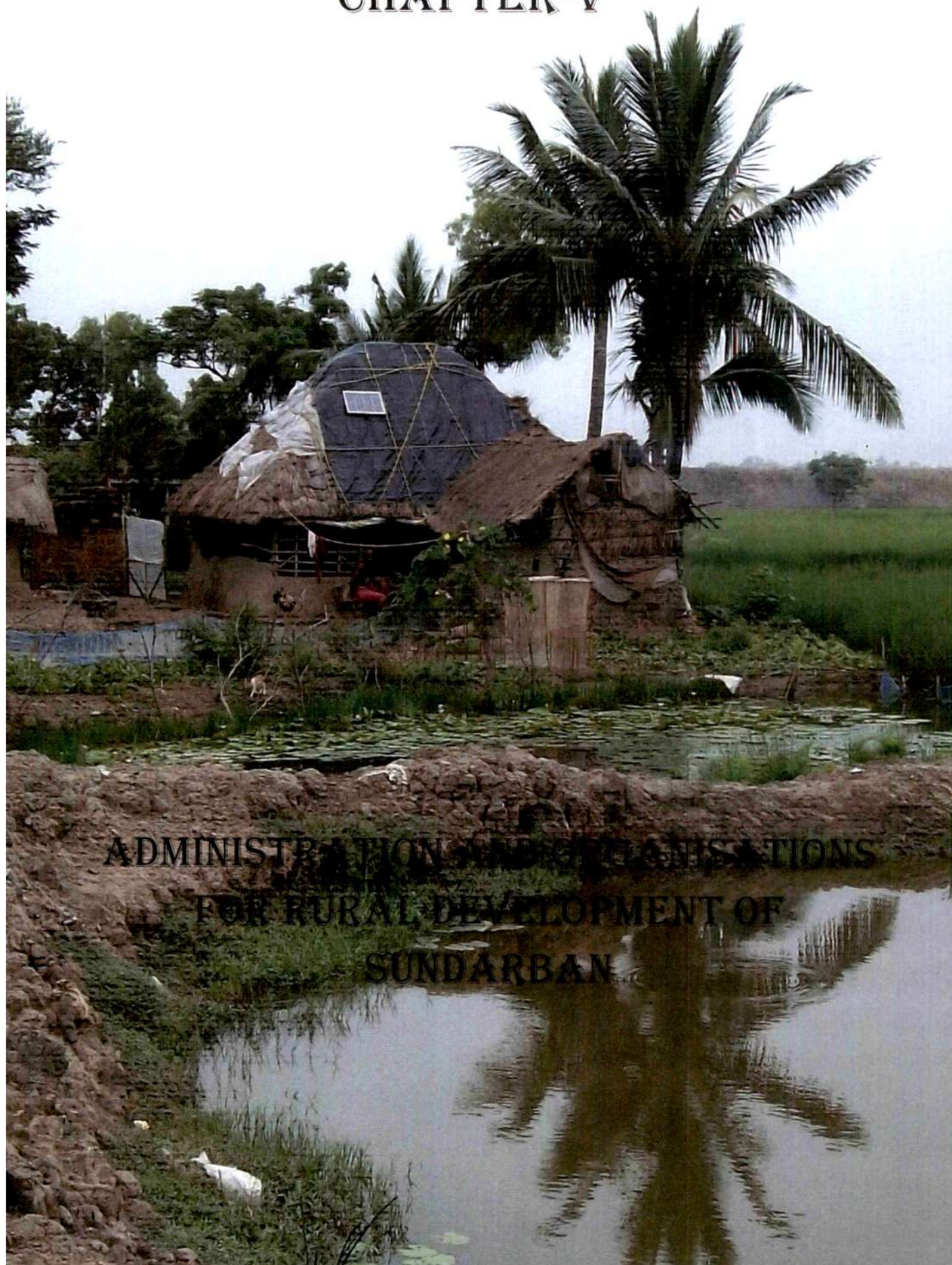


CHAPTER-V



ADMINISTRATION AND ORGANISATIONS
FOR RURAL DEVELOPMENT OF
SUNDARBAN

CHAPTER –V: ADMINISTRATION AND ORGANISATIONS FOR RURAL DEVELOPMENT IN SUNDARBAN

5.1 Introduction:

Proper administration makes an organisation well for work. Any developmental work needs proper maintenance and administration. Rural development in India mostly depends on the administration from the very beginning. Further, people's involvement in the whole development process largely depends on the cooperation and coordination of the administrative organisations. The administration and organisation responsible for the development of the different rural sectors of Sundarban are dealt in detail in this section with the West Bengal's administrative structure as the base.

5.2 Administration and Organisational Structure for Programme Implementation:

Any development programmes or schemes are not implemented wholly in the Sundarban region. The two corresponding district administrators are responsible for the programme implementation. There were so many discrepancies in the programme implementation in the corresponding blocks of the two corresponding districts. Thus the development profile or scenario is different in the blocks of North and South 24 Parganas. The administrative set-up for planning and the implementation of different rural development programmes has to be understood properly in order to understand the development scenario of all the blocks of Sundarban. The administrative set-up is as follows:

Table 5.1: The Administrative Set-up:

<i>Development Level</i>	<i>Panchayati Raj Institutions and Other Development Administration</i>	<i>People's Representatives</i>	<i>Additional Representatives</i>	<i>Government Officials</i>
<i>District Level</i>	Zilla Parishad	Sabhadhipati	Sahakari Sabhadhipati	District Magistrate (DM) and Additional District Magistrate (ADM)
<i>Block Level</i>	Panchayat Samiti	Sabhapati	Sahakari Sabhapati	Block Development Officer (BDO) and Joint BDO
<i>Village Level</i>	Gram Panchayat	Pradhan	Upa Pradhan	Secretary and Village Level Workers

Source: Tabulated by the author

➤ **Sabhadhipati** heads the Zilla Parishad and is assisted by **Sahakari Sabhadhipati**. District Magistrate is the Executive Officer of the Zilla Parishad at the District Level. Different sectors namely Planning and Establishment, Finance, Environment and Land Reforms, Forest, Agriculture, Irrigation and Co-operation, Fishery, Animal Resources, Public Works, Health, Small Scale Industries, Relief and Social Welfare, Education, Information and Culture and Sports, Electricity and Non-conventional Energy, Food and Supplies are looked after by the Coordination Committees which is headed by *Karmadhakshya*.

Executive Officer, Assistant Engineer and other staff of Rural Development Department are placed on deputation to Zilla Parishad. The Executive Officer issues necessary direction for execution of schemes to the respective state level officers as per the order of the Zilla Parishad and its standing committees. He also receives progress report of different sectoral development schemes. At the district level there are two co-ordination bodies, namely, 'District Planning Committee' and 'District Planning and Co-ordination Council' to overlook and sanction fund for different development schemes. District level officers of the development departments and commissioners in-charge of the division are also invited to the meeting of the council. The District Planning Committee is chaired by *Sabhadhipati* of Zilla Parishad and ten *Karmadhyakshas* of Sthayee Samitis, *Sabhapatis* of all Panchayat Samitis and one representative of each state body in the district have been drafted as members.

The District Magistrate is the Member-Secretary of both the District Planning and Co-ordinating Council and District Planning Committee and thus Zilla Parishad monitors the implementation of the work by the Panchayat Samiti and Gram Panchayats.

➤ **Sabhapati** heads the Panchayat Samiti and *Sahakari Sabhapati* assist in the work. BDO is the Executive Officer of the Panchayat Samiti at the Block Level. Standing Committees are being set up to look after the mentioned sectors. These Standing Committees which are known as Sthayee Samiti are headed by *Karmadhakshyas* who are elected members of the Panchayat Samiti.

The *Sabhapati* is elected by the Panchayat Samiti members and headed the block. The BDO is assisted by the joint BDO in the implementation of development activities in the block. The *Sabhapati* acts as the Chairman of the Block Planning Committee and BDO is the Member-Secretary of this Committee. The Block Planning Committee selects schemes fed by the *Karmadhakshyas* of the Sthayee Committees. The Block Planning Committee compiles a draft Block Plan and submits it to the District Planning Committee for approval and thereafter the implementation of schemes at the Gram Panchayat level is monitored by the Panchayat Samiti.

➤ The Gram Panchayat (GP) is headed by the **Pradhan**. The GP is divided into Gram Sabhas that are further divided into Gram Sanads and the people of a GP elect one member from each Gram Sanad.

The Gram Panchayats have the following category of staff:

a. Secretary-dealing with administration and accounts matters. b. Joint Assistant- dealing with all matters like preparation of schedule and implement various schemes. c. Gram Panchayat Karmee.

5.2.1 Origin of Rural Local Self Government in West Bengal:

West Bengal has a long recorded history of rural Local Self-Government (LSG) Institution. During the colonial era, bodies known as Chowkidari Panchayats were set-up in 1870 in groups of villages for maintenance of law and order. This was followed by the Bengal local Self-Government Act, 1885 which was a sequel to the famous Ripon resolution (1882). This provided for two tiers of local Self- Government: District Boards at district level and Union committees at the level of a group of villages. Local Boards, set-up in some sub-division, did not last and were abolished. The leadership of the District Boards, however, remained in the hands of the District Magistrates, and it cannot be held that there was any genuine grass-roots level democracy. The number of member and assemblies in the three tier panchayat system of recent times is given below among which Sundarban part as the two corresponding districts have always played a vital role.

Table 5.2: The Number of Members and Assemblies in the three-tier Panchayat System:

Districts	Sub-Divisions	Blocks/ Panchayat Sanities	Gram Panchayat	Gram Panchayat		Panchayat Samities		Zilla Parishad	
				No of assemblies	No of members	No of assemblies	No of members	No. of assemblies	No of members
North 24 Parganas	5	22	200	2603	2905	575	575	51	51
South 24 Parganas	5	29	312	3592	4129	877	877	73	73

Source: Tabulated by the author

A Royal Commission on Decentralisation (1907-09) recommended a little more autonomy for the LSG institutions and, ultimately, under the Dyarchy, the existing legislation was amended by the Bengal Village Self-Government Act, 1919. This act introduced Union Boards at the level of group villages replacing Union Committees and Chowkidari Panchayats and the resulting system of District Boards and Union Boards lasted till the 1950's. This Act certainly brought about a greater degree of popular control over the LSG institutes and significant local development works were carried out, though elections to the bodies were based on limited franchise and, as a result, the bodies were dominated by the rural elite.

5.2.2 Post-independence developments of local self government:

The Balvant Ray Mehta Committee, appointed by the National Development Council, recommended (1957) the introduction of the three-tier Panchayat System based on universal adult suffrage to ensure people's participation in development programmes. On the basis of these recommendations, the West Bengal Panchayat Act, 1957 was passed with the intent of setting up a four-tier Panchayat System: Zilla Parishads at the district level, Anchalik Parishads at the block level, Anchal Panchayats at the union (group of villages) level and gram Panchayats at the village level. However, the Panchayat bodies were set-up in a half-hearted manner with Gram Panchayats and Anchal Panchayats being set-up in 1958-59 but Anchalik Parishads and Zilla Parishads being set-up only in 1964 after the West Bengal Zilla Parishad Act, 1963 was passed. For the first time Panchayat bodies were set up on the basis of universal adult suffrage, even though direct elections were held only to the lowest tier Gram Panchayat and the higher bodies were formed by indirect elections and nominations. By the time the new Panchayat bodies were set-up, the State was in the throes of an unprecedented food crisis (1965), followed by political instability. Responsibilities for implementation of development programmes reverted to the officials, the LSG bodies became inactive and Zilla Parishads and Anchalik Parishads were superseded (1967), though Anchal Panchayats and Gram Panchayats limped on after a fashion. Elections were not held for more than fifteen years.

An initiative was taken to frame a consolidated piece of legislation. The West Bengal Panchayat Act, 1973 contemplating a three-tier system with Zilla Parishads at the district level, Panchayat Samitis at the block level and Gram Panchayat at the Anchal (group of villages) level. Each tier was to have its own functionaries and administrative structure related to its statutory development responsibilities. However, for four long years, the legislation was not implemented.

5.2.3 Second generation Panchayat:

5.2.3.1 Introduction:

The Janata Government, on coming to power at the union level, set-up the Asoke Mehta Committee (1987) to review the working of Panchayat and to make recommendation for strengthening the existing system. The Committee noted that there were three distinct phases in the evolution of Panchayati Raj Institutions (PRIs) in India: the phase of ascendancy (1959-64), the phase of stagnation (1964-69) and the phase of decline (1969 onwards). The committee perceived Panchayat as instruments of rural development and recommended introduction of two tiers Panchayat, open participation of political parties in Panchayat elections, direct involvement of PRIs in development programmes and constitutional protection for further decentralisation of power. Only a few State Governments (Karnataka, Andhra Pradesh, Kerala and West Bengal) accepted some of these recommendations and set-up new look PRIs which have been called 'Second Generation Panchayats'.

The Left Front Government, on coming to power in West Bengal in 1977, held elections under the West Bengal Panchayat Act (1973) in June, 1978. Since then, Panchayat general elections have been held in 1983, 1988 and 1993 strictly observing the five-year period. A three-tier Panchayat system was set-up with elections contested on party lines and with direct elections for a majority of seats in each tier. The Front Parties have swept the elections on all four occasions and several evaluations have held that the Panchayat bodies in West Bengal were dominated by the land-poor rather than by the landed aristocracy. To protect the interests of Scheduled Castes / Tribes and women, provisions were made for nomination of two members from each category to each PRI body, provided that these categories were under-represented. However, these provision were not always utilised and women membership, in particular, continued to be low (below two per cent) till 1993. West Bengal, however, went ahead of the 73rd Constitutional Amendment Act, by reserving one-third of the seats for women and proportional seats for Scheduled Castes/ Scheduled Tribes. At

present participation of women as well as Scheduled Castes/Tribes in the PRIs are adequate and many of them are holding positions of authority.

In 1989, a major amendment was made in the formation of Darjeeling Gorkha Hill Council (DGHC) in the hill area and the Siliguri Mahakuma Parishad (SMP) replacing the ZP for Siliguri Sub-division. At present, we have 16 ZPs, SMP, 340 PSs (election to 8 PSs in DGHC areas have, however, not been held) and 3314 GPs apart from DGHC.

5.2.3.2 Administrative Structure of the Panchayat System:

The Zilla Parishad (ZP), under the chairman ship of the Sabhadhipati, is the Key organisation at the district level and has the District Magistrate as the Executive Officer, assisted by an Additional Executive Officer and a Secretary who is a senior State Civil Service Officer. The Formal association of the District Magistrate with the ZP appears to be an advantage in dealing with other Government departments. The district heads of the developing departments are, at present, only linked to their ZP through membership of Standing Committees. Each ZP has a strong engineering cell consisting of its own engineers and engineers on deputation from technical departments.

At the Panchayat Samity (PS) level, under the chairman ship of the Sabhadhipati, the Block Development Officer (BDO) acts as the Executive Officer and the BDO's officer and the BDO's has been converted into the office of the Samiti. The Extension Officer for Panchayats (EOP) is the Secretary of the PS while all the block staff has been placed at the disposal of the PS. It has been brought to the notice of the Commission that there was still some confusion over deployment of block staff in Panchayat Works. Government orders in this respect are very clear and should be implemented forthwith without any further delay.

The Gram Panchayat (GP) has the elected Pradhan as its titular head. The pradhan is assisted by a full-time Secretary who maintains the office records and semi-skilled Job Assistant for supervising works programmes. Dafadars and Chowkidars, now redesigned Gram Panchayat Karmees, are also full-time staff of the GPs. The State Government also placed the Gram Sevaks (Village Level Workers) at the disposal of the GPs but legal difficulties have stalled the move.

5.2.3.3 Involvement of PRIs in Development Works:

The West Bengal Panchayat Act, 1973 contains provisions for entrusting development works to Panchayat bodies for implementation. The 1992 legislation has widely amended these provisions to bring them in line with the 73rd Constitutional amendment.

The Panchayat bodies were directly involved with works programmes for the first time following the devastating floods of 1978 when Panchayat were directly made responsible for reconstruction of rural assets using the **Food For Work (FFW)** resources. Till December, 1980, the PRI of West Bengal was able to utilise Rs. 120 crores and 4 lakh metric tonne of food grains under FFW. Subsequently, the Panchayat in West Bengal shouldered much heavier responsibilities in financial and physical terms with employment generation programmes such as the **National Rural Employment Programme (NREP)**, **Rural Landless employment Guarantee Programme (RLEGP)** and, ultimately, the **Jawahar Rozgar Yojana (JRY)**. In the JRY guidelines, the Government of India made mandatory the involvement of PRIs and also adopted many of the methodologies developed in the State of West Bengal during implementation of NREP. At present, annual allocations under JRY scheme by the State are in excess of RS. 300 crores and it were spent through GPs of the corresponding blocks of Sundarban.

The other programmes entrusted to the PRIs in West Bengal of implementation include the Rural Housing Scheme, Rural Water Supply, distribution of minikits for Agriculture, Operation Black Board, Mass Literacy Programme, supervision of ICDS projects, Projects benefitting SC/ST communities, Social forestry etc. The IRDP was entrusted to the PSs for implementation. Later, a system was devised in which GPs were made responsible for selection of beneficiaries and sponsoring of schemes; PSs for screening of proposals in construction with banks and sanctioning of the schemes; and ZPs in charge of the overall supervision with the *Sabhadhipati* as the Chairman of the District Rural Development Agency (DRDA).

The Panchayat bodies were also deeply involved with the reforms measures with the *Bhumi-O- Sanskar Sthayee Samiti* (Land and Land Reforms Standing Committee) for each Panchayat Samities (PSs) being reconstituted as the Block Level Land Reforms Advisory Committee. This enabled the panchayat bodies to remain closely linked with distribution of vested lands, recording of share-croppers and unearthing of 'benami' land apart from ensuring some tie-up between land inputs and non-land inputs to eligible land reforms beneficiaries. The panchayat bodies, particularly the PSs have also forged close working relations with banks through the operation of various programmes tying up Government subsidies with medium-term credit such as IRDP, Special Component Programme (SCP), Tribal Sub-Plan (TSP), Special Animal Husbandry Programme (SAHP), Fish Farmers Development Agency (FFDA) etc. This has helped co-ordination between sectoral infrastructure programmes and sectoral credit flow and operation such target group-oriented programmes has also enhanced the beginning power of the rural poor. Panchayat have also been involved with loan recovery.

The quality of such programmes implemented by panchayat has also been examined repeatedly by agencies such as NABARD, RBI and different autonomous academic institutions in concurrent evaluation studies by the Government of India. NABARD and RBI have commented on good identification of poor families by panchayat bodies in West Bengal. Concurrent evaluation studies have generally indicated sufficiency of the assistance and good quality of assets in all the programmes in the study area, while commenting on the local choice of schemes, quick implementation, payment of wages at the approved rate and usefulness of the community assets created in case of employment generation schemes like NREP, RLEGP in West Bengal.

5.2.3.4 Resource Mobilization through the PRIs:

The panchayats have often been widely regarded as extensions of the state government rather than as local self government institutions so far the implementation of the major rural development programmes is concerned. A large sum of money have flowed to the PRIs every year as grants-in-aid and the Panchayats have wrestled with the job of utilising such funds with very few staff support. Therefore, most of the PRIs have given little emphasis on raising their own resources, being dependents on funds received from above, and this has hamstrung their functioning. Hence, it was felt that united funds would give the PRIs much greater flexibility, though direct resource mobilisations by PRIs have continued to be low. In West Bengal, the average resource mobilisation per GP in the year 1994-95 has been about Rs. 12,000 which is only a small fraction of the grants-in aid inflow. The GPs of Sundarban as well as West Bengal have by and large not taken their fiscal power too seriously. Henceforth, the involvement of PRIs with state resource mobilisation has been on the increase with the introduction of some interacting schemes.

5.2.3.5 Decentralized Planning:

In early 1950s, the planning process in the country as a whole remained highly centralised, but after the Planning Commission set-up working groups on Block Level Planning and District Planning, the nature has been regarded as decentralised planning. These working groups are:

- i. Existence of political will and commitment
- ii. District Planning Body in each district
- iii. Suitable planning machinery in each district
- iv. Demarcation of planning functions
- v. Delegation of administrative powers
- vi. Disaggregation of plan funds
- vii. Ensuring people's participation at all the stages of planning process.

The Planning Commission recommended adoption of the decentralised planning approach in the Seventh Plan period (1985-90). The Government of India set-up the G.V.K. Rao Committee which reviewed the situation in 1985 and observed that Sundarban as well as West Bengal had made some progress in the decentralised planning so far the rural development is concerned. At that time planning bodies were set-up at the district and block levels and thus the PRIs of West Bengal had

made some experience in planning and implementation of some anti-poverty programmes. Thus, a system of decentralised planning gradually emerged after overcoming some related problems. All the departments were to disaggregate their schemes as State level schemes and District level schemes and communicate tentative districtwise outlays. The District Planning Committee (DPC), in consultation with the district level officials, would give some indications of fund availability to the Block Planning Committees. Thereafter, the Block Planning Committee would formulate the block plans on the basis of local needs and resource base with the planning inputs from block level officials and GPs. Therefore, the prepared District plans were discussed with the State Planning Board to ensure the co-ordination with the State Plan. Thereafter, the district plan was discussed and approved in the District Planning and Co-ordination Council (DPCC). The DPC emerged as the major planning body with the DPCC only having formal role. The DPCs were given some technical staff support and sometimes the DPCs required extensive discussions with State Level experts.

5.2.3.6 Implication of Self-governance:

The power of a panchayat will be circumscribed as it has to function within a district and then within a state and the Union of India. The substantial freedom can be given to local bodies to initiate actions in their own areas but the scope for local choice and initiative was very limited. The panchayats in West Bengal have been suffering from three handicaps, like: they virtually have no funds of their own; the major parts of the Central schemes have to be implemented without much staff support and rights of a self-governing body regarding funds and staffs was nearly absent. Therefore, the decentralisation of development efforts is easier said than done in the prevailing milieu. Zilla Parishad and other local bodies is the most effective instrument of development because they are located near the sites of action. The interaction with the local people will be better and they can supervise the work of staff better and tighten the existing slack. Moreover, people based panchayats will be obliged to strengthen horizontal coordination as they will be best suited to lower sections and maximise results. In the State headquarters, there can be no dispute on the importance of various departments because they are the authority for implementation of various programmes. The State level officials will define policies, supply knowhow and monitor execution of work in districts. All the departmental activities will easily lend themselves to a decentralised pattern for better works.

5.2.4 Procedure of programme implementation:

Any rural development programme in India has been implemented through a particular procedure with some different basics or guidelines. Each and every programme not exactly follow the same path to select the beneficiaries to obtain the programme's benefit but the awareness campaign about the programme make able to wide spread information to the rural mass. The procedure and proper planning can make fruitful or succeed any programme for rural development. Therefore, the procedure followed and their sharpness always tells the story of success and failure of any rural community development programme. All the sectors of rural development would not cover all the aspects to standardize the living standard of the inhabitants or rural poor and thus they often complain and arises fingers against the government. But the implementing procedure of any rural development programme signifies the assured benefits but the people engaged in this huge process are not always doing the right things. The problems acute by some political disturbance and corruptions exist in every level of administrative structure in PRIs. Henceforth, the actual problem lies in the administrative structure, not in the procedure of implementation of the programmes.

Flow chart for the implementation of a programme:

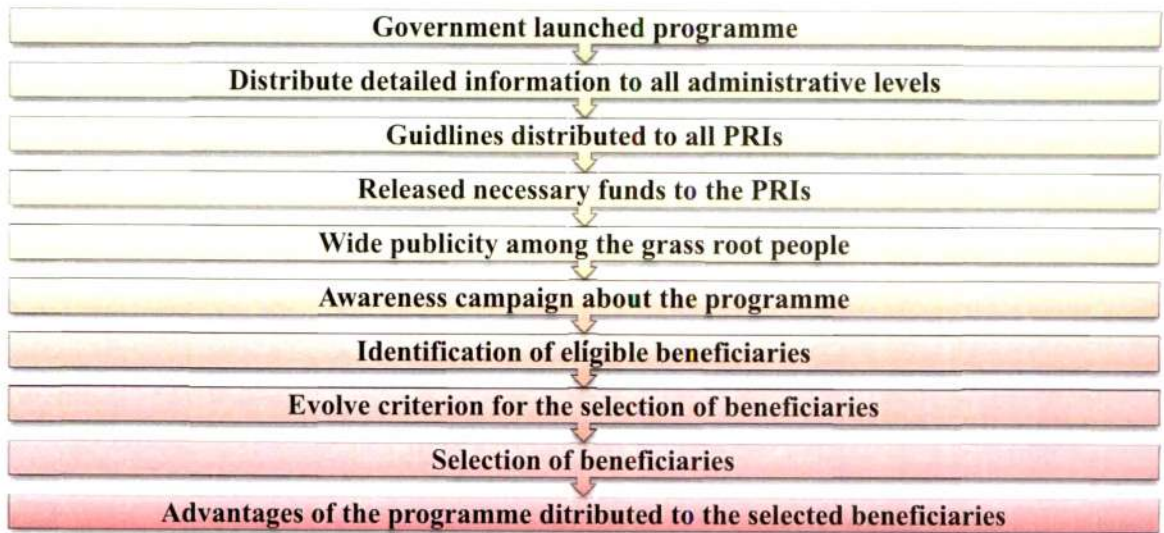


Fig. 5.1

Source: Author

5.2.5 Development of Sundarban through plans and programmes:

Before independence, no concerted efforts were made to effect any planned change in Sundarban by the ruler of the area. In 1952 just after Independence, Indian Sundarban region has faced the first planned developmental programme namely Community Development Programme (CDP) which was introduced all over the country. But this programme could not able to make the effective change in the area. Thereafter, many development programmes were formulated and introduced in the area. Then Sundarban development Board (SDB) was formulated in between special area programme for backward area and underserved area. But, at the initial stage, the Board could not become much effective due to paucity of funds. So, the foreign donation, financial institution like IMF, World Bank, non-resident Indians and other agencies strengthen the financial support of SDB as well as West Bengal Government for the development of Sundarban. The SDB made efforts by using World Bank-sponsored IFAD (International Fund for Agricultural Development) to analyse the developmental scenario of Sundarban. From the last few decades, the West Bengal government has assigned more weightage on the functioning and strengthening of Panchayat for effective rural development. In the whole process of such development, the people of the villages of Sundarban have been playing a major and decisive role in bringing desirable changes in their life and living standard.

Pre-Independence Era:

In 1759, Robert Clive of East India Company was granted the 24 parganas of West Bengal as the assignment of revenue in return for the services (called '*Jagir*') by a Sanad. Thus until his death in 1774, Clive became the superior revenue collector. As the most of the portion of the district was inaccessible due to dense forests, Rennell's Atlas (1777) was the only early graphic portrayals of the district and the Company dependent on the Atlas.

In 1765, the company after acquisition of civil administration of Bengal took Sundarban as it's property and engaged to improve its conditions. Claude-Russel, the Collector General of the 24 Parganas district attempted to reclaim the forest in 1970.

Later, the lease system made some progress particularly on reclaimed land, and therefore, the neighbouring Zamindars also promoted the cultivation. Due to this operational work, the Sundarban was cleared almost up to Sagar Island on the south and Canning on the east in the period of 40 years. Many tribal people of plateau area of central India were begun to settle in the Sundarban after the reclamation of its large area. From that time the region became an area of mixed culture with the mixture of various ethnic and cultural groups.

During the World War II, the Survey of India (SOI) had prepared topographical map on 1:50,000 scale for 24 parganas, Kolkata and adjoining areas in West Bengal based on air-cum-ground survey. But the south-eastern part of the Sundarban had been covered by photogrammetric method (1:40,000, vertical air photograph) due to its inaccessibility. The appointment of a Commissioner was conducted in the Sundarban with the power or authorization to collect land revenue by Regulation IX of 1861. Later, in 1905, the Sundarban Act modified its regulation of function which had been transferred from the Commissioner to the collectors of 24 parganas district. O' Malley's commented in this way - "This was not a very great change, for the administration had long been conducted by the District Officer, with the exception of making settlements and holding enquires out. The District Officer already controlled exercise, education, police, crime, chaukidari, the opening out of communications and other branches of administration."

The State Government declared the Sundarban as the state property in 1817. In 1828, the right of the state was determined over the land brought to recent cultivation and the forest. To demarcate the boundary of the Sundarban area, Dampier was appointed as the Commissioner and Hodges as the Surveyor. They (Dampier and Hodges) surveyed and defined the forest line of the Sundarban during 1829-30. In 1831, Hodges was prepared a map based on the surveys made by him and his predecessor has been the standing map of the Sundarban and the northern boundary of which is demarcated as *Dampier-Hodges Line*.

In 1849, a Sundarban Development Committee reported that the improvement of the barrage project, elimination of zamindari system and land reform. The Committee suggested some measures or path for the economic as well as infrastructural development. With the increase of number of ferries and ferry-point and constructing more all weather effective roads, transport development came into being. The Committee also suggested to undertake some functions to improve fodder, fishery, and forest products along with the agricultural development.

Post-Independence Era:

In 1973, *Sundarban Development Board (SDB)* was set up under the Development and Planning Department of West Bengal for betterment in planning and coordination of development activities. The SDB played the following functions-

- To formulate integrated programmes.
- To coordinate different plans.
- To make effective utilization of the local resource base.
- To supervise the projects/schemes/programmes.
- To evaluate the progress of development activities.
- To review the whole matter of development and make reports on it.

Apart from the coordinating development activities, the SDB was also involved in future planning and implementation of various projects, construction of infrastructure like- rural roads, small wooden jetties, foot bridges, culverts etc. Build up of village small scale industries like agro-based, food processing, handloom, carpentry, bakery, dairy, poultry etc along with the promotion of rabi cultivation through subsidised farm inputs which were also initiated by the SDB.

The SDB operated its functions through three Branch Offices and 27 Growth Centres along with the headquarters. Through these centres SDB ran its various agricultural, infrastructural, literacy programmes of the region. To overcome the problems of this backward region, the SDB is also engaged in exploring of extended funds, because only state funds would not be adequate to gear up the economy. The World Bank sponsored International Fund for Agricultural Development (IFAD) adopted various development plans for improving the economic condition of the Sundarban. The SDB formulated Annual Plan and a 10 year Integrated Development Plan for the proper utilization of the resource base for that purpose the SDB emphasizes on mass participation of the human resource and development of growth centre plan.

As the development funds for Sundarban was sanctioned or mostly provided by the government, so the inhabitants of the area largely depends on the government for their sustainable development. Government, the panchayat functionary provides the basic amenities, like,

construction of rural roads (kutcha or brick-paved or metalled), jetty, river embankments, excavation of ponds, tanks or canals, reclamation of coastal forested lands, afforestation, social forestry etc. These planned and executed works indicates that if the resource constraints removed, and the existing manpower properly utilized with the financial assistance, the area can be developed at desired level.

The three-tier Panchayat system (PRIs) of West Bengal has played an important and sophisticated role in whole process of development. The Gram Panchayat has been able to done well and effective functions but the Panchayat Samity's performance is quite poor. For the betterment of development process, PRA technique could be very effective and useful at various levels of panchayat functioning and people's participation. At the village level, the Gram Panchayat implements small-fund projects whereas the Panchayat Samities implements medium-sized fund projects and Zilla Parishad implements projects of large-sized fund. The State Government has assigned more weightage on functioning of panchayat for effective development.

5.2.6 Role of NGOs in the Development of Sundarban:

5.2.6.1 Vivekananda Sevakendra O Sishu Uddyan (VSSU): *Vivekananda Sevakendra O Sishu Uddyan (VSSU)* is an apolitical Non-Governmental Organisation (NGO) undertaking social and environmental development through micro-finance. VSSU starts its journey in 1983 and upgrades its status with some milestones, like-

Box 5.1: Profile of VSSU:

1986 – VSSU was registered as a voluntary Society.

1994 – Began its micro-finance activities as a mutual as a *Swanirbhar Gosthi*.

2001 – Became a one stop micro-banking institution.

2004 – Act as a Bank for Community Development.

At present, VSSU works with the vision of community development through community resources and faster social development activities that meets the community's need. This NGO situated in South 24 Parganas and spread its wings throughout the Sundarban and non-Sundarban blocks.

Programme:

a. Economic Sector:

- *Micro finance:* Micro finance is the oldest economic programme of VSSU. VSSU's fund comes from micro savings from thousands of clients in the community and using the funds, VSSU lend back to the community with some interest. Poor people in the village, mainly daily labours and unemployed persons are benefitted through VSSU.

- *Micro enterprise:* VSSU is the fore front in micro enterprise development, specially the surroundings area of South 24 Parganas. Small entrepreneurs and traders take the opportunity with a high repayment rate from VSSU to invest money in their business.

- *Micro banking:* The micro banking style of VSSU benefitted most of the clients for small and medium industries and enterprises development. VSSU offers huge amount of funds as loan and it is utilized to expand the business. The businesses include ice factory, sunflower oil factory, clothes shops, and agricultural businesses and so on.

The on-lending programme of VSSU originated from the need of other NGOs in the community to access funds. This type of wholesale banking has been successful with VSSU lending Rs. 36 lakhs to 12 NGOs in the area with a 100 per cent repayment mode with 12 per cent per annum interest rate.

b. Social Development:

- *Education:* VSSU funds and operates a pre-school and primary school for some poor students. It has contributed Rs. 6, 00, 000 in scholarship to 40 high school students in the year of 2000, for continuation of their education by providing them monthly stipend, purchasing books and for other educational materials. The scholarship programme has been extended to MBBS and Ph. D. Level too.

○ *Relief operation:* VSSU provides food relief to 700 poor, needy and old people of the surrounding area. It also expands its hand to the poor by providing clothing of needy men, women, and children.

○ *Health and Sanitation:* VSSU donates for the poor people to have treatment from the deadly diseases. It has so far constructed 15 communal latrines to improve the hygiene level of the surrounding area.

VSSU also engaged with the cultural activities, environment and infrastructural development activities. Road side plantation, repairing of roads, market area, construction of culverts, rest sheds at major bus stops, construction of tube well, bridges, electrified households etc. are the some other activities provided by the VSSU.

5.2.6.2 NGO: Joygopalpur Youth Development Centre

The inhabitants of Sundarban have to survive as against crocodiles in water, obstructing the main path of their transportation/ movement and snake and tigers in land. But the people are politically aware. However, there prevails high level of inequalities in respect of economic and social developments as well as infrastructural developments such as schools, road communications, health centres, minor irrigations, rural industries, power supply, telephone communications, drinking water supply etc. The river embankments are not regularly attended by the concerned department resulting into regular erosion and finally enter of saline water in cultivable lands causing a great loss to their products and properties.

The Joygopalpur Youth Development Centre, situated at Sandeshkhali-II Development Block under North 24 Parganas District of Sundarban is an active NGO and is working for the development purpose. The basic information of the NGO is given below:

Box 5.2: Profile of Joygopalpur YDC:

1. Registration under West Bengal Societies Act, 1961 (W. B. Act. XXVI of 1961) on 2002 – 2003.
2. Affiliated under Nehuru Yuva Kendra, North 24 Parganas, West Bengal.
3. Associated with -
 - a) World Wide Fund for Nature – India, 172 B, LODI Estate, New Delhi – 110003
 - b) West Bengal Renewable Energy Development Authority
 - c) National Bank for Agriculture and Rural Development
 - d) Regional Centre for National Afforestation and Socio-Economic Development Board, Jadavpur University
 - e) Prof. Samar Kumar Dutta, Professor, Centre for Management in Agriculture of Indian Institute of Management, Ahmedabad
 - f) SPADE (Society for Professional Action in Development), Kolkata
 - g) American Information Centre, Kolkata
 - h) Society for Environment and Development, Kolkata
 - i) Centre for Environment Education, Bhubaneswar
 - j) Sundarban Development Board, Sundarban Affairs Department Government of West Bengal
 - k) Save the Depressed Children, Netaji Nagar, Kolkata -700 040
 - l) Haldane Society for Eco- Research and Enterprise Development (HSEED)
 - m) Fisheries Department, Government of West Bengal
 - n) North 24 Parganas Zilla Parisad, Barasat
 - o) North 24 Parganas District Rural Development Cell (DRDC).

Objective:

- To organize people in its working areas and create awareness for various issues in their locality, about their rights and their own development.
- To capacitate and strengthen the groups, village committees, central committee, SHGs for managing their respective organizations effectively and efficiently.
- To promote livelihood options among the members for increasing their income and curbing food insecurity.

- To educate the women on women rights, violence against women, women trafficking, exploitation, ill effects of dowry.
- To aware the members regarding NREGA and RTI acts so that they can avail the benefits of those acts for better life and livelihood.
- To conscious the community and provide services like education, health care specially among the children and women.
- To facilitate the process of linkage of organized groups with other resource sharing agencies to carry out their own development.

Main activities:

- Improvement of rural socio economic condition of the poor people (mainly SC / ST community)
- Formation of homogeneous Self help groups under SGSY and NABARD mainly with the mothers
- Regular monitoring of the activities of the SHGs.
- Marketing of the products of SHGs at reasonable price.
- Rural sanitation programme
- Adult education for literacy
- Village eco-tourism covering Sundarban package
- Pulse Polio
- Mental health camp
- Skill development training on different aspects - Aquaculture (fin fishes and crustaceans), animal husbandry, agriculture, horticulture
- Installation and maintenance of Solar Photovoltaic System for lighting the households and *ferry ghats* (man landing ghats)
- Micro-finance for upliftment of SHGs
- Regular awareness camp / seminars for
 - Disaster Management /control global warming
 - Anti trafficking (trafficking is virus in Sundarban)
 - Environmental pollution, global warming and plantation (mainly mangrove forestry and eco-forestry)
- Different types of fairs (*Mela*)
 - Organic Farming
 - To stop of Wild Meen Catching (wild shrimp collection)
- Development of Cold Chain System
- Rehabilitation of shrimp collectors bringing them under the clutches of SHGs
- Human development

Other Activities:

- Implementation of Rural Water Harvesting Scheme (Rain water Harvesting) of Sundarban Affairs Department, Government of West Bengal.
- Marketing of approximately 30 varieties of organic based rice and paddy seeds.
- Organic based horticulture, agriculture and aquaculture.
- Appointed as Nodal Agency / Implementing agency by NABARD in implementation of Village Development Plan in three villages of three gram panchayats (one each) of Sandeshkhali-II Panchayat Samiti, North 24 Parganas; Manipur GP-Joygopalpur, Korakati GP-Dhuchnikhali, Khulna GP - Khulna
- Deputing members in different organizations / blocks for Participatory Rural Appraisal
- Marketing of vermi compost manure.
- Conducted survey to install a total of approximate 400 Solar Photo Voltaic Street lights installed by WBREDA in the Sundarban region of South and North 24 Parganas Districts.
- Conducted household survey

- i) Running a laboratory for testing water quality, particularly drinking water of Sandeshkhali-I and II Blocks, being funded by UNICEF and guided by Rural Development Department, Government of West Bengal through North 24 Parganas Zilla Parisad under National Rural Drinking Water Quality, Monitoring and Surveillance Programme.
- j) Running two resorts – one at Dhamakhali (Sandeshkhali-II Block) and another at Hemnagar (Hingalgunj Block) on lease from North 24 Parganas Zilla Parisad.
- k) Supply of artificial limbs and aids and appliances (Wheel Chairs, Tri-Cycles, Blind stick, Walking Stick, Braillite Slate, Axilla Crutches, Elbow Crutches, Hearing Aids etc.) to the disabled persons (Orthopedically handicapped having lower limbs deformity, blind in two eyes, deaf and dumb).
- l) Arrangement for medical treatment and free distribution of medicines as far as practicable.
- m) Preparation and supply of rural latrine equipments
- n) Arrangement of trainings on smokeless woven and usefulness of the same
- o) Arrangement for capacity building on different aspects

The SHG members are often engaged in different developmental activities, like:

- a) Aquaculture – fresh water, brackish water (including giant fresh water prawn, tiger prawn, mud crabs etc.)
- b) Animal Husbandry - Cattle, Pig, Duck, Poultry, Goatery etc.
- c) Vermi- compost
- d) Horticulture
- e) Agriculture
- f) Fish by- products – kurkura, pickles, papad etc.
- g) Terakota
- h) Jari and batik print
- i) Sauce preparation
- j) Spices
- k) Tailoring

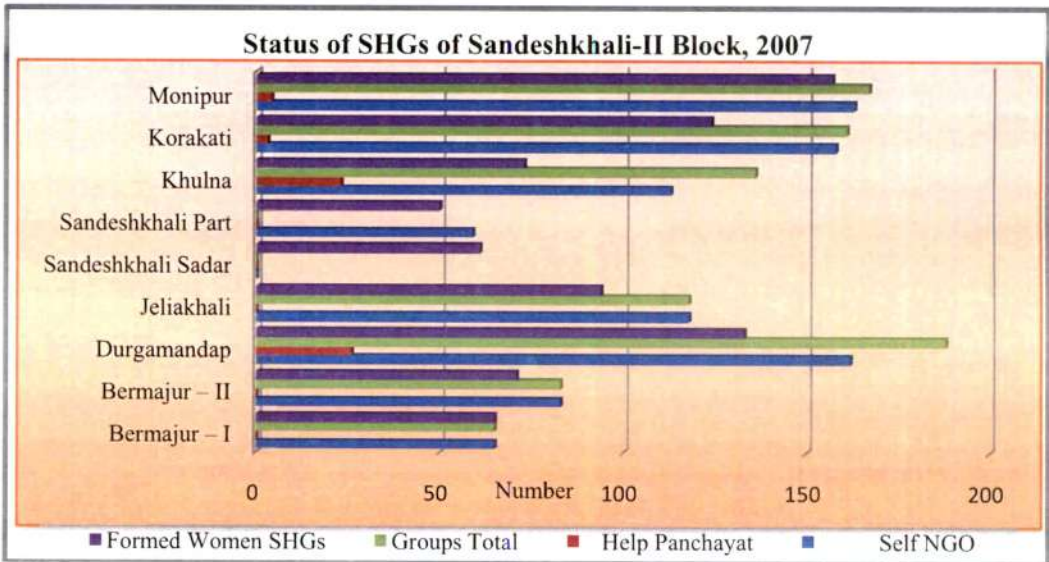


Fig 5.2 Data Source: Joygopalpur Youth Development Centre, 2007

Status Report of SHG: YDC has been engaged in the development and management of SHGs in the entire GP of Sandeshkhali-II block. Self NGOs are more in number in all the GPs than women SHGs. Durgamandap, Sandeshkhali, Khulna, Korakati, Monipur are the GPs where Panchayat helps some of the NGOs and SHGs, but the number is not too good. Therefore a total of 1000 Self NGOs are working in the block including 828 women SHGs.

5.2.7 Role of Co-operative societies:

A large number of co-operative societies are also involved to serve the people of Sundarban in the corresponding blocks. But the poverty of most of the inhabitants in the area has become the major drawback of these involved societies for the increment of their working capital and increase in the number of the membership. Among all the Sundarban blocks, Sagar in the South 24 Parganas and Hasnabad of the North 24 Parganas district occupy the maximum number of co-operative societies.

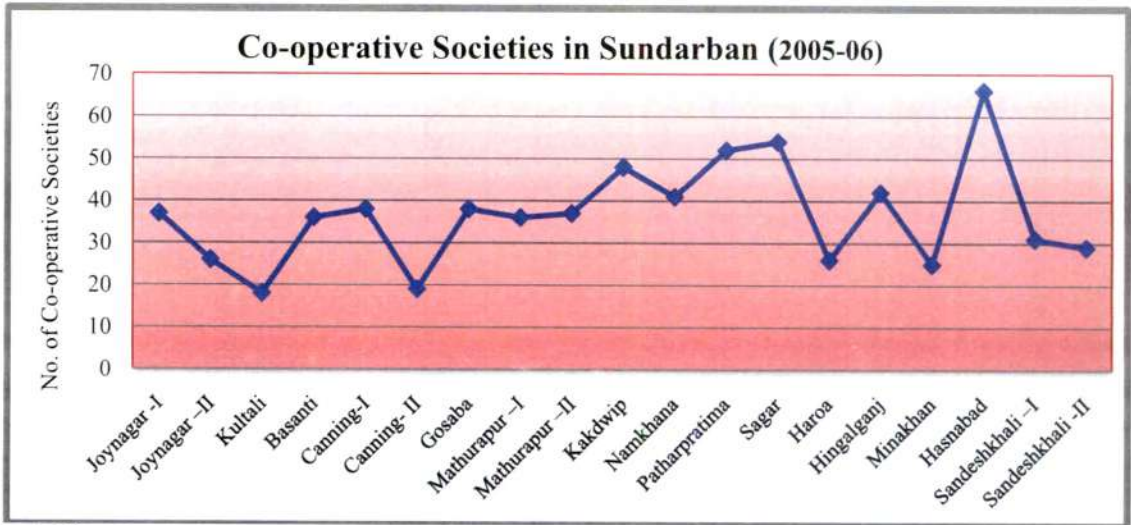


Fig. 5.3 Data Source: Statistical Handbook, South and North 24 Parganas, 2006

The total number of the members and working capital was very high in Patharpratima block which is far ahead than the other respective blocks of Sundarban, followed by Sagar, Namkhana, and Mathurapur-II blocks. Most of the BPL people are engaged in their money savings and taking loans from these co-operative societies due to their availability rather than the post office and banks.

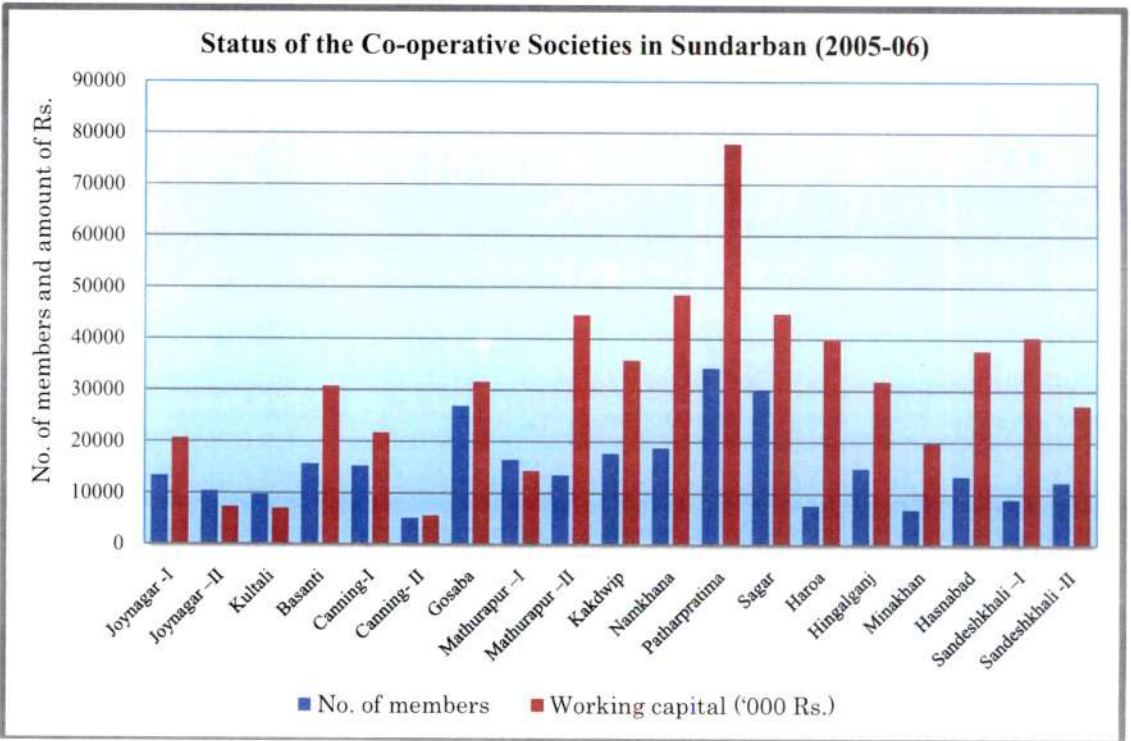


Fig 5.4 Data Source: Statistical Handbook, South and North 24 Parganas, 2006

5.2.8 Remarks:

The administrative structure of West Bengal in the district level was good in respect to decentralisation of planning for the rural development. Moreover, Sundarban Development Board (SDB) and Sundarban Affairs Department (SAD) were introduced separately for the development of different sector of rural development of Sundarban. The administrative organisations of the two corresponding districts, SDB, SAD and different NGOs are actively engaged in the whole development processes but still Sundarban was not developed so much as desired. This is mostly because of the unawareness of the people of the locality about the facilities given by the Government and NGOs. Some of the blocks which are developed somehow better than the rests are mostly due to the good governance and people's involvement. In those blocks, cooperative societies, NGOs and SHGs are running very successfully. They make the people more aware about their involvement in the income generation process as well as in the development of different socio-economic sector. Some of the NGOs have therefore emphasized in the micro finance process. Moreover, the decentralised planning process helps the local government, i.e. Panchayat a lot to use their power and capacity in this regard.

5.3 Role of Sundarban Affairs Department (SAD) and Sundarban Development Board (SDB):

5.3.1 Introduction: The overall development of Sundarban is largely depends on its organisation. Sundarban Affairs Department and Sundarban Development Board are playing very important role in this regard. Different developmental programmes and activities were initiated by these two departments. These department and board are always actively engaged in the development activities through annual plans. But different intra-departmental non-cooperation and less people's involvements arises as serious drawbacks for the development. Sundarban Affairs Department and Sundarban Development Board were the two distinct organisations responsible for different plan wise development of Sundarban region. Development activities of other organisation and NGOs are controlled by these two departments. World base different organisation was also actively engaged into developmental activity in the Sundarban region with the collaboration with these two departments. Thus, it can be stated that these two are the most populated and important organisation solely responsible for the overall development of Sundarban.

5.3.2 Role of Sundarban Affairs Department (SAD):

In 1994, the Sundarban Affairs Department was formed effectively institutionalizing the SDB functions and activities created during the International Fund for Agricultural Development (IFAD) project. In 1995 an inter-ministerial committee was formed which include Departments of Finance, Transport, Tourism, Fishery, Public Works, Health and Family Welfare, Forest, Public Health, Engineering, Power, Agriculture, Irrigation and Waterways, Sundarban Affairs etc.

Table 5.3: The activities that are operating by the committee are as follows:

It ensures the integrated development of the all Sundarban blocks through effective coordination between the districts of North and South 24-Paraganas.
The plans and programmes were evolved by District Planning Committees of the North and South 24 Paraganas by the Department.
It oversees and coordinates implementation of development programmes.
The Department is engaged to identify and assess special problems of Sundarban area.
It tries to find out the critical gaps that may exist in the planning as well as in implementation of various programme of the area.
The Department suggests and recommends the need and measures of appropriate plan for the entire area.

Source: Sundarban Affairs Department (SAD)

The Sundarban Affairs Department has implemented the following activities through various divisions of the Sundarban Development Board.

- (a) Promotion of social, economical, and cultural advancement of the people.
- (b) Development of the livelihood pattern through implementation of socio-economic and allied schemes, research, training, and rural technology.
- (c) Engagement in creation of infrastructure facilities through improvement of transport and communication, water resources, irrigation and drainage.
- (d) Conservation and development of natural resources for ecological balance of this sensitive bio-sphere.
- (e) Operation of various awareness programmes, etc.

The operation area of Sundarban Affairs Department spread over 16 Police Stations and 19 blocks/ Panchayat Samities of North and South 24 Parganas districts. The administrative set up of Sundarban is given below:

Table 5.4: List of sub-division, police station and blocks of Sundarban:

<i>District</i>	<i>Sub-Division</i>	<i>Police Stations</i>	<i>Blocks / Panchayat Samity</i>
South 24-Parganas	Kakdwip	Sagar, Namkhana, Kakdwip, Patharpratima	Sagar, Namkhana, Kakdwip, Patharpratima
	Diamond Harbour	Mathurapur, Raidighi	Mathurapur-I, Mathurapur-II
	Baruipur	Kultali, Joynagar	Kultali, Joynagar-I, Joynagar-II
	Canning	Canning, Basanti, Gosaba	Canning-I, Canning-II, Basanti, Gosaba
North 24-Parganas	Bashirhat	Hingalganj, Hasnabad, Sandeshkhali, Haroa, Minakhan	Haroa, Minakhan Hingalganj, Hasnabad, Sandeshkhali-I, Sandeshkhali-II.

Source: Sundarban Affairs Department (SAD)

After so many years of developmental experience, the block profiles of Sundarban covers wide regional varieties and imbalance in the demographic features, land use pattern, irrigation status, agricultural production, educational institutions, health facilities, financial institutions, fisheries, live stocks, physical infrastructures available etc.

5.3.3 Role of Sundarban Development Board (SDB):

In the 21st century, at the day of globalization, Sundarban has drawn universal attraction with its unique Biosphere Reserve and World Heritage site, plethora of potentials and problems. The Indian Sundarban symbolizes the eternal global dilemma and conflict between developmental and ecological values throughout the ages. In India, Sundarban Development Board (SDB) was constituted in 1973 to meet the various challenges over 19 blocks of South (13 blocks) and North 24 Parganas (6 blocks) districts of West Bengal. It was placed then under the Sundarban Area Branch of the Development and Planning Department. In January 1994, Sundarban Development Department was created to give an impetus to the development efforts and the Sundarban Development Board has been placed under the department. Sundarban Development Board is committed to continue its constructive works through concerted and collective endeavours of all concerned departmental activities. The department is also trying to augment the resource base through matching increase in budgetary allocation by the State Government.

In March 1973, the SDB was formed by Calcutta Gazette Notification, by the Resolution No. 80/2c-6/73. The functions and power of SDB was tabulated below:

Functions: The functions of SDB are tabulated below:

Table 5.5: List of functions of SDB:

•	Formulate integrated programme for effective utilization of resources.
•	For the development of the region, SDB coordinate execution of plans.
•	Supervise the execution of any project as a whole or part of it.
•	Review and evaluate the progress of implementation.

Power: The power of SDB is tabulated below:

Table 5.6: List of power of SDB:

•	SDB utilize funds as instructed by the State Government and placed at its disposal or other agencies for the purpose.
•	For the proper performance of the Board, create posts and pay scales on the terms and conditions with State Government approval.
•	The Board exercise disciplinary control over staff.
•	It subordinates financial authorities and administrative powers and duties.
•	The Board receives appropriate text, budgetary material, maps, plans, permits and other data of Government agencies, authorities whose activities affect economic, social, civic and physical development.
•	The Board actively receives funds from Government and with State Government approval from other sources domestic and international, public and private, disburses such funds.
•	To achieve an integrated effect and an efficient utilization of resource, the SDB revises and amend plan of other public agencies, authorities and organizations.
•	The Board may constitute as many committees consisting wholly or partially of members for such purpose.
•	To achieve its objectives and exercise other powers as the Government may prescribe by the Board.

Source: Sundarban Development Board (SDB)

The Sundarban Development Board has been implementing the work-Programme through its four working divisions, like-

* **Engineering Wing:** Sundarban Development Board comprises the Engineering Wing with one circle consisting of five divisions and nine Sub-Divisions. Moreover, another division namely **Survey Investigation and Design Division (SID)** has been created in 2003 for preparation of drawing, design and estimates of different schemes/projects of the Board. In June 2006, a new working division viz. Civil Engineering Division No.-IV has been created. This division has started functioning from the financial year 2007-08. The operation area under the Engineering wing is as follows:

Table 5.7: Engineering divisions and their operational area:

<i>Engineering Divisions</i>	<i>Operational area under the Divisions</i>
CED - I	Mathurapur - I and II, Joynagar - I and II, Kultali Blocks and Heramba gopalpur and Lakshmijanardanpur GP under Patharpratima Block
CED - II	Sagar, Namkhana, Kakdwip, Patharpratima (excluding 2 GPs)
CED - III	Hingalganj, Hasnabad, Sandeshkhali - I and II, Haroa and Minakhan
CED - IV	Canning - I and II, Basanti and Gosaba

Source: SDB

* **Agriculture Division:** Agriculture and allied activities are implemented through 27 Growth Centres located in 19 blocks of Sundarbans under the supervision of three Branch Offices namely Kakdwip (9 Growth Centres), Canning (10 Growth Centres) and Nezat (8 Growth Centres) Branch Offices.

- * **Social Forestry Division:** Under this division, the activities are implemented through three Range Offices and six Beat Offices. The Range Offices are located at Namkhana, Canning in South 24-Parganas and Hasnabad in North 24-Parganas district.
- * **Fishery Division:** This division mainly supervises the activities related to the fishing sector. Recently, this division has one Fishery Project at Jharkhali in Basanti P.S. of South 24 Parganas. Apart from these working divisions there are Administrative Division and Planning, Monitoring and Evaluation Division under Sundarban Development Board.

5.3.3.1 Board Structure and Administration: There are a level of hierarchy in the board structure and its administration of SAD and SDB. Different segments under the board distributed through six levels. All these segments are responsible for the various activities related to the development of Sundarban. The board structure is given below:

Board Structure of SAD and SDB

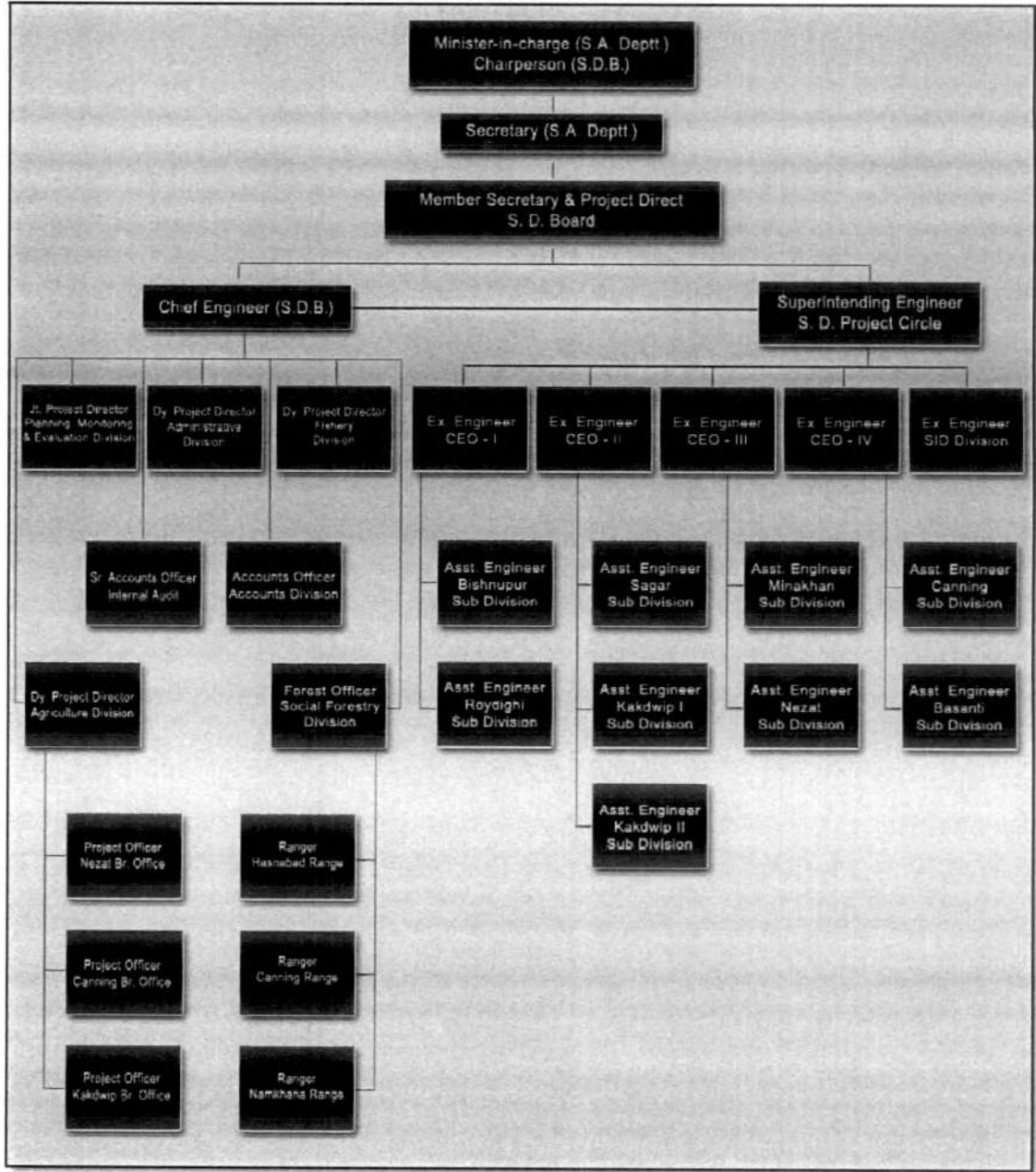


Fig. 5.5

Source: SDB

5.3.3.2 Sundarban Infrastructure Development Corporation: Sundarban Infrastructure Development Corporation of SAD was also very active to develop the Sundarban area through its different activities. There are eight level of the structure of the corporation. The structure of the corporation is given below:

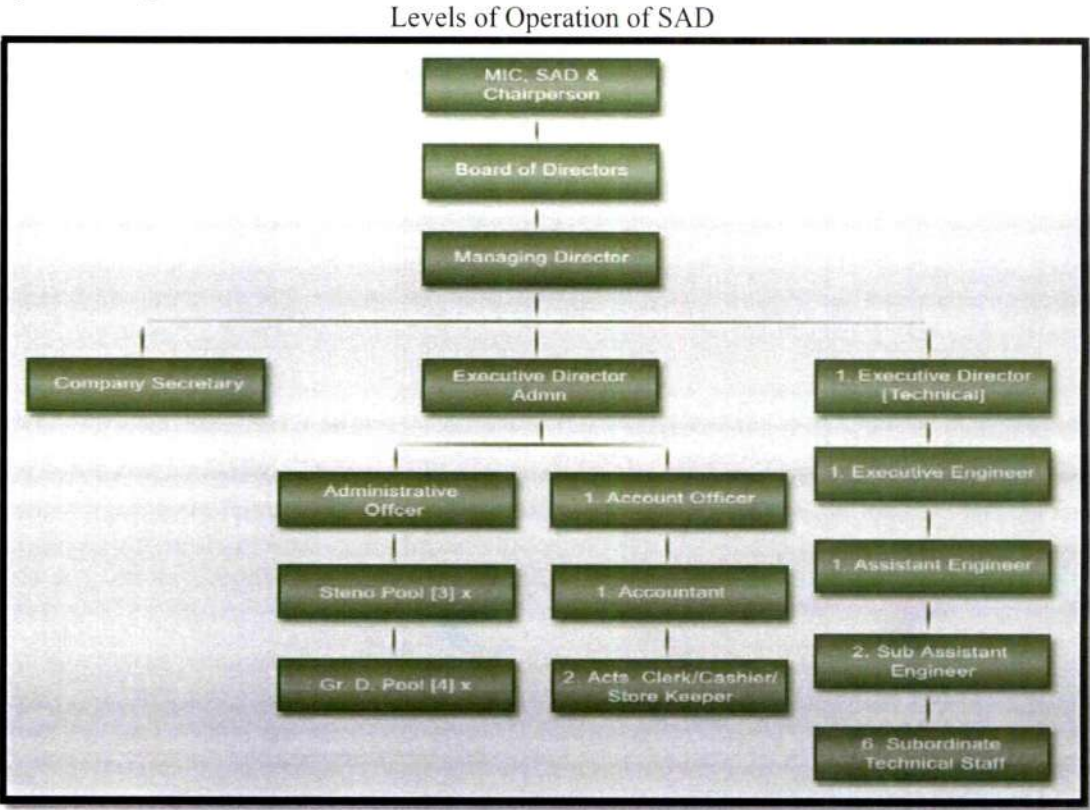


Fig. 5.6

Source: SAD

5.3.3.3 Programmes implemented by the Sundarban Development Board:

The marked backwardness of the Sundarban region could be attributed to the lack of road connectivity and transportation among other infrastructure shortcomings and thus Sundarban Development Board has to increase road and bridge connectivity and other infrastructure of civil nature. In 1982, engineering wings were created with the introduction of IFAD Project and since then civil work programmes have been executed as one of the major programme elements. In Sundarban, agriculture and allied programmes is being the prime activity, supports in the fishery, forestry etc. sector has also been emphasized.

Major Programmes at a glance:

- 1) Development of transport and communication infrastructure with special emphasis on construction of high quality roads and bridges and jetties etc. including rural roads in island areas. It also includes extension of all-weather usable roads and the brick paved roads.
- 2) Creation of irrigation facilities through rain water harvesting for increasing cropping intensity and crop rotation system to create crop diversity.
- 3) Improved and support for strengthening of river embankments for flood control and development of drainage network for the multi-purpose uses.
- 4) Sustainable use of local resource base by supporting the extension of power supply through conventional and non-conventional energy sources especially in the island remote villages.
- 5) Raise the standard of living and improvement of livelihoods and social well-being of the inhabitants through increasing productivity in agriculture and allied sectors.

- 6) Conservation of biodiversity of the entire Sundarban through regeneration of forest both in inter-tidal area (*charlands*) and in the country side.
- 7) Providing supports and benefits for improved social services with special emphasis to backward classes and disadvantaged groups of the society for the community development.
- 8) Providing rural marketing facilities through creating infrastructure for storage and marketing of agricultural and related produces.
- 9) Generation of special programmes for women self help groups (SHGs) for generating additional employment opportunities.
- 10) Sustainable use of human resource through creating eco-tourism infrastructure and logistic support for the improvement of this sector keeping in view the sensitive biosphere and scenic beauty of Sundarban.
- 11) Creation of additional employment through implementing labour intensive projects and mobilization of resources for productive purposes.

5.3.3.3.1 Agricultural Programme: As the soils of Sundarban are deep fine textured, heavily structured and slow draining, the effective area of agricultural land in Sundarban is only about 3,15,500 hectares. About 62 per cent of total cultivable land of this region suffers from elevated salinity during dry season, from intrusion of saline water, capillary action, and is low lying in nature. Moreover, soil drainage is generally inadequate and deep water stagnation occurs mainly in monsoon season.

At present near about 20 per cent of the agricultural land in this region is multi cropped land. In this region 9 per cent of the farmers are classified as small farmers and 35 per cent as marginal farmers. Apart from this, the concentration of bargadars, pattaholders and landless agricultural labourers are very high. In 2001, per capita land was 0.084 hectares. The farming community consisting of small and marginal farmers and bargadars are typically focused on subsistence production and their prime focus is the food security for their survival. The agricultural programme consists of the following schemes:

- (a) Distribution of fruit plants amongst school students of this region.
- (b) Distribution of agricultural inputs during rabi season for bringing more areas under double cropping with non-traditional crops like oil seeds, pulses and cotton etc. The major thrust of this scheme is to create additional employment opportunity for the local people and to bring change in cropping pattern.
- (c) Extension of mushroom (oyster) cultivation.
- (d) Introduction with a greater extension of cotton cultivation.
- (e) Demonstration of organic farming.
- (f) Training and Workshop on the use of bio-fertilizers and bio-pesticides.
- (g) Training and Workshop for the development of agriculture and allied activities etc.

Rabi Programme: In recent years, farmers of the area are provided with high quality seeds mainly high yielding varieties and hybrid seeds for cultivation in some specific area. The programmes are chalked out keeping in view the agro- climatic conditions, soil status and available irrigation facility etc. of the area. In this programme the farmers whom the facilities are being provided, are selected in consultation with local panchayats and for certain portion with active NGOs.

The activities relating to agriculture and allied activities are implemented through 27 Growth Centres located in the entire 19 development blocks of Sundarban under the supervision of three Branch Offices namely Kakdwip (9 Growth Centres), Canning (10 Growth Centres) and Nazat (8 Growth Centres) Branch Offices.

Agriculture Extension Programme: In Indian Sundarban, almost 85 per cent of the population is dependent on agriculture; the socio-economic development of the inhabitants of the region is also directly related with the advancement in agriculture. Resultantly it is one of the major thrust areas of the SDB. But, the major problem of agriculture of the area is intimately related to salinity and

water logging and scarcity of irrigation. The vagaries nature of the monsoon and the inadequate drainage facility during the dry season, affects the yield of paddy crop very adversely.

As the maximum cultivable land is mono-crop in nature, a huge portion of land remains fallow during dry season because of shortage of fresh water for irrigation. Moreover, most of the land holdings belong to the small and marginal farmers who operate farming activities with very low capital investment. In recent days, through the Sundarban Development Board (SDB), a series of interventions like, better drainage system, early release of land, increased irrigation potential and promotional activities, the productivity as well as cropping intensity in the entire area has been raised in a very slow rate. In the rabi cultivation season, the SDB has implemented the agricultural programme for marginal and small farmers, bargadars and pattaholders through supply of improved agricultural inputs. This support has also been provided during Kharif season for raising HYV paddy and some vegetable products based on the irrigation facilities. Under the programme, improved seeds and fertilizers are provided to the beneficiaries against a very small (about 10 per cent of the actual cost) amount of token money. The beneficiaries are selected by the Growth Centres of the SDB in consultation with the local Panchayats and NGOs. For the improvements of agro-forestry, some plants have been distributed amongst school students to transplant in their respective homestead area. Cultivation of mushroom (only for women beneficiaries) has benefited the rural folk. About 27 Growth Centres of the Board have implemented the scheme under the supervision of the Branch Offices spread over the whole Sundarban region.

5.3.3.3.2 Fishery Development Programme: The Sundarban Development Board with the launching of IFAD-assisted project has introduced the programme related to brackish aquaculture and fish farm activities. Under the programme fish culture operation is running in Jharkhali Fish Farm under Basanti Block of Sundarban having a total land area of almost 50 hectares [water area 12 hectares].

5.3.3.3.3 Civil Work Programme: Sundarban Development Board generally executes civil works, like-connectivity, enhancement of irrigation potential, drinking water supply etc. Some of these programmes are discussed below:

Construction of Road and Culverts: Brick paved and water bound macadam road has been constructed by the SDB in all the 19 blocks of Sundarban along with culverts to provide all weather road benefits. Up to June 2007 more than 3000 km. of brick paved and water bound macadam road have been constructed. As the entire Sundarban area is criss crossed with the river network, the provisions of construction of jetties have been made for promotion of landing facilities particularly in the riverine areas. Three types of jetties viz. R.C.C. type, Brick Block and Rail Posts have been taken up and around 184 jetties have been constructed (up to 2007) in entire Sundarban.

Rainwater harvesting/Irrigation/Excavation of derelict channel: For the improvements of agriculture and for creating additional irrigation potential through harvesting of rainwater, derelict channels have been re-excavated. This has added to the increase of irrigation potential and cropping intensity as civil work programme.

Master Sluices and Closure: These have been constructed on diversion channels to provide controlled drainage during monsoon season and irrigation water during the dry season from the stored sweet water.

H. P. Sluices: Hume Pipe Sluices have been constructed and main drains are also been excavated to provide outlets for excess water into the rivers/tributaries and prevent saline water intrusion. One single vented H.P. Sluice provides drainage facility for an average area of 2.5 sq. km.

Rural Water Supply: The SDB has implemented scheme of sinking tube wells for supply of potable drinking water to the people inhabiting in 19 blocks of the region. Board has installed more than 600 tube-wells up to July 2007.

Buildings: As a part of the civil work, some buildings have been constructed which include office-cum-rest sheds, staff quarters and training centres. The buildings are located at Hingalganj, Hasnabad, Nezat, Sonakhali, Jharkhali, Moukhali, Gosaba, Kakdwip, Helen, Moushuni and Gangasagar.

Installation of tube-wells: SDB has been installing tube-wells for supply of drinking water for which considerable fund has since been earmarked. But the problems of some villages of Sundarban are yet to address with alternative sources of water. For the speedy execution of larger schemes and projects, in a few cases the works are entrusted with State Government Corporations and State Government Managed Companies along with the Engineering Wing of the Board, though it implements mainly on the civil works. The SDB also participates in the implementation of some big bridges, power supply etc. through sharing of funds. The civil works schemes of the Board are implemented under three Major Heads of Plan Outlay. These are - *Core Plan, Rural Infrastructure Development Fund (RIDF), Additional Central Assistance (ACA)*.

5.3.3.4 Social Forestry Programme: In late 1981-82, the Social Forestry Programme of the Sundarban was initiated under IFAD-assisted project by the SDB. The prime objective of the programme was to create provision for constant supply of fuel wood for the rural folk and maintenance of ecological balance by departing the people from cutting of the wood from the mangrove forest area. Preventing soil erosion and increase plant population etc. were also added with the objective. Creation of Mangrove Plantation, Strip Plantation and Farm Forestry [distribution of plants] have been adopted under the scheme by the SDB. These programmes are implemented by the Social Forestry wing of the Board through its three Range Offices located at Namkhana, Canning and Hasnabad and six Beat Offices at Sagar, Raidighi, Joynagar, Canning, Nezat and Hasnabad. Some glimpses of social forestry programmes are:

Mangrove Plantation: The plantation of mangroves are the beauty of the region and at the same time they have maintained the ecological balance of Sundarban, deforestation of these on the other hand has seriously affected the entire ecosystem and the surrounding environment of Sundarban. In recent course of time, the tidal rivers are under serious threat of erosion and the river embankments are becoming vulnerable day by day. Moreover, the land structures and the siltation process of the rivers in this deltaic region are disturbed very much and it adversely affected the natural habitat of flora and fauna in the inter-tidal zones of Sundarban. To overcome these serious problems, SDB undertook conservation of mangrove forest in the inter-tidal zones of char lands and mudflats of the entire region. SDB followed these plantation techniques by: i) subsequent transplantation in the silted up trenches particularly on the islands, ii) raise the nurseries of mangrove seedlings and iii) direct plantation of mangrove seedlings. Due to the support of local inhabitants, panchayats and NGOs, the SDB has so far been able to successfully manage the newly created mangrove forests in considerable areas of char lands and adjacent fringing villages.

Farm Forestry: The seedlings of new plant species of timber, fuel and fruits are raised for distribution amongst the intending households and organizations for plantation through this programme. SDB has created a big chunk of mangrove forest in Bhangankhali GP of Basanti Block along the charlands of Matla River. The SDB is very active in this matter and local people also spontaneously joined for transplantation of mangroves in the damaged char lands.

Strip Plantation: The SDB is also active in strip like plantation works mainly on the both sides of roads. Initially plantation was done for timber, fodder, fuel etc. but the trend has been changed in recent years and the present emphasis has been given on plantation of fruit bearing trees. The

Board also has framework of policy for involving NGOs and voluntary organizations in planning and maintaining along with the engagement of local people, departmental mazdoors and hired labourers in this process

5.3.3.3.5 Non-conventional Energy: The geographical condition and less connectivity of Sundarban make the conventional electricity supply in all villages seems to be a little bit impossible. The SDB undertook some programmes of non-conventional energy sources to provide power supply to the hostels of academic institutions and to individual households of remote riverine areas. SDB organizes programme for the areas which not are connected with conventional Power Supply. They are to be brought under the installation, of Solar Home Lighting Systems (SHLS) in the hostels attached to the schools. Almost 250 units of SSLP (Solar Street Lighting System) have been installed at Ferry Ghats, Jetty Ghats, Markets, and Hospitals etc. of entire Sundarban area. To provide SHLS to the tribal households of Sundarban on 100 per cent subsidy basis has also been taken up by SDB. Almost 160 units of SHLS had been installed in 52 School Hostels under subsidy programme of the State Government during the year 2004-05. SDB had to pay an amount of Rs. 6,000/- per unit of SHLS and the total expenditure for the programme was about Rs. 9.6 lakhs. The West Bengal Renewable Energy Development Agency (WBREDA) was entrusted with the work of installation and maintenance of the SHLS.

Solar Energy: The Sundarban has become a fertile ground for the use of solar and other renewable forms of energy because of its openness. Now a day, the abundance of sunshine in this region has been counted as a base for an alternative source of energy. The supply of electricity through the renewable sources of energy has the potentiality to enhance the income of local poor people who are primarily engaged in activities in fishing, woodcutting, and honey collecting. At present, the market for solar-operated electricity grew incrementally catering to all sections of the society in the entire region. Today the Sundarban have solar and other renewable energy set-ups which provide electricity to the entire remote villages.

The lives of the villagers of Sagar block have been changed forever after the SPV (solar photovoltaic) programme was initiated as on priority basis by the Ministry of Non-Conventional Energy Sources. Almost half of the villages of Sagar block are electrified and more than 50 per cent of the total electricity consumed is generated through solar energy which benefited about 1400 families. In February, 1996, the first 26-kwp power plant was established at Kamalpur village having only 19 consumers and a drinking water supply scheme of the island is also energized through these power plants. At present, these solar power plants are being operated through the local rural electric co-operatives on a commercial basis. From a study of Ramakrishna Mission entitled 'Initiative Impact Study' in 2000, which stated that-'Consumption of kerosene, which was the only source of lighting in the households prior to solar lighting systems, has been reduced by 7 liters per month on an average and the less use of kerosene minimizes the indoor pollution and prevents the diseases related with it too'(SDB report), it is clear that the impact of renewable energy on the lives of the people is palpable. Above all, they cause neither air, noise or water pollution. This change not just makes tourists happier, but also be relatively benign to nature of Sundarban.

Biogas Energy: The biogas energy power station was introduced in the Chotomollakhali Island of Gosaba block of Sundarban. This is one of the successful energy programme for the development of Sundarban islands. A detail of the energy station was given below:

- The wood biomass gasified power station operates for six hours daily in the evening has been in operation in June 2001. Biomass gasification is basically conversion of solid biomass into a combustible gas mixture also known as 'Producer gas', which is essentially low gas and the process produces carbon monoxide as well as hydrogen both of which are combustible. This gas is cleaned and directly fed into an already running internal combustion engine that runs the turbine for generation of electricity. For producing each unit of electricity, the power station consumes about 0.13 litre of diesel and a kilogram of dried wood chips.

- The generating unit has a distribution network covering about half of the Chotomollakhali *mouza* catering to about one-third of the *mouza* population; each of the consumers has a meter to record consumption, as there is no restriction to the extent of consumption and type of use as defined within the categories of domestic, commercial and industrial.
- The power station has a lifespan of 15 years, which is not factored in the tariff structure. As of now the revenue that the power station generates is inadequate to meet running expenses due to steep upward revision of diesel price in a period of 3-4 years. Due to this, WBREDA wanted an upward revision of tariff in 2005 but the consumers resisted on the ground that if power generation is biomass-based then diesel price rise is irrelevant. The villagers refer to the power station as the 'wood electricity project'. Again, due to non-payment of dues by consumers there is a gap of about 40 per cent between potential revenue and collected revenue on a monthly basis.
- Irregular supply of biomass widens the gap more; the power station requires about 400 kilograms of dried wood biomass every day. Although WBREDA claims to raise seven hectares of energy plantation every year up to a total of 40 hectares, the first plantation effort was made when construction was well underway.
- The power station was commissioned with the Chotomollakhali market (with over 350 shops) as the main load centre. The market is one of the largest in the Sundarban islands but has gone into decline due to infrastructure development elsewhere. The Chotomollakhali-Dhamakhali boat service during the day has been discontinued around the same time; the night service is still in operation and is mainly used by fish traders. One of the probable reasons for this erosion of prominence of the Chotomollakhali market is due to the construction of an all-weather metalled road on the opposite island to the north, the road leads up to Dhamakhali, a road head on the mainland. This power station is capable of driving small industrial machinery but the nearest saw mill continues to run on diesel since the mini-grid has not reached the area where the saw mill is located.
- Though it may not be possible to currently meet all the energy requirements from renewable sources, regions such as the Sundarban do provide the opportunity to bypass the pitfalls of conventional development, as well as operationalise the strategy for sustainable development if the technical and management issues are addressed and other fuels are brought within the ambit of energy planning. As of now rural electrification based on the general aim of: (a) raising the standard of living of rural people, and (b) boosting the rural economy.
- It is apparent that the standard of living improves only in terms of improved lighting arrangement and that too for those who can afford and are within the distribution network; not more than 35 per cent of the population in each of the *mouzas* can afford electricity and are within the distribution network. The majority of the population remains outside the ambit of the projects.
- A boost to the local economy or economic progress due to electrification is not apparent on either of the markets. Householders are charged at a lower rate than commercial or industrial consumers; in a way encouraging households rather than movers of local economy to become electricity consumers.
- The Bagdanga market is expanding while the Mollakhali market is losing significance due to other interventions elsewhere such as better road and rail connectivity. Moreover, it is usually one of a number of changes taking place in rural areas at a given point of time, which in synergy contribute to rural development. Supply of electricity in the absence of resources, skilled labour, entrepreneurship, transport and markets cannot bring about an expansion of the economy and production.

5.3.3.3.6 The Awareness Programme: Over the last few years a conscious effort has been initiated to enhance people's awareness on various issues of development activities, social importance like environment protection, conservation of biodiversity, preservation of cultural heritage through observance of Banabibi Utsav, observance of Sundarban Dibas, promotion of Swechhasram activities. PRIs and some NGOs have also been involved in the overall activities of the SDB to optimize the output so far as the developmental matter is concerned.

SDB acts with the belief that conservation is people based, as nature responds to human behaviour. Therefore, conservation aspects include the conservation of the existing portfolio of development assets like natural resources, social and physical assets including human resources. Moreover, such conservation target not only includes the resources but does target to the inappropriate human behaviours towards resources. Considering this issue, SDB has taken up different programmes to generate awareness amongst the people to conserve and save Sundarban and in this purpose they celebrate two major events like *Banabibi Utsab* and *Sundarban Day*. In 2011, from November 27 to December 4 is the Sundarban Banabibi Utsab held on The Canning-I block.

Need for the Awareness Programme: The Indian Sundarban Region has a total area of 9630 Sq. km. and 426,400 hectares of Sundarban Mangrove Forest which is completely protected and consisted of:

- (i) The Sundarban Tiger Reserve (STR).
- (ii) The Sundarban National Park (SNP).
- (iii) The Wildlife Sanctuaries of Sajnekhali, Lothian and Holiday Islands;
- (iv) The Reserve Forest, west of Matla River.

The Sundarban Mangrove Forest is also of direct importance to a large proportion of the inhabitants because they largely depend on the mangrove forest for numerous basic needs and also for natural resources like water, flora and fauna for their livelihood. This ecosystem is the home to a number of globally threatened species such as tiger (Royal Bengal Tiger), estuarine crocodile, dolphins and variety of migratory and resident bird species and about 61 mangroves and more than 600 animal species have been enumerated in the Indian Sundarban of which a good number are classified as rare and endangered. In spite of its global importance and recognition, Indian Sundarban is facing serious threat of vulnerability of local communities related to cyclone and flooding. Therefore, more awareness should be created for strengthening and maintaining of 3500 km. river embankments in fact.

5.3.3.3.7 Infrastructural Development: The Sundarban Affairs Department has been earmarked for the implementation of civil works schemes with the budgetary allocation for creation of physical assets. The major work components are:

Table 5.8: Construction of rural roads by SAD:

(i)	Construction of rural roads
(ii)	Development and up gradation of existing brick-paved roads. to WBM / Concrete / Bituminous Roads
(iii)	Construction of Jetties
(iv)	Construction of Bridges
(v)	Construction of HP Sluices and Culverts
(vi)	Re-excavation of derelict channels and ponds for rain water harvesting
(vii)	Sinking of tube-wells for supply of drinking water etc.

Source: SAD

5.3.3.3.8 Development of Communication: To build up the communication infrastructure to link up the rural and island areas with markets, schools, health centres and ferry ghats, etc. mainly by rural roads. The development of communication infrastructure has facilitated the transportation and movement of marketable surplus of the areas to nearby nodal centres and transportation of inputs and daily needs of the rural mass. Easy access to the nearby nodal centres, towns and cities also helps the inhabitants of these remote areas to avail the health care and education related facilities.

In this purpose, apart from creation of a vast rural road network having a total length of about 3000 km. and construction of about 180 *jetties* in Sundarban, a worth mentioning project that has been undertaken by the SDB in recent years is the construction of some important double lane road bridges. These bridges will set up linkage with the island villages of Sundarban with that of the

mainland and will open up scopes and some new hopes of development in different rural sectors of the entire Sundarban.

5.3.3.4 Main Institutional Stakeholders and their Functions:

Table 5.9: List of institutional stakeholders with functions:

Government Departments	Major Role Functions
Sundarban Affairs Department,	<ul style="list-style-type: none"> o Implementation of Special Area Development Plan o Co-ordination and integration of plans o Performance assessment and monitoring
Sundarban Development Board	<ul style="list-style-type: none"> o Enforcement of the Indian Forest Act, Forest (Conservation) Act. o Statutory role for protection of forests and wildlife
Forest Department	A development role for- <ul style="list-style-type: none"> o Non-Social Afforestation o Soil Conservation o Control and improvement in timber yield
Fisheries and Aquaculture Department	<ul style="list-style-type: none"> o Statutory role for conservation of fish species through regulated harvest from the marine sector o Creation of infrastructure for fishing activities by construction of fish landing centers/jetties minor fishing harbors o Survey and statistical wing in each districts o Providing kits/inputs to the fish farmers' cooperatives for improved fish production and improvement in their livelihoods o Operating ice plants through BENFISH o Undertaking skill up gradation and alternative income generation programmes
Agriculture Department	<ul style="list-style-type: none"> o Providing information on current agriculture practices o Schematic implementation of programmes through village/block/district level network o District/block level seed farms o Sub-divisional laboratories for soil analysis, pest management o Administering GOI programmes (Integrated Cereal Development Programmes in all Sundarban blocks) o Providing services for fertilizer use, soil conservation and improved agriculture practices
Panchayat Department	<ul style="list-style-type: none"> o Statutory role for the three-tier Panchayat body i.e. Zilla Parishads (district level), Panchayat Samity (Block level) and Gram Panchayat (village level) o Advisory and recommendatory roles for other departments operating in the region o Social forestry (Zilla Parishad)
Animal Husbandry Department	<ul style="list-style-type: none"> o Facilitator for providing kits/inputs, schemes for improvement of livestock
Non-Conventional Energy Department (under Department of Science and Technology)	<ul style="list-style-type: none"> o Awareness programmes in the non-grid power sectors for use of Solar Thermal, Solar Photovoltaic, (SPV) Bio-mass/Bio-gas o Implementing agency (self) and through subsidized schemes o Formation of rural co-operatives (WBREDA)
Environment Department	<ul style="list-style-type: none"> o Law enforcement through the West Bengal State Pollution Control Board o Regulator for environment management and conservation o Facilitator for awareness campaigns on conservation and livelihood

	<ul style="list-style-type: none"> ◦ Lead agency for State Biodiversity Strategy and Action Plan
Scheduled Castes and Scheduled Tribes Department	<ul style="list-style-type: none"> ◦ Development and improvement of the social, cultural and livelihoods of the SC and ST population ◦ Implementing employment generation schemes, providing financial assistance to the SC and ST community
Tourism Department	<ul style="list-style-type: none"> ◦ Promoting and developing tourism projects ◦ Conducting regulated tours in the forest and wildlife areas ◦ Administering and maintaining selected tourism properties at various destinations
Home (Police) Department	<ul style="list-style-type: none"> ◦ Implementation of the legal provisions under the various departments viz. Forest, Fisheries, Environment, etc, and general law and order
Irrigation and Waterways Department	<ul style="list-style-type: none"> ◦ Schemes greater than 2500 hectares. ◦ Implementation and maintenance of major river valley projects ◦ Flood control (flood protective embankment in the Sundarban) ◦ Drainage (planning, investigation, design, implementation and maintenance)
Water Investigation and Development Department	<ul style="list-style-type: none"> ◦ Local scheme for irrigation less than 2500 hectares. ◦ Tube-wells ◦ Groundwater extraction licensing
Non Governmental Community Institutions and NGOs	
Forest Protection Committees (FPC's)	<ul style="list-style-type: none"> ◦ About 23 FPCs with over 9,500 members in South 24 Parganas district. ◦ About 10 FPCs with over 3,800 members associated with the reserved forest.
Eco-development Committees (EDC's)	<ul style="list-style-type: none"> ◦ Fringe community groups around protected areas with no right but with livelihood improvement programmes.
Fishing Communities	<ul style="list-style-type: none"> ◦ Association of fishermen formed around the fishing/fish landing centers/minor fishing harbors (National Fish Workers Forum)
Self Help Groups	<ul style="list-style-type: none"> ◦ Micro-credit and thrift societies that work with groups of local communities.

Source: SDB

5.3.3.5 Active NGOs working in Sundarban: There are as many as 32 active NGOs are working in Sundarban at various locations. Most of them from Ramkrishna Missionaries related, Bigyan Mancha, local NGOs and Welfare Societies. Following table represents the name and location of working NGOs in Sundarban:

Table 5.10: List of active NGOs working in Sundarban:

Sl.No.	Names of NGOs / Local Based Organisations
1	Narendrapur Loko Siksha Parishad, Narendrapur, South 24 Parganas
2	Sri Ramkrishna Ashram Nimpith, Joynagar, South 24 Parganas
3	Tagore Society for Rural Development, 46 B, Arabinda Sarani Kolkata -5 Branches: at Rangabelia, Gosaba and Rudranagar, Sagar, South 24 Parganas
4	Southern Health Improvement Samity [SHIS], Ghatakpur, South 24 Parganas
5	Mass Education, Mahamayatala, Garia Branches: at Mathurapur and Patharpratima, South 24 Parganas
6	Paschim Banga Bigyan Mancha, South 24 Parganas
7	Paschim Banga Bigyan Mancha, North 24 Parganas
8	Kultali Milontirtha Society, P.O.- Narayanitala, Basanti, South 24 Parganas

9	Sabuj Sangha,P.O.+ Vill.- Nandakumarpur, Raidighi, South 24 Parganas
10	Amra Sabai, P.O.+ Vill.- Nandakumarpur, Raidighi, South 24 Parganas
11	Society for Participatory Action And Reflection [SPAR], Prince Golam Md. Shah Rd, Kolkata-33, Branch at Durbachati, Patharpratima, South 24 Parganas
12	Kakdwip Kalpataru, Kakdwip, South 24 Parganas
13	Sagar Mongal, Chowrangee, Rudranagar, Sagar, South 24 Parganas
14	Akshaynagar Pallishri Sangha, Akshaynagar, Kakdwip, South 24 Parganas
15	Dk. Shibganje Loko Siksha Parishad, Patharpratima, South 24 Parganas
16	Sir Daniel Ashram, Gosaba, South 24 Parganas
17	Gosaba Rupayan, Gosaba, South 24 Parganas
18	WWF, WB State Office, 43, JL Nehru Rd., Kolkata-1 Branch at Bali, Gosaba, South 24 Parganas
19	Sitalia Mahila Unnayan Samity, Sitalia, Sandeshkhali, North 24 Parganas
20	Champa Mahila Samity, Basanti, South 24 Parganas
21	Lokemata Rani Rasmoni Mission, Nimpith, Joynagar, South 24 Parganas
22	S.D. Marine Biological Research Institute, P.O.+Vill.- Bamankhali,Sagar, South 24 Parganas
23	Ramkrishna Vivekananda Seba SamityL Uttar Kumrapara, Raidighi, South 24 Parganas
24	Bali Nature Wildlife and Conservation Society, Satyanarayanpur,Bali ,Gosaba, South 24 Parganas
25	Banakalyan Sangha, Kakdwip, South 24 Parganas
26	Young Fighter's Club, Kakdwip, South 24 Parganas
27	Kishore Sangha, Kakdwip, South 24 Parganas
28	Maitree Sangha, Namkhana, South 24 Parganas
29	Asha Welfare Society, Ganeshnaqar, Namkhana, South 24 Parganas
30	Ramkrishna Seba Sangha, Dk. Chandanpiri, Haripur, Namkhana, South 24 Parganas
31	Manbtirtha Club, Vill + P.O.- shibpur, Freierqani, Namkhana, South 24 Parganas
32	Ramkrishna Vivekananda Seba Sangha, Vill + P.O.- shibpur, Frejerganj, Namkhana, South 24 Parganas

Table 5.10

Source: SDB

5.3.3.6 Annual Plan:

5.3.3.6.1 Annual Plan 2006-07:

The Sundarban Affairs Department has approved Annual Plan of the for the year 2007-08 at **Rs. 97,13,87,000.00** only and out of the total Plan allocation, the **Non-plan Budget** provision of the department is **Rs. 11,42,23,000**. Provision under Suspense Account is **Rs. 1, 16, 64,000**.

Table 5.11: The details of budget outlay are as follows:

Sl. No.	Components	Budget Estimate (Rs.)
1	Non-Plan Budget Provision	10,32,05,000
2	Core Plan	24,55,00,000
3	RIDF	15,00,00,000
4	12th Finance Commission Grant	25,00,00,000
	Total:	74,87,05,000

Source: SDB

Non – Plan Budget Provision: The Sundarban Affairs Department has assigned Non-Plan Budget Provision for the year 2006-07 at **Rs. 10, 32, 05,000** only.

Core Plan: The proposed sectoral allocation of the core plan budget outlay for 2007-08 is as follows:

Table 5.12: Sectoral allotment of core plan budget:

A.	Works Budget	(Rs. in lakh)
i.	Arrear Liability	1000

ii.	Current year's Programme	900
B.	Other Charges	
i.	Agriculture Programme	
	a) Arrear Liability	178.58
	b) Current year's Programme	121.42
ii.	Social Forestry Programme	180
iii.	Fishery Programme	20
iv.	Other Programmes [Awareness, Land Acquisition, Seminar, Training and Workshop, Non-Conventional Energy, Livelihoods Development programme Etc.]	55
Total		2455
C.	Capital Account:	
(i)	RIDF	3500.00
(ii)	12 TH FC GRANT	2500.00
Total		8455.00

Source: SDB

RIDF: Sundarban Affairs Department has got its schemes sanctioned under **RIDF-VIII, IX, X, XI and XII**. For the construction of bridges, brick paved roads, bituminous roads, drainage scheme and RCC Jetties. The approved budget outlay under RIDF for 2007 - 08 is Rs. 3500 lakh.

Table 5.13: RIDF schemes:

Sl. No.	Projects / Schemes	Proposed Allocation
1	Bridges	1500
2	Brick Paved Roads	1500
3	Drainage Project	100
4	Bituminous Roads	400
Total:		3500

Source: SDB

12th Finance Commission Grant: The 12th Finance Commission has recommended a sum of Rs. 100 crore as Grant –in-Aid for State Specific needs for Development of Sundarban Region during 2006-07 to 2009-10. S.D. Board has approved the sectoral allocation of the grant which is given below:

Table 5.14: 12th Finance Commission Grant:

Sl. No.	Scheme Components	Tentative Outlay (Rs. in Crore)
1.	Development of Agriculture: i) Land Shaping Scheme/ Agriculture ii) Research Centres, etc.	20.00
2.	Transport and Communication Infrastructure- [Roads, Bridges, Jetties, etc.]	40.00
3.	Strengthening of River Embankments:	15.0
4.	Power Supply	5.0
5.	Schemes for Livelihoods Development: [Training –cum- production, Women's Programme (Self Help Groups) Animal Resource Development Programmes, Cottage Industries etc.]	7.0
6.	Social Service Schemes: [Drinking Water Supply, Health Support services, Crop Insurance, Education Support Services and Socio-cultural Activities etc.]	7.0

	C. Construction of Concrete Roads- Construction of Concrete Road from Ghanteswar Maity's More to Kali Bangaler Kheya in Banashyamnagar GP of Patharpratima [Length-4.0 km.]	68.75		55per cent
	D. Construction of RCC Jetties- RCC Jetty at Joykrishnapur Kheya Ghat (Naroder Kheya) in Nandakumarpur GP, Mathurapur-II	16		Completed
	Strengthening of River Embankments: i) Revetment of sea facing embankment of Gobardhanpur Mouza in G-Plot GP under Patharpratima (Length-250m) ii) Revetment of sea facing embankment of Cemaguri Mouza in Dhablat GP under Sagar (Length-250m) iii) Strengthening of river embankment in Dongajora Mouza under Kultali (Length-300m) iv) Strengthening of river embankment in Deulbari under Kultali Block- (Length-530m) v) Strengthening of Ichamati river embankment in Taki of Hasnabad vi) Strengthening of Mridangabhangra river embankment in Mahbbatnagar under Nanadakumarpur GP of Mathurapur-II vii) Strengthening of Mridangabhangra river embankment in Maheshpur under Lakshmijanardanpur of Patharpratima	125 125 35 132.5 120 50 50	500	Implemented by the Irrigation and Waterways Directorate, Government of West Bengal
	Extension of Electricity: i) From Jagannathchak In Nanadakumarpur GP under Mathurapur-II to Herambagopalpur GP through Tower and then to Lakshmijanardanpur – Achintyanagar- Banshyamnagar- G-Plot GP in Patharpratima ii) From Jamtala to Kaikhali in Kultali iii) From Sonakhali to Jharkhali in Basanti		100	Sharing of cost for extension of HT and LT Line in non-electrified Mouzas through WBSEB.
	Development of Eco-tourism Infrastructure: i) Jharkhali in Basanti ii) Frejerganj – Bakkhali in Namkhana iii) Jogesganj – Parghumti, North 24 Parganas		100	Implemented by SD Board. The DPRs are under preparation.
	Development of Social Infrastructure: A. Creation of Hostel facility for the girls students of- i) Patharpratima College- ii) Raidighi College- iii) Dr. Ambedkar College in Kultali iv) Kalinagar College in Sandeshkhali –I B. Development of Sports Complex i) Kakdwip ii) Raidighi iii) Canning iv) Sandeshkhali	50 50 50 50 15 15 15 15	200 60	-Do-
	Livelihood Development: i) Training cum Production units of handicrafts for women under SHGs ii) Setting up of Animal Husbandry Units [Sheep and Goat] iii) Setting up of units for local artisans		100	Concerned Line Departments/ Directorates

Source: SDB

Budget Provision: The Annual Plan Provision of the Sundarban Affairs Department comprises of three major components viz. **Core Plan, Rural Infrastructure Development Fund (RIDF) and 12th Finance Commission Grant.**

Core Plan: In Core plan sector, the department implements programmes under civil works, agriculture, social forestry, fishery, awareness etc. The Core Plan outlay of the department for 2006-07 is **Rs. 2455.0 lakh.** These sectoral allocations of plan outlay are given below:

Civil Works Programme for 2006 - 07: The available funds for taking up new schemes under Core Plan head in the current year will be **Rs. 950 lakh** only whereas the civil works programme proposed for the year 2006-07 involves a total amount of **Rs. 1561 lakh** only of which an amount of **Rs. 950 lakh** will be proposed for allotment in the current year's Budget Provision. Major components of the schemes are:

- (a) Construction of roads;
- (b) Construction of culverts, footbridges, jetties, etc.
- (c) Construction of drainage structures;
- (d) Sinking of Tube-wells;
- (e) Soil Investigation and Preparation of DPRs;
- (f) State Share of CSS, etc.

The SDB has approved some individual schemes in consultation with the local Panchayats, people's representatives, NGOs etc. considering the need of the area keeping in view the integrated approach of development. The Engineering Divisions of the SDB will prepare the estimates of the approved schemes for sanction and releasing of fund from the Finance Department for implementation of the schemes undertaken. The block wise allocation of fund for taking up new civil work schemes under this head has been finalized and shown below:

Table 5.16: Allocation of funds for implementation of scheme:

Sl. No.	Blocks	Allocation of Fund (Rs. In lakh)	Sl. No.	Blocks	Allocation of Fund (Rs. in lakh)
A			9.	Kultali	90
1	Sagar	50	10	Canning - I	50
2	Namkhana	30	11	Canning - II	50
3	Kakdwip	60	12	Basanti	80
4	Patharpratima	100	13	Gosaba	80
5	Mathurapur - I	80	14	Hingalganj	70
6	Mathurapur - II	90	15	Hasnabad	60
7	Joynagar - I	60	16	Sandeshkhali - I	70
8	Joynagar - II	60	17	Sandeshkhali - II	70
B	Departmental schemes	150			
C	Sinking of Tube-wells	50			
D	Soil Investigation and Preparation of DPRs	50			
E	State Share of CSS	41			
	Total :	Rs. 1561 lakhs			

Source: SDB

Ongoing Civil Works Schemes:

For the better standard of living, the large share of the plan outlay of SDB is earmarked for implementation of civil works schemes with increasing demand for building up infrastructure facilities. The agriculture and allied sectors also demanded for diversified projects and schemes for

the betterment of growing economy under civil works programme of SDB. It has been assessed that the extra works programme over and above the plan outlay is required to achieve the financial target approved in the budget or annual plan outlay. But, however, the SDB can avail only six months active working season because of vagaries nature of monsoon for implementation of civil work schemes in this region, and as such most of the schemes cannot be completed within one financial year. These compulsions and conditions accumulate considerable liability on the department. Therefore, SDB has made efforts to complete the on-going spillover schemes as far as practicable and to settle the claims of arrear liabilities from the released plan fund.

Agriculture Programme 2006-07: The cost of agricultural inputs and fruit plants procured during that year 2006-07, this sector has a total arrear liability of Rs. 5,385.00 lakh only.

Table 5.17: Particulars of agricultural programmes:

Sl. No.	Particulars of Schemes	Arrear Liability (Rs.)
1	Coconut Sapling Distribution Programme: 2006-07	34,000
2	Input Support for Patal Cultivation: 2006-07	49,375
3	Rabi Season's Agriculture Programme: 2006-07	87,45,812
4	Sunflower Cultivation Programme: 2006-07	36,75,155
5	Safeda Plants Distribution Programme: 2005-06	21,92,766
6	Rabi Season's Agricultural Programme: 2005-06	31,61,320
	Total:	1,78,58,428

Source: SDB

Table 5.18: Programme element wise allocation of funds for 2006-07:

Sl. No.	Programme Elements	Allocation of Fund (Rs.)
1	Distribution of Fruit Plants: (1.50 lakh seedlings/plants)	40.00
2	Rabi and Kharif Season's Agriculture Programme	105.00
3	Mushroom Extension	3.00
4	Extension of Cotton Cultivation	25.00
5	Training and Workshop	4.00
6	Construction of Organic Composting Structures [350 units]	20.00
7	Extension of Vermi-Compost [800 units]	10.00
8	Training, Workshop and publicity for the use of Bio-fertilizers and Bio-pesticides	39.15
Total		246.15 lakh

Source: SDB

The Agriculture Division of the Board has prepared project proposals for individual schemes for releasing of fund from the current year's Budget Provision. These schemes will be implemented through 27 Growth Centres of the Board under the supervision of three Branch Offices. The beneficiaries under the programmes will be selected in consultation with the representatives of Panchayats, people's representatives and NGOs.

5.3.3.6.2 Annual Plan 2007-08:

Social Forestry Programme: The Social Forestry Division of the Sundarban Development Board will implement following work-Programme:

a) Amar Ban Prakalpa – Plantation programme through Women Self Help Groups with the plants raised by SDB under Kishan Nursery Programme during 2006-07 and maintenance of the plants for next 10-11 months.

b) Mangrove Plantation – Creation of mangroves in charlands and mudflat of rivers in the identified areas will be done through this programme. Budget Provision for Social Forestry sector of the Board is Rs. 1,80,00,000 only.

Table 5.19: Programme element wise allocation of funds for 2006-07:

Sl. No.	Programme Elements	Allocation of Fund (Rs.)
1	<i>Amar Ban Prakalpa</i> – Plantation programme through Women Self Help Groups	1,00,00,000
2	Mangrove Plantation in identified charlands and mudflat of rivers	1,80,00,000

Source: SDB

Fishery Programme: Sundarban Development Board operates one fishery project at **Jharkhali in Basanti Block**, 24-Parganas (South). During 2007-08, Budget Provision for operation and maintenance of Jharkhali Fish Farm is Rs. 20, 00,000 only. The project has a total area of 50 ha but actual water area under operation is 12 hectares. Activities proposed to be taken up under this division are given below:

Table 5.20: Particulars of fishery programmes:

Sl. No.	Particulars of Schemes	Estimated Cost (Rs. in lakh)
1	Fish Culture operation at Jharkhali Fish Farm	7.90
2	Purchase of laboratory materials for setting up laboratory facility at Jharkhali Fish Farm	0.45
3	Setting up of Solar Lighting System in the Fish Farm	1.50
4	Survey on the Shrim Larvae Collection	7.82
5	Minor Construction Works in Jharkhali Fish Farm	1.02
6	Training and workshop	0.20
7	Purchase of Training aid	0.75
	Total:	19.64

Source: SDB

Miscellaneous Programme-2007-08: Apart from its normal programmes for creation of physical assets and extension programmes in agriculture and social forestry sectors, the SDB has to take up some other activities relating to building up of awareness for conservation and development of Sundarban Biosphere; to organize and participate different seminars and workshops; sensitization programme and commemorative function and to organize training on livelihoods development along with support services etc.

Table 5.21: The proposed allocation of fund for these programmes elements:

Sl. No.	Programme Elements	Fund (Rs. in lakh)
1	Awareness programme: Exhibition, Seminars, Workshops, Celebration of Banabibi Utsab and Sundarban Dibas.	25.00
2	Survey, Research, Support Services etc.	5.00
3	Land acquisition for different civil works schemes	25.00
Total		55.00

Source: SDB

RIDF: Approved Budget Outlay for RIDF is **Rs. 3500 lakh** for the current year.

Bridge Schemes under RIDF-VIII: NABARD sanctioned 6 bridge schemes in different blocks of Sundarban at a total estimated cost of **Rs. 10,34,81,000** in the year 2002-03.

Brick Paved Roads Sanctioned under RIDF-VIII: NABARD sanctioned **257.165 km.** of brick paved roads in **15 police station** area of Sundarban. Total sanctioned amount for construction of these roads is **Rs. 2183.94 lakh.**

Construction of Master Sluice under RIDF-IX: Improvement of Moni River drainage system including construction of Master Sluice under RIDF-IX. NABARD sanctioned this scheme with an estimated cost of Rs. 6, 65,44,000.00 only under RIDF-IX.

Table 5.22: Details of bridge constructed:

Sl. No.	Particulars of Schemes	Amount Sanctioned	Physical Progress (%)
1.	Construction of Bridge over Jagannath Khal in Haroa	53.38	100
2	Construction of Bridge over Bogeswar Khal in Hasnabad	109.40	95
3	Construction of Bridge over Mahamaya Khal in Mathurapur-II	113.40	95
4	Construction of Bridge over river Moni at Joynaler Kheya in Mathurapur-II and Joynagar-II	301.29	100
5	Construction of Bridge over Bidyadhari Khal at Boalghata in Haroa	252.47	Just Started
Total		829.94	

Source: SDB

Centrally Sponsored Scheme [CSS]: Department of Shipping, Ministry of Shipping, Road Transport and Highways, Government of India has sanctioned construction of 22 RCC jetties in Sundarban under Centrally Sponsored Scheme (CSS) with an estimated cost of Rs. 407 lakh. The Government of India subsidy for the scheme will be 90per cent. The State Government share being 10per cent of the estimated cost of the scheme (i.e. Rs. 40.7 lakh) has been provisioned in the Annual Budget of this Department.

Table 5.23: The locations of the jetties developed by SDB are listed below:

Sl. No.	Blocks	Locations of Jetties
1	Namkhana	At Hujjaiter Kheya Ghat in Mousuni GP
2	Kakdwip	At 15 no. Gundakata in Ramgopalpur GP
3	Patharpratima	At Tentultala Ghat in Banashyamnagar GP
4	Patharpratima	At Khorar Khey Ghat in Digambarpur GP
5	Patharpratima	At Gobindapur Abad in Brajaballavpur GP
6	Patharpratima	At Shibua Ghat in Lakshmijanardanpur GP
7	Patahr Pratima	At Amirer Kheya opp. to Jagannathchak in Heramba Gopalpur GP
8	Mathurapur-II	At Simar Bandh of Purba Sridharpur Mouza on river Pukchara in Nagendrapur GP
9	Mathurapur-II	At Doctor Ghery Ghat in Kankandighi GP
10	Kultali	At Debipur opp. to Majherkheya in Debipur
11	Kultali	At Nandir Ghat in Maipith – Baikunthapur GP
12	Joynagar -II	At Bhubankhali in Chuprijhara GP
13	Canning-I	At Madhukhali Ghat in Itkhola GP
14	Basanti	At Sonakhali (East Side of Hogal bridge) in Ramchandra Khali GP
15	Basanti	At Hogalduri opp. to Pathankhali College Ghat in Ramchandrankhali GP
16	Gosaba	Opposite to Jatirampur Kheya Ghat in Satjelia GP
17	Gosaba	Opposite to Sambhunagar Jetty Ghat in Chunakhali GP
18	Gosaba	At Bali Kheya Ghat Opposite to Satsang Ashram in Bali-II GP
19	Minakhan	At Majherpara Kheya Ghat
20	Sandeshkhali-I	Near Hatgachi R.K.Vidyapith in Hatgachi GP
21	Sandeshkhali-I	At Sehara Bazar Ghat in Sehara - Radhanagar GP
22	Sandeshkhali-II	At Piprakhali Kheyaghat

Source: SDB

5.3.3.7 Disaster Management Plan:

The Sundarban Biosphere Reserve which is home to hundreds of species of animals, birds and plants, is also located in this District. Owing to its unique geographical location the entire 'Sundarban Biosphere Reserve' and especially the 13 thickly populated riverine blocks of the District are under constant threat of powerful nor'westers, bay cyclones, tidal surges and constant change of courses by the numerous distributaries in the active part of the delta.

Being a part of the active delta of the Ganga, South 24-Parganas is basically a district of islands interspersed by many streams and a maze of innumerable distributaries and fearfully wide tidal creeks. It is to admit that to most of these islanders' wide roads, safe water transport, safe jetties or bridges, electricity or telephones are till date a distant from reality. They do not have many strong and high buildings that can be used as shelters during large scale disasters and they hardly have any large vessel to help large scale evacuation.

5.3.3.8 Achievement of development of Sundarban through Sundarban Development Board:

As per 2001 Census, the total population of the region was about 37.56 lakh. The decennial growth rates registered during 1971-1981, 1981-1991 and 1991-2001 were 21.47 per cent, 29.55 per cent and 17.4 per cent respectively. The density of population as per 2001 census was 845 per sq. km. The Sundarban Development Board (SDB) obtains its fund for development programmes from normal (core) plan resources, RIDF, 12th Finance Commission and Additional Central Assistance.

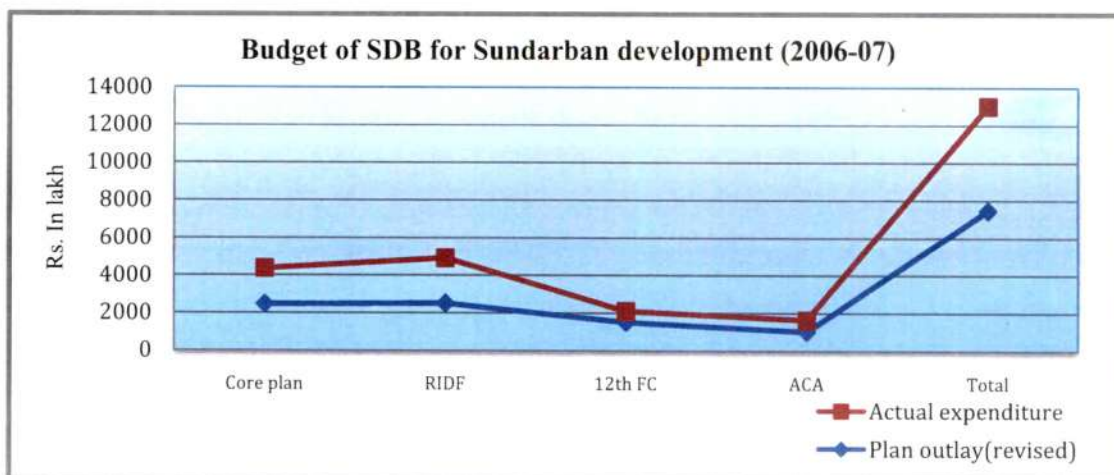


Fig. 5.7

Data Source: SDB

It would be clear to understand the progress of the development led by Sundarban Development Board in the year of 2006-07 and 2007-08 under different heads from the following tables:

Table 5.24: Achievement in Sundarban Development by SDB:

Heads of Development	Achievement (No. of beneficiary)	
<i>a. Agriculture and Allied</i>	<i>2006-07</i>	<i>2007-08</i>
Input to growers	150, 000	145, 000
Mushroom extension	1500	1500
Cotton demonstration	6000	6000
Distribution of fruit plants/ seedling	250, 000	196, 885
Agriculture and allied training	1000	604

Table 5.25: Achievement in Sundarban Development by SDB:

Heads of Development	Achievement (Area in Hectares)	
<i>b. Social Forestry</i>	<i>2006-07</i>	<i>2007-08</i>
Mangrove plantation	695.42	585
Strip plantation	358.19	260
Farm forestry (No.)	593,000	10,400,000

Table 5.26: Achievement in Sundarban Development by SDB:

<i>Heads of Development</i>	<i>Achievement</i>	
	<i>2006-07</i>	<i>2007-08</i>
<i>c. Transport and Social service</i>		
B.P. / W.B.M. Road (Km.)	250	205
Black topped road (Km.)	30	5
Re-excavation of channel (Km.)	-	-
Bridge/ Multiple Culvert (No.)	20	7
Jetty (No.)	17	5
HP sluice (No.)	-	-
Installation of tube well (No.)	100	500
Solar light distributed to school hostel (No.)	150	-

Source: Sundarban Affairs Department (SAD), Government of West Bengal, 2009

In achieving the physical and financial targets the early onset and/ or late departure of monsoon has their constraint. It has delayed the civil works programme and in the coming years therefore SDB seeks to convert existing rural roads in Sundarban. Upgrading and widening of existing brick paved roads to bituminous roads are taken up with grants provided by 12th Finance Commission. A project is under construction to build up a multipurpose cold storage at *Raidighi*. Strengthening and repairing of the vulnerable embankments facing the sea and both sides of the confluence of rivers are the need of the hour. The SDB has taken up schemes for the strengthening and increasing heights of river and embankments with the grant sanction by 12th Finance Commission for Sundarban. For the sake of conservation of environment, generation of additional employment opportunity and also for income generation for the women, social Forestry Programme has been taken up through women SHGS by the SDB. Moreover, projects for transporting grid power line to the island area taken up in collaboration with the WBSedCL.

5.4 Evaluation of the work of Sundarban Affairs Department and Sundarban Development Board:

In the entire Indian Sundarban Region, out of 102 Islands, at present only 54 are inhabited by people. The lands of these inhabited islands are over-crowded by almost 37.56 lakh people. Among the total population, 39.5 per cent belong to schedule caste (SC) communities and another 5.5 per cent belong to schedule tribe (ST) communities. It can be stated that Sundarban Affairs Department and Sundarban Development Board are always actively engaged in different development activities in the Sundarban region. From mangrove plantation to construction of roads, from establishment of solar energy to installation of tube wells, from jetty construction to bridge construction, from agriculture to pisciculture, from social forestry to tourism- in each and every sphere of development these two organisations are doing well in terms of development. But so far the socio-economic development is concerned, these two organisations are not able to generate source of income. Moreover, the rate of migration from the Sundarban region to Kolkata is increasing very fast. Thus it can be argued that these organisations are not able to decrease the rate of migration through income generation activities. At present, people of the locality, mostly due to unawareness, are not actively take part in the developmental activities of the organisation. Therefore, the main problem lies in the grass root level which can be removed through the creation of more awareness and attractive income generating activities.

5.5 Concluding Remarks: Sundarban Development Board is the only organisation solely responsible for the overall development of Sundarban region. But the vast area of Sundarban spread over the two corresponding districts, North and South 24 Parganas. In spite of the pressure of wide area, the SDB is also pressurized by the huge bulk of population. Almost 4 million populations are surviving on the landmass of Sundarban. The short scope of agricultural and fisheries extension move the people towards Kolkata. This can be stopped with the improvement of

agriculture with the proper crop rotation system and alternative livelihood opportunity. At present, people are also engaged in some small scale industrial activities, but the number is too little compared to the bulk population of the area. Henceforth, more power can be released to the SDB for the initiative activities for the Sundarban region as a whole. Instead of considering the Sundarban region as the part of the North and South 24 Parganas, the 19 blocks must be treated as the region as a whole with separate identity. More power should be properly utilised by the SDB. Annual report along with the drawbacks of various earlier programme and areas of scope for the development should also be considered in each and every year for proper development of Sundarban.

Selected References:

- Anand, S. and Sen, A. (2000). Human development and economic sustainability. World Development, 28(12), 2029-2049.
- Bhattacharya, Asok Kumar. (1999). Embankments as large-scale constructions in the Indian Sundarbans and their impacts on the coastal ecosystems. In D.N. Guha Bakshi, P. Sanyal, and K.R. Naskar (Eds.) *Sundarbans Mangal* (pp. 143-149). Calcutta: Naya Prokash.
- Chakraborty, S.C. (2005). The Sundarbans - Terrain, Legends, Gods and Myths. Geographical Review of India, 67,(1), 1-11.
- Danda, A.A. (2003). Institutional inadequacies to attaining sustainability in the Sundarbans. Journal of the Indian Anthropological Society, 38, 61-66.
- De, Barun. (1994). *West Bengal District Gazetteers: 24-Parganas*. Calcutta: Government of West Bengal.
- Ghosh, A.K. and Das, S.K. (2003). Captive energy plantation for renewable energy in the Sundarbans, West Bengal, India. International Energy Journal, 4(2), 93-97.
- Ghosh, S, Tuhin K. Das and Tushar Jash. (2004). Sustainability of decentralized woodfuel-based power plant: an experience in India. Energy, 29, 155-166.
- Government of India. (2001a). Report of the working group on decentralized planning and Panchayati Raj institutions. New Delhi: Ministry of Rural Development.
- Government of India. (2001b). Report of the task force on Panchayati Raj institutions. New Delhi: Planning Commission.
- Hazra, S., T. Ghosh, R. Dasgupta, and G. Sen. (2002). Sea Level and associated changes in the Sundarbans. J. Science and Culture. Vol. 68, No. 9-12, pp. 309-321.
- Hunter, W.W. (1875[1998]). *A Statistical Account of Bengal*, Vol. I, Part-II: Sundarbans. Calcutta: Government of West Bengal.
- Kanjilal, Tushar. (1999b). Sundarbaner Nadibandher Samasya (Problems of river embankments of Sundarbans). In *Pathe Prantare* (in Bengali) (pp. 34-37). Calcutta: Projanma.
- Mallick, R. (1999). Refugee Resettlement in Forest Reserves: West Bengal Policy Reversal and the Marichjhapi Massacre. Journal of Asian Studies, 58 (1), 104-125.
- Mandal, Asim Kumar. (2003). *The Sundarbans of India: A Development Analysis*. New Delhi: Indus Publishing Company.
- Mukherjee, K.N. (1969). Nature and Problem of Neo-Reclamation in the Sundarbans. Geographical Review of India, Vol. 31, No. 4; pp. 1-20.
- O'Malley, L.S.S. (1914/98). *Bengal District Gazetteers: 24 Parganas*. Calcutta: Government of West Bengal.
- Sengupta, Rabindra Kumar. (1972). Importance of the Sundarbans Region in West Bengal's Economy. In Kanan Gopal Bagchi, Sunil Kumar Munsu, and Rabindranath Bhattacharyya (Eds.) *The Bhagirathi-Hooghly Basin (Proceedings of the Interdisciplinary Symposium)* (pp. 308-12). Calcutta: Sri Sibendranath Kanjilal.
- Sharma, B.C. (1994). Lower Sundarban: Role of fisheries in its sustainable development. Calcutta: The Asiatic Society, pp.12-23.