU to coordinate the undertaking and reporting on environmental activities under the project. During the project, a strong Environment and Social Development Cell is to be set up at WRO to coordinate the activities of the regional environment and social cells (as per the Environment and Social Assessment recommendations for the project).
- Coordination with Environment Department: The mission, with MDPU staff, also met with Secretary, Environment to apprise him of the project and to solicit his active help on strengthening coordination with the Department of Environment and Forests and the State Pollution Control Board in the activities to be undertaken under the project. In particular, this includes collaboration on the scoping work on the highly polluted Cooum sub-basin, designing approaches to reduce pollution in canals passing through urban areas, improving environmental awareness, and coordination for work on sustainable basin planning and SWaRA activities. The MDPU project director and Secretary, Environment would explore ways to make this collaboration operational in the first few months of the project:

## Cooum Sub-basin Plan Development

- Institutional: The mission discussed the special case of the Cooum sub-basin where the sub-basin plan needed to be evolved with care, given the complex urban-rural-coastal zone linkages. The Secretary, PWD indicated to the mission that he had requested the constitution of a Technical Group on the Cooum Sub-basin to facilitate knowledge base collation, analysis, and awareness-building. The mission discussed that a Cooum Sub-basin Board could be a vehicle to bring broad-based multi-stakeholder perspectives into planning for improvement of the Cooum. The Secretary also indicated that a special

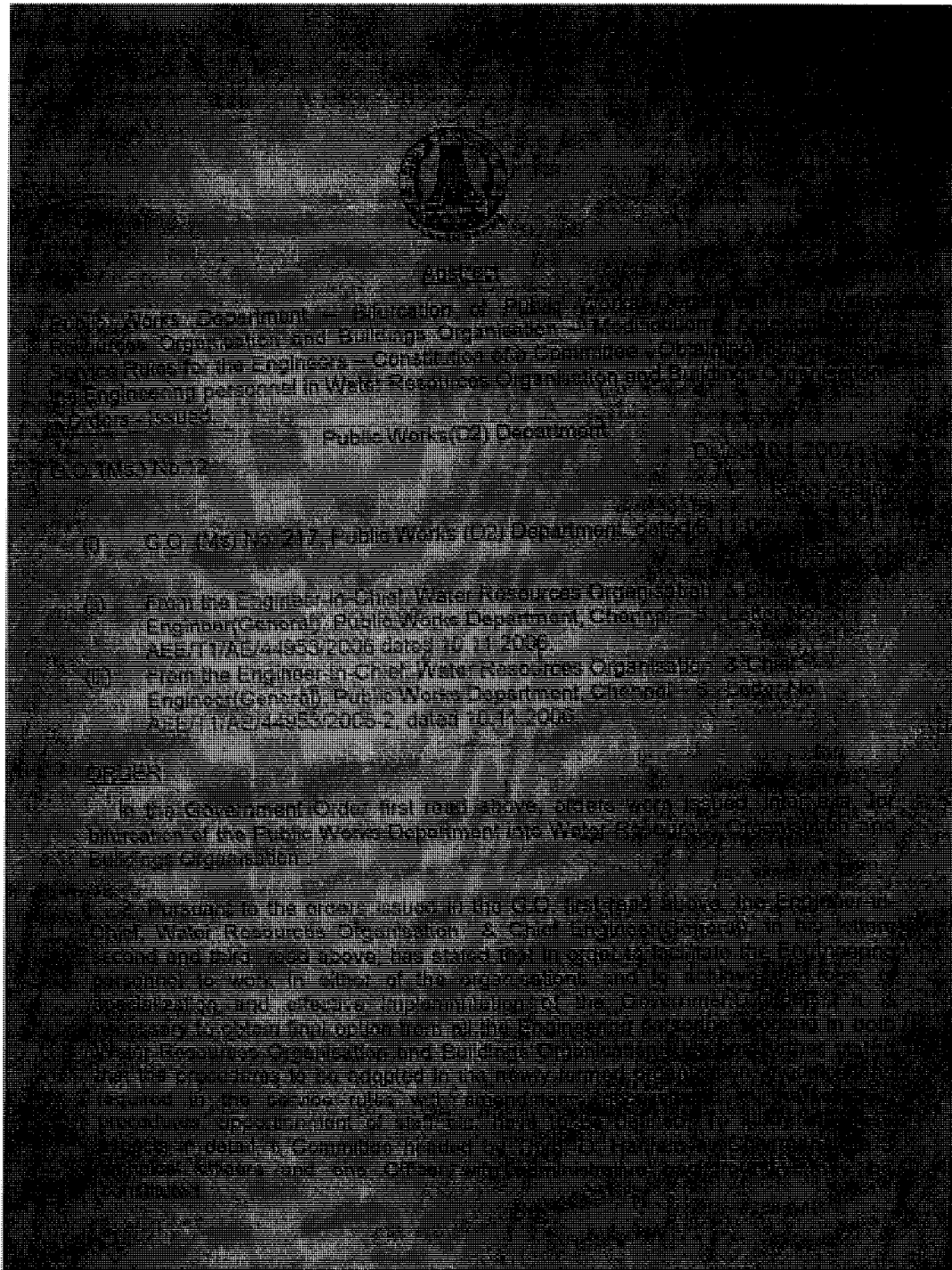
Authority was also being considered to manage the Chennai waterways in an integrated manner. The key departments to be networked for work on the Cooum include the WRO (and SWaRMA later - including units such as CE Chennai, CEPF, IWS, SGSWDC, IHH), Chennai Metropolitan Development Authority (CMDA), Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), Tamil Nadu Water and Drainage (TWAD) Board, Chennai Corporation; Local Municipalities in Cooum Sub-basin, Environment/TNPCB/Forest Dept., TN Slum Clearance Board (TNSCB), and Agriculture Department. Other key players that need to be involved include: Universities: TNAU (esp. Environmental Dept), Anna, IIT, Madras Univ), NIOT, CLRI & Similar Institutes, Horticulture Department, Animal Husbandry Dept., Fisheries Dept., Tourism Dept., Industries Dept., Revenue Dept., Information & Public Relations Dept., and various stakeholder representatives.

- **Initial Activities:** The mission reviewed progress on the initial knowledge base and decision support system being developed for the Cooum sub-basin and stressed that this should be developed with the active participation of key departments involved. The initial activities related to creating a Cooum knowledge base included development of a Cooum Sub-basin Atlas (discussed in detail with the mission and consisting of data, maps, and photographs on administration, topography, climate, hydrology, land, social, environmental, infrastructure, irrigation, agriculture, and coastal zone issues), further work on a Decision Support System customized to help various decisions to be made, a Video State of the Cooum report, and conducting awareness-building activities on the need and options for restoring the Cooum. The activities were zoned into three areas:
  - **Tidal Zone:** The CE, Chennai was requested by the Secretary, PWD to prepare a suitable, well-drafted plan for dredging the Cooum mouth, and explore the possibility of tidal gates (e.g. at the Napier bridge) and improvement in Groynes (beyond ongoing work) to improve flushing. The MDPU fisheries specialist was also requested to explore improvement in brackish water fisheries especially that of mosquito-larvae eating fish (as found locally in Chennai waterways).
  - **Urban Zone:** The urban and peri-urban section of the Cooum has unique problems related to water quality, solid waste management and encroachment. The mission recommended engaging a good Consulting firm to develop a Cooum River Options Scoping Assessment to use environmental planning, engineering, and public-private partnership concepts to systematically explore spatial land-use planning, environmental management, and hydraulic options to maximize the productivity of the Cooum and minimize its nuisance and public health concerns, building upon the considerable work already completed. The recommendations of such a Consultancy could be used to design interventions and demonstrations/pilots to be supported under this and other GoTN/GoI projects. The MDPU would work closely with the Bank on developing a suitable terms of reference for such a study.
  - **Upstream Zone:** The Cooum Sub-Basin areas upstream of the urban area has potential for regulation, tank rehabilitation, catchment management and cropping systems changes (e.g. SRI use in paddy cultivation) that could result in much-needed additional instream flows in the Cooum. This work would require a shared vision of activities across many different departments and a small consultancy may be required to facilitate this effort.

The mission and the GoTN appreciated this early opportunity to discuss and refine project implementation details. Regular communication and close project implementation support missions are planned, especially in the crucial first few months of implementation to ensure that project activities get off to a smooth start.

# Annex-A

## Government Order Regarding PWD Bifurcation





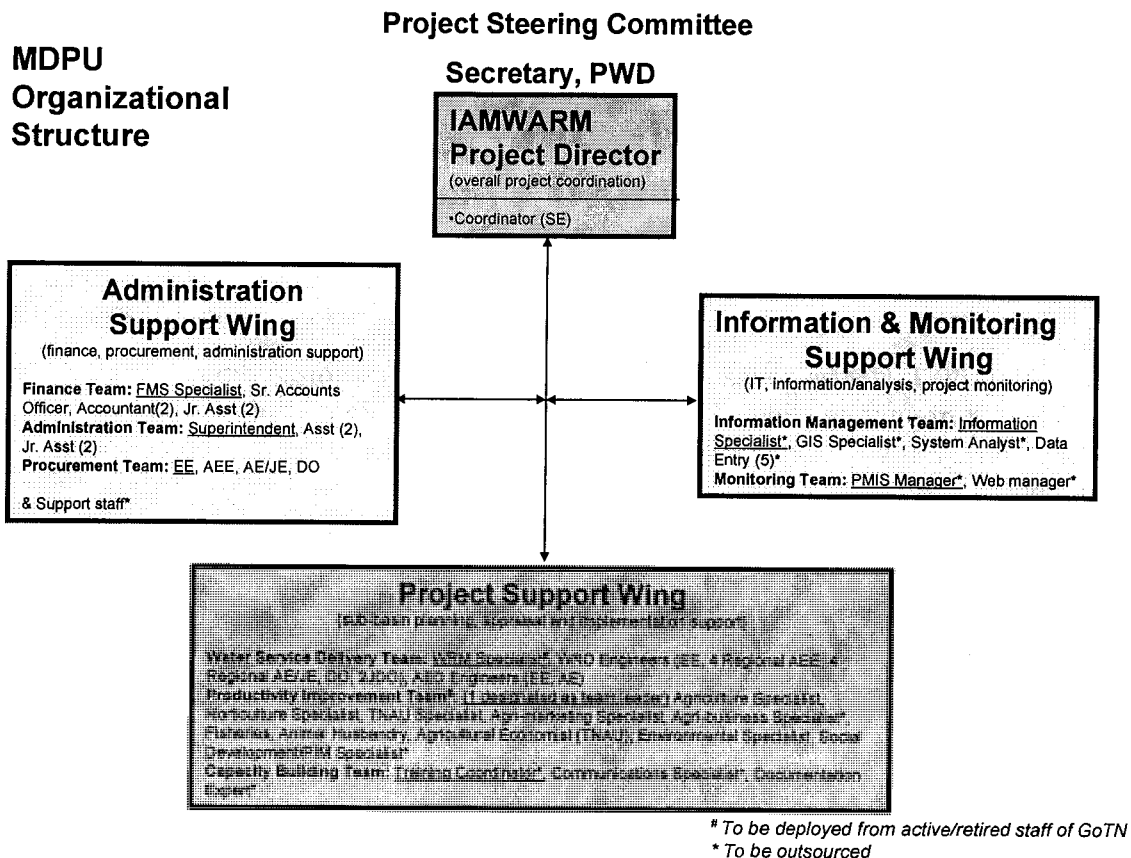


# Annex-B

## Multi-Disciplinary Project Unit (MDPU) Structure and Functions

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The mission had discussions with the Secretary (PWD) as well as MDPU Project Director and Staff on streamlining the structure of MDPU while moving from preparation to implementation of the project. In addition, the mission worked with the MDPU to better define the role of the various units proposed and the key staff to ensure smooth implementation of the IAMWARM project.



### Unit and Key Staff Responsibilities

- Project Director with the support of the Coordinator**
- Coordinate and facilitate the implementation, monitoring, and reporting of all project activities
  - Coordinate activities of all staff and Consultants of MDPU
  - Facilitate interaction across project implementing agencies in implementation of the project (including assistance with procurement and financial management, as well as economic, environmental and social aspects)
  - Communicate with the Project Steering Committee and The World Bank

<b>Administration Support Wing</b>		
<ul style="list-style-type: none"> <li>• Coordinate Finance, Procurement and Administration activities related to the IAMWARM project</li> <li>• Work closely with other wings of the MDPU in supporting project activities</li> </ul>		
<b>Finance Team</b>	Financial Specialist (Treasury), Sr. Accounts Officer, Accountant (2), Jr. Assistant (2)	<ul style="list-style-type: none"> <li>• Coordinate financial management of the project, including budgeting, expenditure, reimbursement, monitoring, audit and reporting</li> <li>• Internal financial management of MDPU expenditure</li> </ul>
<b>Procurement Team</b>	EE, AEE, AE/JE, DO	<ul style="list-style-type: none"> <li>• Support project procurement (including support to Procurement/IAMWARM Cells in line agencies)</li> <li>• Assist with development of Terms of Reference for Consultancies, and procurement document preparation</li> <li>• Help develop capacity in MDPU and other project agencies for Bank procurement procedures</li> <li>• Support procurement plan refinement, monitoring, reporting, submission to World Bank (for prior review cases) and support for post-review cases</li> </ul>
<b>Administration Team</b>	Superintendent, Assistant (2), Jr. Assistant (2)	<ul style="list-style-type: none"> <li>• Support office administration, operations and logistics (incl. maintenance of files, documents and records, office supplies, etc.)</li> <li>• Provide such administrative support (as a pool) to all wings of MDPU</li> </ul>

<b>Information &amp; Monitoring Support Wing</b>		
<ul style="list-style-type: none"> <li>• Provide information management and information technology support for MDPU in coordinating and facilitating IAMWARM project activities (e.g. preparation of GIS-based sub-basin atlases, hardware/networking/ A/V conferencing support, data management, system security, project website management, etc.)</li> <li>• Provide support for monitoring and evaluation of project activities, in particular, to coordinate Project Monitoring Information System (PMIS) activities and ensure that the system developed is used for project monitoring, reporting, and evaluation (including for sub-basin ICRs and periodic project reporting, including presentations).</li> <li>• Coordinate PMIS development and use with other project-related agencies and the M&amp;E Consultant</li> <li>• Provide advice on information management and IT to other IAMWARM agencies</li> <li>• Work closely with other wings of the MDPU under the supervision of the Coordinator</li> </ul>		
<b>Information Management Team</b>	<u>Information Specialist*</u>	<ul style="list-style-type: none"> <li>• Lead the Information Management Team and coordinate work of other specialists on the team</li> <li>• Assist in use of modern Information Technology and Information Management Systems in the IAMWARM project</li> <li>• Design information management systems at MDPU</li> <li>• Ensure appropriate information flow arrangements across line agencies and with MDPU (with adequate consultation)</li> <li>• Provide information management services to other parts of MDPU and to the other project agencies</li> </ul>
	GIS Specialist*	<ul style="list-style-type: none"> <li>• Develop and publish sub-basin maps and atlases</li> <li>• Organize relevant multi-disciplinary sub-basin data in a spatial format collating relevant information from various departments</li> <li>• Assist with GIS interfacing of the PMIS information</li> <li>• Assist with documentation, reporting, and presentations</li> </ul>
	System Analyst*	<ul style="list-style-type: none"> <li>• Facilitate procurement, deployment, and maintenance of IT computer, presentation, and communications hardware, networking, and software</li> <li>• Ensure data security, backup and protection</li> <li>• Provide support for IT at MDPU and provide advice to other project agencies</li> <li>• Provide/oversee any programming services required to all parts of MDPU</li> </ul>
	Data Entry (5)*	<ul style="list-style-type: none"> <li>• Provide data entry support for improved information management and communications to facilitate work of all MDPU staff</li> </ul>

		(PMIS) <ul style="list-style-type: none"> <li>• Designate security access for PMIS access and updating</li> <li>• Develop customized reports as necessary from the PMIS</li> <li>• Coordinate training activities related to PMIS development, deployment, and use</li> </ul>
	Web Specialist*	<ul style="list-style-type: none"> <li>• Conceptualize and develop web portal for the TN IAMWARM project</li> <li>• Interface with web hosting services (outsourced)</li> <li>• Interface with other specialists to collate information for web portal and respond to web communications/ enquiries</li> <li>• Work with M&amp;E Consultants and PMIS manager for web interfacing of the PMIS</li> </ul>

<b>Project Support Wing</b>		
<ul style="list-style-type: none"> <li>• Assist with integrated sub-basin plan formulation, integrating inputs across line agencies and other stakeholders</li> <li>• Appraise sub-basin plans from technical, environmental, social, and economic perspectives</li> <li>• Obtain approval of sub-basin plans from the Project Steering Committee and the World Bank</li> <li>• Coordinate implementation of sub-basin plans</li> <li>• Work with other implementing agencies and to provide information to the Information and M&amp;E Support Wing of MDPU to obtain relevant information from various implementing agencies, consolidate the monitoring and reporting of project activities (including annual workplans, schedules, supervision reports, sub-basin ICRs, mid-term report, final project report, etc.)</li> <li>• Interface with activities of WRO and SWaRMA</li> <li>• Derive lessons learned from implementation and evaluation and share these with relevant staff/agencies as required</li> <li>• Work with Administrative Support Wing of MDPU on finance, administration, and procurement aspects of project activities</li> <li>• Build partnerships (e.g. with academia) to assist with IAMWARM activity implementation and project institution development and encourage multi-disciplinary innovative approaches</li> <li>• Assist implementing agencies in media, communication, outreach, and awareness-building activities to support project objective and activities</li> <li>• Outline, facilitate, and obtain feedback from capacity-building and training programs to be supported under the project; consolidate annual training plan</li> <li>• Work closely with other wings of the MDPU</li> </ul>		
<b>Water Service Delivery Team</b>	WRM Specialist#	<ul style="list-style-type: none"> <li>• Team leader for water service delivery</li> <li>• Lead preparation and appraisal of sub-basin plans and support their implementation</li> <li>• Nodal person for all project monitoring across all implementing agencies and interfacing with the Information &amp; M&amp;E Wing and M&amp;E Consultants</li> <li>• Assist with building partnerships to facilitate implementation</li> <li>• Work on activities relating to Water Resources Management in the IAMWARM project (e.g. creation of and liaising with SWaRMA)</li> <li>• Interface with WRO, AED, and other agencies as required on project activities</li> <li>• Facilitate interfacing with other units of MDPU</li> </ul>
	WRO Engineers (EE, 4 Regional AEE, 4 Regional AE/JE, DO, 2JDO)	<ul style="list-style-type: none"> <li>• For sub-basins in the region concerned, coordination of sub-basin preparation, appraisal, implementation, monitoring, and reporting (including ICR preparation) on sub-basin plans, liaising with WRO</li> <li>• Ensure that Sub-basin and District Committees are effective and consider options for irrigation and drainage systems modernization, water measurement and management, and customization of designs to irrigation systems and cropping systems being considered</li> <li>• Support collection of knowledge base, surveys, stakeholder consultation, joint walkthroughs, analysis, institutional coordination, procurement and financial management to support smooth implementation of project activities</li> <li>• Undertake frequent field visits to assess sub-basin plan preparation and implementation</li> <li>• Support the work of project-related staff and consultants</li> <li>• Work to resolve problems during project implementation and advise senior management of any unresolved issues and options to address these issues</li> </ul>
	AED (EE, AE)	<ul style="list-style-type: none"> <li>• For sub-basins in the region concerned, support for micro-irrigation (drip/sprinkler), farm ponds, other on-farm development, and farm/processing machinery aspects of sub-basin preparation, appraisal, implementation, monitoring, and reporting (including ICR preparation) on sub-basin plans, liaising with AED</li> <li>• Ensure that Sub-basin and District Committees are effective and consider options for micro-</li> </ul>

		<p>irrigation, farm ponds, other on-farm development and machinery, and customization of micro-irrigation/on-farm delivery systems to bulk water and cropping systems being considered</p> <ul style="list-style-type: none"> <li>• Work with fisheries specialist/department on use of farm ponds for fisheries</li> <li>• Support collection of knowledge base, surveys, stakeholder consultation, joint walkthroughs, analysis, institutional coordination, procurement and financial management to support smooth implementation of project activities</li> <li>• Undertake frequent field visits to assess sub-basin plan preparation and implementation</li> <li>• Support the work of project-related staff and consultants</li> <li>• Work to resolve problems during project implementation and advise senior management of any unresolved issues and options to address these issues</li> </ul>
<b>Productivity Improvement Team (one specialist designated as team leader)</b>	<b>Agriculture Specialist</b>	<ul style="list-style-type: none"> <li>• Coordinate all activities related to agricultural aspects of the IAMWARM project</li> <li>• Coordinate project implementation with the Agriculture Department</li> <li>• Assist MDPU, WRO and SWARMA with agricultural aspects</li> <li>• Coordinate and assist in building capacity through the project on modern agriculture to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate agriculture research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special studies/consultancies on agriculture, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface agricultural activities with other activities in the sub-basin plan (e.g. in defining crop water requirements, determining market-led crop choices, etc.). Appraise all sub-basin plans from an agriculture perspective.</li> <li>• Coordinate measures to enhance environmental and social aspects of agriculture (incl. IPM, INM, Organic Farming, SRI in coordination with TNAU, other water saving techniques, reuse of desilted material for agriculture, involvement of poor, landless, women, and other vulnerable groups in project agricultural activities)</li> <li>• Coordinate project monitoring and reporting on agricultural aspects and work closely with the Agriculture Department, TNAU (first year baseline), Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>• Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
	<b>Horticulture Specialist</b>	<ul style="list-style-type: none"> <li>• Coordinate all activities related to horticultural aspects of the IAMWARM project</li> <li>• Coordinate project implementation with the Horticulture Department</li> <li>• Assist MDPU, WRO and SWARMA with horticultural aspects</li> <li>• Coordinate and assist in building capacity through the project on modern horticulture to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate horticulture research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special studies/consultancies on horticulture, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface horticultural activities with other activities in the sub-basin plan (e.g. in defining crop water requirements, determining market-led crop choices, etc.). Appraise all sub-basin plans from a horticulture perspective.</li> <li>• Coordinate measures to enhance environmental and social aspects of horticulture (incl. IPM, INM, Organic Farming, other water saving techniques, reuse of desilted material for horticulture, involvement of poor, landless, women, and other vulnerable groups in project horticultural activities, turfing/foreshore plantation activities)</li> <li>• Coordinate project monitoring and reporting on horticultural aspects and work closely with the Horticulture Department, TNAU (first year baseline), Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>• Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
	<b>TNAU</b>	<ul style="list-style-type: none"> <li>• Coordinate all activities related to TN Agricultural University work of the IAMWARM</li> </ul>

Specialist	<p>project</p> <ul style="list-style-type: none"> <li>• Coordinate all activities related to agricultural aspects of the IAMWARM project</li> <li>• Assist MDPU, WRO and SWARMA with modern agriculture/horticulture technology aspects</li> <li>• Coordinate and assist in building capacity through the project on modern cropping technologies and techniques to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of relevant special studies/consultancies, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface agricultural activities with other activities in the sub-basin plan (e.g. in defining crop water requirements, determining market-led crop choices, etc.). Appraise all sub-basin plans from an agricultural technology perspective.</li> <li>• Take the lead in promoting SRI in project areas to save water and improve productivity</li> <li>• Promote mechanized approaches, improved tools and modern technologies in project areas</li> <li>• Coordinate measures to enhance environmental and social aspects of agriculture (incl. IPM, INM, Organic Farming, SRI, other water saving techniques, reuse of desilted material for agriculture, involvement of poor, landless, women, and other vulnerable groups in project agricultural activities)</li> <li>• Coordinate project monitoring and reporting on agricultural aspects and work closely with the Agriculture Department, TNAU (first year baseline), Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>• Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
Agri-marketing Specialist	<ul style="list-style-type: none"> <li>• Work closely with Agri-business Specialist to coordinate all activities related to marketing aspects of the IAMWARM project</li> <li>• Coordinate project implementation with the Marketing Department</li> <li>• Assist MDPU, WRO and SWARMA with marketing aspects</li> <li>• Coordinate and assist in building capacity through the project on modern agricultural/horticultural marketing to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate horticulture research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special marketing studies/consultancies, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface horticultural activities with other activities in the sub-basin plan (e.g. in defining crop water requirements, determining market-led crop choices, etc.). Appraise all sub-basin plans from an agri-marketing perspective.</li> <li>• Coordinate measures to enhance environmental and social aspects of horticulture (incl. marketing of environmentally-friendly inputs such as vermicompost and other compost, environmentally-friendly outputs such as safe/organic food, hygienic milk, etc., water saving technologies, etc., building up WUA capacity- especially that of the poor, landless, women, and other vulnerable groups - in marketing and entrepreneurship)</li> <li>• Work with Project Consultants and IT Cell in WRO and others in MDPU to facilitate implementation of IT kiosks and development of market intelligence financed by the project</li> <li>• Coordinate project monitoring and reporting on marketing aspects and work closely with the Horticulture Department, TNAU (first year baseline), Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>• Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
Agri-business Specialist*	<ul style="list-style-type: none"> <li>• Work with the Agri-marketing specialists on agri-business aspects</li> <li>• Support for agri-business development activities related to the project</li> <li>• Explore and facilitate partnerships with public and private sector institutions (e.g. CH, agri-business companies, universities, marketing portals, etc.), with a special focus on marketing products and processing</li> </ul>

	<ul style="list-style-type: none"> <li>•Support the preparation, implementation, monitoring and documentation of sub-basin marketing plans and related special studies</li> <li>•Develop strategy to implement the Agri-business Development Facility to be supported under the project</li> <li>•Support other project staff and consultants in implementation of the project</li> </ul>
Fisheries	<ul style="list-style-type: none"> <li>•Coordinate all activities related to promotion of sustainable fisheries in the IAMWARM project</li> <li>•Coordinate project implementation with the Fisheries Department</li> <li>•Assist MDPU, WRO and SWARMA with fisheries aspects</li> <li>•Coordinate and assist in building capacity through the project on modern agriculture to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate fisheries research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special studies/consultancies on agriculture, etc.</li> <li>•Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface fisheries activities with other activities in the sub-basin plan (e.g. in using tanks, farm ponds, etc. for fisheries, procurement of fingerlings, marketing of produce, building capacity of fisherfolk, etc.).</li> <li>•Coordinate measures to enhance environmental and social aspects of agriculture (incl. sustainable fisheries, control on exotic species, appropriate promotion of larvicidal fisheries near urban areas to control mosquitoes, involvement of poor, landless, women, and other vulnerable groups in project fisheries activities)</li> <li>•Coordinate project monitoring and reporting on fisheries aspects and work closely with the Fisheries Department, TNAU (first year baseline), Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>•Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>•Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
Animal Husbandry	<ul style="list-style-type: none"> <li>•Coordinate all activities related to promotion of sustainable livestock in the IAMWARM project</li> <li>•Coordinate project implementation with the Livestock Department</li> <li>•Assist MDPU, WRO and SWARMA with livestock aspects</li> <li>•Coordinate and assist in building capacity through the project on modern agriculture to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate livestock research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special studies/consultancies on agriculture, etc.</li> <li>•Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface livestock activities with other activities in the sub-basin plan (e.g. in using tanks, farm ponds, etc. for livestock). Appraise all sub-basin plans from a livestock/fodder perspective.</li> <li>•Coordinate measures to enhance environmental and social aspects of agriculture (incl. sustainable breed management, breed conservation where appropriate, animal health activities, promoting use of livestock Integrated Pest Management, quality fodder production activities, involvement of poor, landless, women, and other vulnerable groups in project livestock activities)</li> <li>•Coordinate project monitoring and reporting on livestock aspects and work closely with the Livestock Department, TNAU (first year baseline), Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>•Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>•Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
Agricultural Economist (TNAU)	<ul style="list-style-type: none"> <li>•Coordinate and facilitate all economics activities of the IAMWARM project, working closely with the WRO, the IAMWARM Cells in all line departments, and the other MDPU and SWaRA staff.</li> <li>•Assist MDPU, WRO and SWARMA with economic aspects and actively pursue ways to enhance economic analysis under the project.</li> </ul>

	<ul style="list-style-type: none"> <li>• Coordinate and assist in building awareness and capacity through the project on economic aspects to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize awareness-building/training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate economic research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special marketing studies/consultancies, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface economic activities with other activities in the sub-basin plan (e.g. in managing solid waste and water quality especially near settlements, improve groundwater recharge, reduce erosion, promote foreshore plantations in tanks, etc.). Appraise all sub-basin plans from an economic perspective.</li> <li>• Coordinate project monitoring and reporting on economic aspects and work closely with other line agencies, the Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop economic content for atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> </ul>
Environmental Specialist	<ul style="list-style-type: none"> <li>• Coordinate and facilitate all environmental activities of the IAMWARM project, working closely with the Environmental and Social Cells in WRO, the IAMWARM Cells in all line departments, and the other MDPU and SWaRA staff.</li> <li>• Liaise with Department of Environment and Forests to improve environmental effectiveness of project activities and synergize with other complementary programs.</li> <li>• Along with the Social Development Specialist, be the key nodal person for implementation of the recommendations of the Environmental and Social Assessment and the associated Social and Environmental Management Plan.</li> <li>• Ensure that all project-financed activities are in accordance with the Bank, GoI and GoTN environmental safeguards and policies.</li> <li>• Actively pursue ways to enhance environmental outcomes and mitigate any environmental concerns under the project.</li> <li>• Assist MDPU, WRO and SWaRMA with environmental aspects</li> <li>• Coordinate and assist in building awareness and capacity through the project on environmental aspects to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize awareness-building/training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate environmental research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special marketing studies/consultancies, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface environmental activities with other activities in the sub-basin plan (e.g. in managing solid waste and water quality especially near settlements, improve groundwater recharge, reduce erosion, promote foreshore plantations in tanks, etc.). Appraise all sub-basin plans from an environmental perspective.</li> <li>• Work with Project Consultants and IT Cell in WRO and others in MDPU to improve environmental content in IAMWARM website, IT kiosks, etc.</li> <li>• Coordinate project monitoring and reporting on environmental aspects and work closely with other line agencies, the Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop environmental content for atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>• Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
Social Development/ PIM Specialist*	<ul style="list-style-type: none"> <li>• Support other project staff and consultants in implementation of the project</li> <li>• Coordinate and facilitate all social development activities of the IAMWARM project, working closely with the Social development and Social Cells in WRO, the IAMWARM Cells in all line departments, and the other MDPU and SWaRMA staff.</li> <li>• Support Environment/Social and PIM cells and LAER cell in the project to include social development objectives and concerns</li> <li>• Work closely with PIM cell on WUA formation and capacity-building under the project</li> <li>• Liaise with Social Welfare and other GoTN departments to improve social development effectiveness of project activities and synergize with other complementary programs.</li> <li>• Along with the Social Development Specialist, be the key nodal person for implementation</li> </ul>

		<p>of the recommendations of the Environmental and Social Assessment and the associated Social and Environmental Management Plan.</p> <ul style="list-style-type: none"> <li>• Ensure that all project-financed activities are in accordance with the Bank, GoI and GoTN social development safeguards and policies.</li> <li>• Actively pursue ways to enhance social development outcomes and mitigate any social development concerns under the project.</li> <li>• Assist MDPU, WRO and SWARMA with social development aspects</li> <li>• Coordinate and assist in building awareness and capacity through the project on social development aspects to all relevant stakeholders (farmers/ WUAs, WRO, other line agencies, etc.) – e.g. organize awareness-building/training/workshops/other events, procurement of relevant books/journals/databases, institutional partnerships, suggesting appropriate social development research areas under the Irrigation Research Fund and the Water Resources Research Fund, coordination of special marketing studies/consultancies, etc.</li> <li>• Participate in sub-basin plan development with appropriate field visits and interaction with field staff. Work closely with other members of MDPU to better interface social development activities with other activities in the sub-basin plan (e.g. in WUA formation, inclusion of women and other vulnerable groups in project activities, etc.). Appraise all sub-basin plans from an social development perspective.</li> <li>• Work with Project Consultants and IT Cell in WRO and others in MDPU to improve social development content in IAMWARM website, IT kiosks, etc.</li> <li>• Coordinate project monitoring and reporting on social development aspects and work closely with other line agencies, the Monitoring and Evaluation Consultants and the Information and Monitoring and other wings of MDPU to develop social development content for atlases, plans, monitoring reports, and ICRs for sub-basins.</li> <li>• Closely interact with and make presentations to MDPU, other project staff, Consultants, various agencies and World Bank missions as required</li> <li>• Undertake any other relevant work as assigned by the Project Director from time to time</li> </ul>
Capacity Building Team	<u>Training Coordinator*</u>	<ul style="list-style-type: none"> <li>• Support for design, implementation, and documentation of the Training Plan for the project</li> <li>• Responsible for assisting the line departments (including WRO Training Cell and PIM Cell) in developing their Annual Training Plan, and monitoring its implementation</li> <li>• Work with M&amp;E Consultants to monitor training plan implementation and obtain timely feedback to improve future training</li> <li>• Explore training and other capacity-building opportunities relevant for the IAMWARM project across line agencies</li> <li>• Develop partnerships with institutions for anchoring training activities at field-level</li> <li>• Support change management activities in the project agencies</li> </ul>
	Communications Specialist*	<ul style="list-style-type: none"> <li>• Support for design, implementation, and documentation of the project communications strategy</li> <li>• Advise line departments in communications relevant to the IAMWARM project</li> <li>• Explore multiple media options for communications (mass media, web, etc.)</li> <li>• Assist in capacity-building efforts of all stakeholders, particularly related to sub-basin consultations and joint walkthroughs</li> <li>• Develop partnerships with institutions to improve project awareness and communications</li> <li>• Maintain a catalogue of media coverage on the IAMWARM project</li> </ul>
	Documentation Specialist*	<ul style="list-style-type: none"> <li>• Support for project-related documentation (including annual workplans, schedules, monitoring/supervision reports, sub-basin plans and ICRs, mid-term report, final project report, strategic communications, etc.), including designing formats, editing text and assisting with graphics</li> <li>• Develop, publish and appropriately disseminate an IAMWARM Project Newsletter and case studies</li> <li>• Maintain a library of publications and electronic information relevant to support project activities</li> <li>• Develop videos of project activities to be used for training and awareness building</li> </ul>



# Annex-C

## Project Operational Manual

### Summary for Sub-Basin Activities

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The MDPU is updating the draft Operational Manual for the IAMWARM project (December, 2006), with particular emphasis on the sub-basin improvements to be carried out under Components A and B. As part of this effort, the responsibilities of various agencies and key personnel are being clarified at different stages of sub-basin planning and development (pre-planning, planning, implementation, and post-implementation).

#### **Key Components to be implemented through Sub-Basin Planning:**

##### **Component A: Irrigation systems modernization in a sub-basin framework (Base Cost US\$ 282.83 million)**

This component seeks to improve bulk water delivery to irrigation systems through modernization of irrigation systems and service delivery and management in schemes in about 63 selected project sub-basins. The two sub-components for this component include A1: Tank systems, and A2: Other irrigation systems

##### **Component B. Agricultural Intensification and Diversification (Base Cost US\$ 166.23 million)**

This component seeks to build on the improved bulk water delivery of the previous component to increase the productivity of agriculture-related activities through improved agricultural intensification and diversification in about 63 selected sub-basins. This will include work on sub-components B1: Tank systems, and B2: Other irrigation systems.

These activities (converging through Sub-basin Plan development and implementation) will be implemented over a period of six years by different departments of Government of Tamil Nadu. These agencies include:

- Water Resources Organization (60% of proposed expenditures)
- Agricultural Engineering Department,
- Agriculture Department,
- Horticulture Department,
- Tamil Nadu Agricultural University,
- Agricultural Marketing Department,
- Animal Husbandry Department
- Fisheries Department, with overall coordination provided by the
- Multi-Disciplinary Project Unit (MDPU)

The following table provides an overall summary of the detailed activities to be undertaken for each sub-basin. Similar tables are being finalized for each of the agencies in detail. In addition, an appropriate project management software is being used to schedule these activities for each sub-basin.

### Summary of Project Operational Manual for Sub-Basin Planning and Development

Stage	Activity Type	Purpose	Key Activities	Key Outputs	Responsibility
Pre-Planning	Official Communication	Ensure appropriate institutional arrangements to initiate activities at sub-basin level	<ul style="list-style-type: none"> <li>Communication to initiate activities in sub-basin, fill posts, appoint nodal officers, setup sub-basin committee</li> </ul>	<ul style="list-style-type: none"> <li>Official Communication</li> </ul>	MDPU, Line Agencies
	Information Collection	Develop initial knowledge base for stakeholder consultation and analysis; develop shared inter-agency vision of sub-basin characteristics	<ul style="list-style-type: none"> <li>Collect relevant reports, data, maps to assist with sub-basin planning; develop sub-basin baseline</li> <li>Initiate surveys</li> <li>Document information</li> </ul>	<ul style="list-style-type: none"> <li>Sub-basin Atlas drafted (description of different aspects of sub-basin and baseline information with illustrative maps, charts, photographs, tables), including description of physical setting/ topography, climate, hydrology, schematics of water network, agriculture/ irrigation/ tank systems status, cropping patterns, livestock, key markets, economy, institutions, potential partnerships</li> <li>Presentation on Sub-basin (with relevant maps, data, and Google Earth or equivalent fly-through of sub-basin showing key features)</li> </ul>	Sub-basin Committee (with Sub-basin Atlas, presentation, and fly-through finally collated by MDPU)
	Preliminary Stakeholder Consultation	Obtain stakeholder perspectives on key issues in improving irrigated agriculture and water productivity to help guide sub-basin planning	<ul style="list-style-type: none"> <li>Identify key stakeholders (incl. formal and informal WUAs, progressive farmers, women, SC/ST, fisherfolk, livestock owners, local agri-entrepreneurs) and initiate stakeholder consultation</li> <li>Prepare communication materials on project (basic project information – objectives, types of activities envisaged; activities initiated/ completed elsewhere under project, environmental and social management framework summary)</li> <li>Communicate project information to local stakeholders and obtain initial feedback</li> <li>Undertake joint walkthrough(s) to determine key issues and options in consultation with local stakeholders (formal or informal WUAs and other stakeholders) and using sub-basin atlas (taking photographs, videos)</li> </ul>	<ul style="list-style-type: none"> <li>IAMWARM Awareness Day(s) held</li> <li>Joint Walkthrough Report (integrated across agencies and indicating a few strategic problems/issues to be addressed in sub-basin and a brief discussion of possible options – represented on a map wherever possible and with illustrative photographs and video footage)</li> <li>Document list of stakeholders consulted</li> </ul>	Sub-basin Committee with Line Dept & MDPU assistance

Stage	Activity Type	Purpose	Key Activities	Key Outputs	Responsibility
Planning	Training	Improve stakeholder awareness of project activities (e.g. modern approaches to irrigated agriculture) to build capacity to be partners in developing sub-basin plans	<ul style="list-style-type: none"> <li>Identify immediate capacity-building needs (technical, administrative, other)</li> <li>Identify appropriate sites for awareness visits</li> <li>Identify appropriate stakeholders (in an open and transparent manner) for awareness visits and training activities</li> <li>Identify stakeholders who could be good trainers in future</li> </ul>	<ul style="list-style-type: none"> <li><u>Training/Capacity-building plan</u> developed for planning stage</li> <li>Awareness visits undertaken (coordinated across line agencies wherever possible)</li> </ul>	Sub-basin Committee with Line Dept and MDPU assistance
	Stakeholder Discussions & Analysis	<u>Merge technical analysis and stakeholder views on hardware (e.g. construction) and software (e.g. capacity-building) options</u> to included in the sub-basin plan	<ul style="list-style-type: none"> <li>Identification of hardware and software options (all key options should be considered including a no-activity option)</li> <li>Preliminary identification of sites for project activities in consultation with stakeholders</li> </ul>	<ul style="list-style-type: none"> <li><u>Maps</u> with identified sites, options</li> <li><u>Preliminary analysis of options</u> (including cost estimates, operation &amp; maintenance implications, successful demonstrations elsewhere, etc.)</li> </ul>	Sub-basin Committee with Line Dept and MDPU assistance
	Sub-basin Plan	Develop appropriate sub-basin plan to be supported under the project consistent with project objectives and design	<ul style="list-style-type: none"> <li>Develop Sub-basin Plan and discuss plan with stakeholders, line agencies and MDPU</li> <li>Appraise Sub-basin Plan from technical, environmental, social, and economic perspectives</li> <li>Ensure plan is approved at all levels</li> </ul>	<ul style="list-style-type: none"> <li><u>Sub-Basin Plan</u> consisting of: <ul style="list-style-type: none"> <li>Finalized Sub-basin Atlas</li> <li>Summary of Consultations</li> <li>Summary of Technical Analysis</li> <li>Proposed Hardware and Software activities as part of sub-basin plan with costing, farmer contribution, and implementation arrangements</li> <li>Economic Analysis (overall costs, benefits, net benefit stream/IRR) using standard spreadsheets</li> <li>Environment and Social Management Plans (including for resettlement and rehabilitation, dam/tank safety, silt disposal, IPM/INM/organic activities, water saving, gender and vulnerable group activities, grievance redressal, etc.)</li> <li>Proposed Schedule of Activities (MS Project)</li> </ul> </li> <li><u>Presentation and Discussion of Sub-Basin Plan</u> (to stakeholders, district collectors, line agencies, MDPU and Project Steering Committee)</li> <li>Memorandum of Understanding signed by all line departments and stakeholders (e.g. relevant WUAs) at Sub-basin Plan Signing Ceremony to officially launch implementation</li> </ul>	<p><u>Development:</u> Sub-basin Committee with Line Dept and MDPU assistance</p> <p><u>Appraisal:</u> MDPU</p> <p><u>Approval:</u> Stakeholders, Sub-basin Committee, line agencies, MDPU, Project Steering Committee, World Bank</p>
	Memorandum of Understanding	Line departments and project stakeholders agree what is to be implemented, where, how and when	<ul style="list-style-type: none"> <li>Develop draft MOU</li> <li>Discuss and agree with stakeholders</li> </ul>		Sub-basin Committee with Line Dept and MDPU support

	Procurement and Financial Management	Effective and transparent procurement and financial management undertaken	<ul style="list-style-type: none"> <li>• Procurement initiated (with appropriate approvals) <ul style="list-style-type: none"> <li>◦ Works: bid documents prepared</li> <li>◦ Goods: specifications developed</li> <li>◦ Contract staff/consultancy: terms of reference/RFP</li> </ul> </li> <li>• Bank procurement processes followed as outlined in project documents</li> <li>• Financial Management (incl. reimbursement) undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• Procurement implemented (e.g. contracts signed, goods procured, contract staff in place)</li> <li>• Regular accounting/ audits/ reimbursement</li> </ul>	Line Departments, MDPU
	Training/Capacity-Building	Capacity-building of stakeholders to help become partners in project activity implementation and quality management	<ul style="list-style-type: none"> <li>• Training</li> <li>• Explore partnerships with other institutions to strengthen implementation and sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• IAMW/ARM Field Days (across departments)</li> <li>• Study Tours/Awareness Visits</li> <li>• Training activities</li> <li>• Partnerships with other institutions</li> </ul>	Sub-basin Committee, Line Depts. and MDPU
<b>Implementation</b>	Implementation Management	Project activities implemented as designed and any changed agreed upon by all parties	<ul style="list-style-type: none"> <li>• Continuous and close monitoring of project implementation (Project Monitoring Information System continuously updated)</li> <li>• Quality Management procedures applied (through stakeholder/WUA social audits, sub-basin committee, line agency, MDPU and quality management and monitoring consultants: OK-card system developed to document sign-offs at each stage of implementation by department and stakeholders)</li> <li>• Documentation of implementation status and issues for resolution</li> </ul>	<ul style="list-style-type: none"> <li>• Updated Project Monitoring Information System</li> <li>• Monthly Sub-basin Project Status Summary by Line Agency</li> <li>• Quality Management and Monitoring Reports</li> <li>• Monthly &amp; Quarterly Progress Report (collated by MDPU)</li> <li>• Final Completion Report by implementing agency (line dept.)</li> </ul>	Sub-basin committee, Line Depts., MDPU

<b>Post-Implementation</b>	Documentation & Evaluation	Ensure that activities conducted as part of the project are well-documented and lessons learned are captured and used	<ul style="list-style-type: none"> <li>• Develop a Sub-basin ICR (integrated across all line dept. activities) and contribute to project Monitoring &amp; Evaluation</li> <li>• Revision for Sub-basin Atlas and inputs to next year's Sub-basin Plan</li> <li>• Adequate trainings on O&amp;M for all WUAs and agencies to be ensured at least for some periods beyond the completion of packages</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-Basin ICR &amp; Workshop</li> <li>• Final Sub-basin Atlas</li> </ul>	Sub-basin committee, Line Depts., MDPU
	Sustainability & Scaling-Up	Ensure sustainability of project activities	<ul style="list-style-type: none"> <li>• Develop any further Sub-basin Partnerships</li> <li>• Continue post-implementation monitoring</li> <li>• Determine approaches to address any identified gaps in ensuring sustainability of project investments</li> <li>• Determine approaches for up-scaling activities (including any follow-up project activities)</li> </ul>	<ul style="list-style-type: none"> <li>• O&amp;M Plan for Project</li> <li>• Revised Sub-Basin Plan &amp; Workshop (indicating partnerships, critical areas for follow-up, ways to enhance sustainability and scale-up adoption of modern water management/ irrigation/ cropping/ livestock/ fisheries/ marketing approaches)</li> </ul>	Sub-basin committee, Line Depts., MDPU

# Annex-D

## Budget Heads for TN IAMWARM Project

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### Component – E (MDPU)

#### **I DEMAND NO. 40 06 TAMIL NADU IAM WARM PROJECT (New Creation)**

1. 2701 Major and Medium Irrigation -80-General-001 Direction and Administration PD-Multi-Disciplinary Project Unit under TN IAMWARM- *Object Codes*
2. 2701 Major and Medium Irrigation -80-General-001 Direction and Administration PE-Co-ordination and Monitoring by MDPU under TN IAMWARM- *Object Codes*
3. 4701 Capital outlay on Major and Medium Irrigation – 80 General - 001 Direction and Administration - PA Construction of Office Building- *Object Codes*

#### **II DEMAND NO.40 01 PUBLIC WORKS-IRRIGATION**

### Component – D (Water Resources Management) \*

1. 2701 Major and Medium Irrigation -03-Medium Irrigation (Commercial) –(Minor Head – to be provided by Finance).....Water Resources Management – PD Water Resources Research Fund under TN IAMWARM – *Object Codes*
2. 2701 Major and Medium Irrigation -03-Medium Irrigation (Commercial) - (Minor Head – to be provided by Finance)....Water Resources Management – PE Creation and Strengthening of SWARMA under TN IAMWARM- *Object Codes*

### Component –C (Institutional Modernization) \*

1. 2701 Major and Medium Irrigation – 03 Medium Irrigation (Commercial) - (Minor Head – to be provided by Finance).....Institutional Modernization – PA Institutional Modernization of WRO & Establishment and Operation of various Cells under TN IAMWARM – *Object Codes*
2. 2701 Major and Medium Irrigation – 03 Medium Irrigation (Commercial) - (Minor Head – to be provided by Finance) .....Institutional Modernization – PB Irrigation Research Fund under TN IAMWARM – *Object Codes*
3. 2701 Major and Medium Irrigation – 03 Medium Irrigation (Commercial) - (Minor Head – to be provided by Finance)....Institutional Modernization – PC Creation and Capacity Building of WUAs under TN IAMWARM – *Object Codes*
4. 4701 Capital Outlay on Major and Medium Irrigation - 03 Medium Irrigation (Commercial) (Minor Head – to be provided by Finance) - ... Institutional Modernization – PA Capacity Building of WUAs under TN IAMWARM – *Object Codes*

**\* only one single minor head is to be opened for components C, B and Construction Monitoring Quality under Component A.**

## Component A

1. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Aliyar Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Aliyar Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Aliyar Sub Basin under TN IAMWARM
2. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Palar (Coimbatore) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Palar (Coimbatore) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Palar (Coimbatore) Sub Basin under TN IAMWARM
3. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Upper Vellar (Salem) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Upper Vellar (Salem) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Upper Vellar (Salem) Sub Basin under TN IAMWARM
4. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of South Vellar (Pudukkottai) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of South Vellar (Pudukkottai) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in South Vellar (Pudukkottai) Sub Basin under TN IAMWARM
5. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Varahanadhi (Tiruvannamalai and Villupuram) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Varahanadhi (Tiruvannamalai and Villupuram) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Varahanadhi (Tiruvannamalai and Villupuram) Sub Basin under TN IAMWARM
6. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Pambar (Pudukkottai) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Pambar (Pudukkottai) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Pambar (Pudukkottai) Sub Basin under TN IAMWARM
7. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Kottakaraiyar (Sivagangai) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Kottakaraiyar (Sivagangai) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Kottakaraiyar (Sivagangai) Sub Basin under TN IAMWARM
8. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Arjunanadhi (Virudhanagar) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Arjunanadhi (Virudhanagar) Sub Basin under TN IAMWARM  
  
(ii) PB Renovation of Tanks in Arjunanadhi (Virudhanagar) Sub Basin under TN IAMWARM
9. 4701 Major and Medium Irrigation – 03 Medium Irrigation –Commercial - .....Renovation of Dam, Canal and Tanks of Manimuthar (Sivagangai) Sub Basin under TN IAMWARM – (i) PA Renovation of Dam and Canals of Manimuthar (Sivagangai) Sub Basin under TN IAMWARM  
(ii) PB Renovation of Tanks in Manimuthar (Sivagangai) Sub Basin under TN IAMWARM
10. 2701 Major and Medium Irrigation -03-Medium Irrigation (Commercial) –(*Minor Head – to be provided by Finance*)- PF – Construction Quality Monitoring – *Object Head*

**Component –B**

**I DEMAND NO. 05 02 DIRECTORATE OF AGRICULTURE**

1. 2401 Crop Husbandry -00- Crop Husbandry - 109 Extension and Farmers' Training - PA Improved Agriculture for Tank irrigation under TN IAMWARM Project- *Object Heads*
2. 2401 Crop Husbandry -00- Crop Husbandry - 109 Extension and Farmers' Training - PB Improved Agriculture for Non- Tank irrigation under TN IAMWARM Project- . *Object Heads*
3. 2401 Crop Husbandry -00- Crop Husbandry –800- Other Expenditure – Establishment of TMIAMWARM Cell and Capacity Building- *Object Heads*
4. Tamil Nadu Agricultural University (TNAU)

**II DEMAND NO. 05 06 AGRICULTURAL ENGINEERING**

1. 2401 Crop Husbandry -00- Crop Husbandry - 113 Agricultural Engineering -PC Drip and Sprinklers & Micro Irrigation Mgt. in Tank Command Areas under TN-IAMWARM Project.
2. 2401 Crop Husbandry -00- Crop Husbandry - 113 Agricultural Engineering - PD Drip and Sprinklers & Micro Irrigation Mgt. in Non-Tank Command Areas under TN IAMWARM Project.
3. 4402 Capital Outlay on Soil and Water Conservation - 00- Capital Outlay on Soil and Water Conservation-102 Soil Conservation - PA infrastructure in Tank Command Areas under TN-IAMWARM Project.
4. 4402 Capital Outlay on Soil and Water Conservation - 00- Capital Outlay on Soil and Water Conservation-102 Soil Conservation - PB infrastructure in Non-Tank Command Areas under TN-IAMWARM Project.
5. 2401 Crop Husbandry -00- Crop Husbandry –800- Other Expenditure – Establishment of TMIAMWARM Cell and Capacity Building- *Object Heads*

**III DEMAND NO. 05 05 DIRECTORATE OF HORTICULTURE AND PLANTATION CROPS.**

1. 2401 Crop Husbandry -00- Crop Husbandry - 119 Horticulture and Vegetable Crops - PA Improving Horticulture for Tank irrigation command under TN IAMWARM Project- *Object Heads*
2. 2401 Crop Husbandry -00- Crop Husbandry - 119 Horticulture and Vegetable Crops - PB Improving Horticulture for Non-Tank irrigation command under TN IAMWARM Project- *Object Heads*
3. 2401 Other Agricultural Programmes-119 Horticulture and Vegetable Crops - 800 Other Expenditure - PA Establishment of TN IAMWARM Cell & Capacity Building under TN-IAMWARM Project

**IV DEMAND NO. 05 03 DIRECTORATE OF AGRICULTURAL MARKETING**

1. 2435 Other Agricultural Programmes-01 Marketing and quality control - 101 Marketing facilities - PA Marketing Systems for Tank irrigated areas under TN IAMWARM Project.- *Object Heads*
2. 2435 Other Agricultural Programmes-01 Marketing and quality control - 101 Marketing facilities - PB Marketing Systems for Non-Tank- irrigated areas under TN-IAMWARM Project- *Object Heads*.



3. 2435 Other Agricultural Programmes-01 Marketing and quality control - 101 Marketing facilities - PC Agri.Business Development Facility for Tank- irrigated areas under TN-IAMWARM Project- *Object Heads*.
4. 2435 Other Agricultural Programmes-01 Marketing and quality control - 101 Marketing facilities - PC Agri.Business Development Facility for Non -Tank irrigated areas under TN-IAMWARM Project- *Object Heads*
5. 4435-Capital Outlay on Other Agricultural Programmes - 01 Marketing and Quality Control - 101 Marketing facilities- PA-Marketing Infrastructure for tank-irrigated areas under TN-IAMWARM Project.
6. 4435-Capital Outlay on Other Agricultural Programmes - 01 Marketing and Quality Control - 101 Marketing facilities- PB-Marketing Infrastructure for Non- tank irrigated areas under TN-IAMWARM Project.
7. 2435 Other Agricultural Programmes-01 Marketing and quality control - 800 Other Expenditure - PA Establishment of TN IAMWARM Cell & Capacity Building under TN-IAMWARM Project.

**V DEMAND NO. 06 02 DIRECTORATE OF ANIMAL HUSBANDRY**

1. 2403-Animal Husbandry-00-Animal Husbandry-102-Cattle and Buffalo Development - PA Improving Livestock Health & Productivity for Tank-irrigated areas under TN-IAMWARM Project.
2. 2403-Animal Husbandry-00-Animal Husbandry-102-Cattle and Buffalo Development - PB Improving Livestock Health & Productivity for Non- Tank irrigated areas under TN-IAMWARM Project.
3. 4403- Capital Outlay on Animal Husbandry - 00- Capital Outlay on Animal Husbandry-102 Cattle and Buffalo Development - PA Improving Livestock Fodder Management for tank irrigated areas under TN-IAMWARM Project
4. 4403- Capital Outlay on Animal Husbandry - 00- Capital Outlay on Animal Husbandry-102 Cattle and Buffalo Development - PB Improving Livestock Fodder Management for Non-tank irrigated areas under TN-IAMWARM Project
5. 2435 Other Agricultural Programmes-01 Marketing and quality control - 800 Other Expenditure - PA Establishment of TN IAMWARM Cell & Capacity Building under TN-IAMWARM Project.

**VI DEMAND NO. 07 01 DIRECTORATE OF FISHERIES**

1. 2405- Fisheries -00 Fisheries - 101 Inland fisheries -PA Improving In-land fisheries for tank and its Command Areas under TN IAMWARM Project.
2. 2405- Fisheries -00 Fisheries - 101 Inland fisheries -PB Improving In-land fisheries for Non-tank and its Command Areas under TN IAMWARM Project.
3. 4405-Capital Outlay on Fisheries -00 Capital Outlay on Fisheries - 101 Inland fisheries - PA Improving In-land fisheries for tank and its Command Areas under TN-IAMWARM Project.
4. 4405-Capital Outlay on Fisheries -00 Capital Outlay on Fisheries - 101 Inland fisheries - PB Improving In-land fisheries for Non-tank and its Command Areas under TN-IAMWARM Project.
5. 2405- Fisheries -00 Fisheries - 800 Other Expenditure - PA Establishment of TN IAMWARM Cell & Capacity Building under TN-IAMWARM Project.