

CHAPTER – 4

IRRIGATION IN ASSAM

4.1. CREATION OF IRRIGATION POTENTIAL UNDER DIFFERENT SECTORS:

Agriculture in Assam is primarily rain-fed. However, because of adverse and unpredictable weather condition experienced by the state time to time as well as to pursue double/multiple cropping and modernization of agricultural sector to cope with the growing problem of food shortage due to formidable increase of population, natural calamities etc., irrigation is highly essential in Assam. Over and above, for a sustained development in the agricultural sector, availability of assured irrigation facility is undoubtedly the most important pre-requisite. Thus, the importance of irrigation development bears special significance in the context of efforts towards economic development of the state too.

Land use pattern in Assam indicates that out of the total geographical area of 78.44 lakh hectare, the gross cropped area of Assam is 41.60 lakh hectare. Against this, the ultimate Gross Irrigation Potential has been estimated at about 27 lakh hectare, which constitutes 64.9 percent of the Gross Cropped Area. It is planned to provide irrigation facilities to 10 lakh hectare of cropped area through Major and Medium Irrigation Projects from surface water sources and the rest 17 lakh hectare, 7 lakh hectare through Minor Irrigation Schemes from ground water sources and the rest 10 lakh hectare of cropped area from surface water sources.

The development programs for improvement of irrigation facility in Assam taken up under two broad heads, viz., Minor irrigation and Major & Medium

irrigation. While the irrigation schemes are classified as major, medium and minor, they are categorized as surface flow, surface lift (or Major/Medium and Minor) and Ground Water Lift (for minor only). Three Departments, viz., Irrigation, Agriculture and Panchayat and Rural Development are associated with development of irrigation facilities in the state. While the state Irrigation Department, being The Nodal Department for development of irrigation in the state, executes and maintains Major, Medium and Minor Irrigation Schemes, the irrigation works of the other two departments are confined to minor irrigation schemes like Shallow Tube Wells, Low Lift Points and Temporary Minor Irrigation Schemes only.

Out of the Gross Cropped area of 41.60 lakh hectares of the state, the Irrigation Department alone created potential of 8.32 lakh hectares up to March, 2013 by operating both completed and ongoing irrigation schemes of which 2.54 lakh hectares through Major or Medium Irrigation Projects and the rest 5.78 lakh hectares through Minor Irrigation Schemes. Out of the 5.78 lakh hectares of created potential under Minor Irrigation Sector, a potential of 4.28 lakh hectare was created through the Govt. Minor Irrigation Schemes executed by the State Irrigation Department and the rest 1.49 lakh hectares through Shallow Tube Wells (STWs) and Low Lift Points (LLPs) installed by the Assam State Minor Irrigation Development Corporation (ASMIDC) Limited. Now the Department is merged with the State Irrigation Department. It is pertinent to note that the Irrigation Department could achieve 39.0 percent of the state against the National average of 75.0 percent till the end of March 2013. The position of creation of irrigation potential under different sectors is presented in table 4.1

TABLE – 4.1
Irrigation potential created upto 2012-13
(In hectares)

Department/Agency	Major & Medium Irrigation Sector	Minor Irrigation Sector	Total
Irrigation Department	254343	428440	682783
ASMIDC Ltd.	Nil	149205	149205
Total	254343	577645	831988

Source: Chief Engineer, Irrigation Department, Assam.

The State Agriculture Department has also created irrigation potential of 9.18 lakh hectare till the end of 2012-13 through of Shallow Tube Wells and Low Lift Points of which 5.43 lakh hectares are under utilizable/assured irrigation. The achievements made by Agriculture Department in installation of Shallow Tube Wells and Low Lift Points to create irrigation facilities to the farmers till 2012-13. This is shown in table 4.2.

TABLE – 4.2**Installation of Shallow Tube Wells and Low Lift Pumps to create assured Irrigation facility by the Agriculture Department (Fig. in number)**

SL. NO.	Component of Irrigation	2008-09	2009-10	2010-11	2011-12	2012-13	Total 1996-97 to 2012-13
1.	Shallow Tube Wells(STWs)	17183	39617	101307	29310	27196	412225
	(a)STW(diesel)	14049	23858	38879	12710	10196	297304
	(b)STW(electricity)	3134	15759	62428	16600	17000	114921
2.	Low Lift Pump(LLP)	3462	5140	14845	500	8200	47022
	(a)LLP(diesel)	3462	4151	4768	0	1200	28456
	(b)LLP(electricity)	0	989	10077	500	7000	18566

Source: Directorate of Agriculture, Assam.

4.2. CREATION OF IRRIGATED AREA AND UTILISATION OF POTENTIAL:

It is worth mentioning that no works of Irrigation Schemes could be successfully completed under normal State Plan due to low allocation of fund during VIII th to IX th plan period. However since 1996-97 Central Assistances have been obtained under Accelerated Irrigation Benefit Program (AIBP) in respect of Major and Medium Irrigation Sector. Since 2000-01 Central Assistances also provided for Minor Irrigation Sector also. Such assistances were also received from other programs like Non Lapsable Central Pool of Resources (NLCPR), Assam Rural Infrastructure for Agricultural Services Program (ARIASP) funded by the World Bank and National Bank for Agriculture and Rural Development

(NABARD) under RIDF-X and RIDF-XI. With the above sources of funding the position of creation of irrigation potential has been improved in the state to certain extent. The year wise irrigation potential created during the last six years is given in table 4.3.

TABLE – 4.3

Irrigation potential created through Govt. Irrigation Schemes by Irrigation Department.(In hectares)

Year	Major & Medium Irrigation	Minor Irrigation	Total
2007-08	484	14966	15450
2008-09	9425	18375	27800
2009-10	7162	29838	37000
2010-11	4426	16456	20882
2011-12	10678	15029	25707
2012-13	Nil	Nil	9485

Source: Chief Engineer, Irrigation Department, Assam.

a) MAJOR AND MEDIUM IRRIGATION SECTOR:

At present there are 4 (four) AIBP funded ongoing Major/Medium Irrigation Projects (Dhansiri I/P, Champamati I/P, Borolia I/P and Buridehing I/P) and all are in different stages of progress. But due to inadequate plan fund and land acquisition problem one project (Buridehing I/P) is targeted to wind up during 2011-12. The remaining 3 Irrigation Projects have been expected to be completed by 2015 with an anticipated expenditure of Rs. 35,695.00 lakh which will create total irrigation potential of 53973 hectares.

Reconstruction of flood damaged Bordikoral Irrigation Project (Major) in Sonitpur District has been taken up for Rs. 47.22 crores under one Time ACA to revive lost potential of 34000 hectares. Till March 2013 revival of 30,300 hectares covering 93 villages within its command has been completed.

Under Assam BikashYojana, revival or improvement work of Rupahi Irrigation Project (Medium) was taken with the estimated amount of Rs. 2.47 crores to restore lost potential of 5668 hectares.

In addition to the above, modernization of Sukla Irrigation Project (Major) in Baksa District has been completed with NABARD and BTC fund and revived lost potential of 27400 hectares.

The State Irrigation Department has planned to complete all the ongoing projects within the 12th Five Year Plan Period. In addition, one Major Irrigation Project viz., Puthimari Irrigation Project at an estimated potential of 12280 hectares and 3 Medium Irrigation Projects – Burisuti Medium Irrigation Project, Dikhow Medium Irrigation Project and Buroi Medium Irrigation Project having potential of 6500 hectares, 6000 hectares and 5000 hectares respectively have been proposed in the 12th Five Year Plan with estimate costs of Rs 1225.09 crores for creating additional potential of 29780 hectares.

b) MINOR IRRIGATION SECTOR:

Under AIBP, total 702 Minor Irrigation Schemes were taken up since 2001-02 with an estimated cost of Rs. 2507.48 crores to achieve an irrigation potential of 3,21,138 hectares. Up to March 2013, 426 Minor Irrigation Schemes have been completed creating a potential of 1,78,613 hectares including restoration or revival of lost potential.

The works of 6 Minor/Irrigation Schemes are in progress under Non Lapsable Central Pool of Resources (NLCPR) funding with an estimated cost of

Rs. 3103.62 lakh to achieve a potential of 4510 hectares. Out of the total 6 Schemes, 3 Schemes have been completed creating a potential of 2510 hectares.

Two NEC funded Minor/Irrigation Schemes have been completed achieving a potential of 370 hectare. Two new Minor Irrigation Schemes are taken up to achieve potential of 635 hectares.

All total 33 Minor Irrigation Schemes have been completed with the NABARD assistance creating potential of 14179 hectares. Under The Assam Vikash Yojana renovation of 27 sick Minor Irrigation Schemes are in progress for revival of lost potential of 1780 hectares. Out of the total aforementioned Schemes, 19 Schemes have been completed reviving a lost potential of 1367 hectares.

During the 12th Five Year Plan period, the State Irrigation Department has targeted to create irrigation potential of 228664 hectares. According to the department, under AIBP there are 319 Minor Irrigation Schemes in different stages of completion. On completion the state could achieve an additional irrigation potential of 148680 hectares. The department has also proposed to take up 779 new Minor Irrigation Schemes to create additional potential of 151878 hectares in different districts to their feasibility during the plan period.

The State Irrigation Department has planned to complete 60 ongoing schemes under AIBP during the year 2013-14 to achieve irrigation potential of 31000 hectares. In addition, the department has proposed to take up 104 new schemes under NABARD Assistance during the said year i.e., 2013-14.

The Department has also undertaken a Pilot Project of Solar Power Driven Deep Tube Well Scheme at Barlah near Hajo of Kamrup district on experimental basis to combat the problem of erratic power supply. Introduction of the system is being proposed for more schemes being the running cost is less.

**C) COMMAND AREA DEVELOPMENT AND WATER
MANAGEMENT (CADWM):**

The centrally sponsored command area Development Program was launched in the year 1974-75 for development of adequate delivery system of Irrigation water up to the farmers' field with an objective to enhance water use efficiency and production and productivity of crops per unit of land and water for improving socio-economic condition of farmers. Accordingly, completion of 60 percent progress of Major, Medium and Minor irrigation projects covering minimum of 1000 hectares are taken into consideration to bring under CADWM program.

Under the CADWM, 8 projects have been taken up Jamuna Irrigation Project, Kaliabor Irrigation Project, Sukla Irrigation Project, Kolong & Sonai River Basin Irrigation Schemes, Kaldiya Irrigation Project, Dekadong Irrigation Project, Bordikraj Irrigation Project and Pahumara CAD Project. Out of the 8 projects Jamuna, Kaliabor, Sukla Irrigation Projects were deleted in July 2003 on completion of On Farm Development (OFD) works and the Kolong & Sonai River Basin Integrated Scheme were discounted as on OFD works was taken up due to non-availability of assured water supply.

d) THIRTEENTH FINANCE COMMISSION:

GRANT-IN-AID:

Under 13th Finance Commission's Grant-in-aid, Rs. 1500 crore is proposed for repairing of 78 nos. of Deep Tube Well points, 10 nos of Lift Irrigation Schemes and 5 nos of Flow Irrigation Schemes in Minor Irrigation Sector to revive lost potential of 3940 hectares during the financial year 2011-12. Another amount of Rs.700 crores are proposed for repairing of 3 nos Major and Medium Irrigation Projects to make them operational. But the scheme could not be

implemented during the year 2011-12 and therefore the same was revalidated during 2012-13. The total 2553 hectares irrigation potential revived during 2012-13 under Minor Irrigation sector.

In respect of Major and Medium sector revival of irrigation potential was 400 hectares.

e) UTILISATION OF IRRIGATION POTENTIAL:

The crop season wise utilization of irrigation potential of State Government owned irrigation projects/schemes under Irrigation Department during the last six years may be evident from the table – 4.4.

TABLE – 4.4
Crop Season Wise Irrigation Potential Utilized.
(Figures in Hectares)

Year	Crop Season								
	Kharif crops season			Rabi & Pre-kharif crops season			Total		
	Minor	Major/ Medium	Total	Minor	Major/ Medium	Total	Minor	Major/ Medium	Total
2007-08	41795	32668	74463	10486	4322	14808	52281	36990	89271
2008-09	40775	34902	75677	10923	9071	19994	51698	43973	95671
2009-10	77495	70274	147769	11178	9907	21085	88673	80181	168854
2010-11	63649	44691	108340	15612	5874	15612	79261	50565	129826
2011-12	71650	61028	132678	18360	6647	25007	90010	67675	157685
2012-13	92677	60700	153377	23546	4822	28368	116223	65522	181745

Source: Chief Engineer, Irrigation Department, Assam.

It is pertinent to mention that the utilization of irrigation potential is not up to the expectation and there is a gap between the created irrigation potential and potential actually utilized. The primary reason of less utilization of irrigation potential is that the cultivators are reluctant to take advantage of irrigation facilities. However, the identified causes for less utilization of irrigation potential were – general wear and tear of the schemes, damage caused by natural calamities like flood, storm etc. erratic power supply in respect of the electrically operated schemes, damage of transformer, HT line and mechanical components, change of river course in respect of surface Flow and Surface Lift Irrigation Schemes, damage of canal system, no demand from cultivators, reluctance of the cultivators to adopt multiple cropping system where assured irrigation is necessary, non – functioning of the schemes due to theft of motors and pumps and other accessories, realization of Irrigation Service charges imposed by the government from beneficiary cultivators, economically poor cultivators want to get free irrigation from Govt. Schemes.

f) CREATION OF IRRIGATION POTENTIAL AND ITS UTILISATION (AS PER CENSUS OF MINOR IRRIGATION SCHEMES):

The 4th Minor Irrigation Census was conducted with reference 2006-07 under the guidance and supervision of Ministry of Water Resources Govt. of India. As per 4th Census of Minor Irrigation, 2006-07, there were 104312 Ground Water Schemes (Shallow Tube Wells and Deep Tube Wells) and 6442 Surface Water Schemes (Surface Flow and Surface Lift) creating 306905 hectares and 322856 hectares of irrigation potential respectively in the state under Minor Irrigation Sector. Of the total potential of 629761 hectares created under Minor Irrigation Sector, a total of 323297 hectares of area was irrigated during that particular year

2006-07. Thus, there exists large gap between irrigation potential created and irrigation potential utilized.

The table – 4.5 shows the category wise number of Minor irrigation schemes, creation of irrigation potential and its utilization.

TABLE – 4.5
Irrigation potential created and utilized
In Assam in 2006-07

Category Of Schemes	Total no. Of Schemes	Schemes in use (No.)	Irrigation potential created (in hectare)			Irrigational potential utilized out of the created potential (in hectare)
			In Use	Not in Use	Total	
Surface water	104312	5025	207049	115807	322856	137786
Ground water	6442	91453	244216	62689	306905	185511
Total	110754	96478	451265	178496	629751	323297

Source: Chief Engineer, Irrigation Department, Assam.

IRRIGATED AREA AS PER AGRICULTURE CENSUS – 2010-11

As per Agriculture Census 2010-11, there is about 1.61 lakh hectares net irrigated area including private sources in the state of which 0.33 lakh hectares area irrigated from ‘canal’ 0.048 lakh hectares from ‘tanks’, 0.02 lakh from ‘wells’, 0.27 lakh hectares receives irrigation from other sources. The table – 4.6 shows the size class wise area receiving irrigation from different sources in the state.

TABLE – 4.6

Size Class and Source – wise area irrigated in Assam

(Area in hectare)

SL. NO	Size Class (in hectare)	Area under operational holding	Area receiving Irrigation from Sources.					Net irrigated Area
			Canal	Tanks	Wells	Tube wells	Other sources	
1	Below0.5	385255.42	1526.19	118.44	101.62	3529.43	8669.36	13944.04
2	0.5-1.0	389541.03	3196.83	468.34	84.74	1850.74	6593.15	12193.80
3	1.0-2.0	687156.19	6559.21	698.40	153.37	4339.87	16900.42	28651.27
4	2.0-3.0	480948.66	5841.16	1169.86	213.77	3413.60	11237.00	21875.39
5	3.0-4.0	337033.83	4578.28	879.46	159.52	2728.56	9871.89	18217.71
6	4.0-5.0	214768.17	2484.95	562.97	57.31	2207.41	7263.68	12576.32
7	5.0-7.5	184189.82	2763.62	256.95	48.59	1748.33	6113.66	10931.15
8	7.5-10.0	38414.24	892.87	79.07	0.00	103.15	2361.59	3436.68
9	10.0-20.0	24567.50	988.38	0.00	0.00	152.35	1264.93	2405.66
10	20 & above	257195.09	4268.05	542.82	1016.72	7095.84	24079.25	37002.68
11	All Classes	2999069.95	33098.54	4776.31	1835.64	27169.28	94354.93	161234.70

Source: Report of Agriculture Census, Assam 2010-11.

AREA IRRIGATED DURING 2012-13:

The table 4.7 shows the crop season wise area irrigated during the year 2012-13 in different districts of Assam form Government sources of irrigation.

TABLE – 4.7

Name of Districts	Kharif		Rabi & Pre-kharif		Total	
	2011-12	2012-13 (p)	2011-12	2012-13 (p)	2011-12	2012-13 (p)
Dhubri	199	44	475	263	674	307
Kokrajhar	13378	6578	175	90	13553	6668
Bongaigaon	48	351	76	216	124	567
Goalpara	1402	2338	734	647	2136	2985
Barpeta	4298	1837	256	174	4554	2011
Nalbari	451	64	100	62	551	126
Kamrup	2702	290	444	589	3146	879
Kamrup(M)	1137	4821	2148	2992	3285	7813
Darrang	4047	4333	800	1340	4847	5673
Sonitpur	11097	9185	24	31	11121	9216
Lakhimpur	426	505	458	415	884	920
Dhemaji	475	415	60	0	535	415
Morigaon	245	225	874	818	1119	1043
Nagaon	20092	29549	4330	4225	24422	33774
Golaghat	224	163	67	0	291	163
Jorhat	55	784	870	394	925	1178
Sivasagar	951	322	29	21	980	343
Dibrugarh	1237	2290	0	120	1237	2410
Tinsukia	743	698	58	17	801	715
Karbi Anglong	15679	32179	3457	5658	19136	37837
Dima Hasao	3819	3875	0	0	3819	3875
Karimganj	50	1305	200	65	250	1370
Hailakandi	1055	925	902	805	1957	1730
Cachar	1130	1130	1961	1766	3019	2896
Chirang	7478	5646	974	1376	8452	7022
Baksa	15896	12485	2625	1114	18521	13599
Udalguri	24364	27830	2910	3373	27274	31203
Total	132678	150167	25007	26571	157685	176738

Source: Chief Engineer, Irrigation Department, Assam.

REALISATION OF IRRIGATION SERVICE CHARGES:

As sufficient fund is required for operation and maintenance of Irrigation Schemes and the fund provided in the state's budget is not adequate, the State Irrigation Department has introduced the system of realization of service charges from the beneficiary cultivators since 1993. The rates of Irrigation Service Charges have been revised during 2000-01 to cope with the increasing cost of maintenance and in accordance with the Fiscal reform Measures of the State Government. The current rates of Irrigation Service Charges are as given in table – 4.8.

TABLE – 4.8

Irrigation Service Charges

Crops	Rate/Bigha.(Rs)	Rate/Hec (Rs)
Kharif	37.50	281.24
Wheat and other Rabi	75.00	562.50
Early Ahu	100.00	751.00
Ahu	100.00	751.00
Jute	20.00	150.00
Sugarcane	29.60	222.00

Source: Chief Engineer, Irrigation Department, Assam.

The reasons for poor realization of Irrigation Service Charges from the beneficiary cultivators are

- i) Poor economic condition of the cultivators.
- ii) General tendency of the beneficiary cultivators to get free water from Govt. Irrigation Schemes.
- iii) Absence of legal authority of Water Users' Associations empowering them to collect Irrigation Service Charges.

iv) Some authorities have not permitted to collect the Irrigation Service Charges.

v) Adverse law and order situation in some area for certain period.

However, the Department is making its endeavor to realize the Service Charges from the beneficiary cultivators. A remarkable realization of Irrigation Service Charges has been made during the year 2011-12 (Rs. 12.06 lakh) as against Rs. 4.72 lakh during the year 2010-11. The year wise status of Irrigation charges actually realized from beneficiary cultivators is presented at table – 4.9.

TABLE – 4.9
Irrigation Charges Realized.
(Rs in lakh)

Year	Amount Realized
2002-03	1.74
2003-04	2.86
2004-05	4.92
2005-06	3.53
2006-07	2.02
2007-08	1.96
2008-09	2.02
2009-10	3.40
2010-11	4.72
2011-12	12.06
2012-13	7.63

Source: Chief Engineer, Irrigation Department, Assam.

In order to improve the position of realization of Irrigation Service Charges the Department has under taken the following steps:

- The Assam Irrigation Act, 1983 as well as The Assam Irrigation Rules, 1997 was enacted.
- The Assam Irrigation Water Users Act, 2004 has been enacted.
- District wise Farmers' Motivation Training Programs are conducted time to time to create awareness about the utility of irrigation for Multiple Cropping with view to uplift their economic condition of cultivators through scientific agriculture.
- 795 Water Users' Associations (WUA) have been constituted in the Command Areas of Irrigation Schemes.
- District wise WUA Farmers' Training was conducted to adopt scientific agriculture in Irrigation Command.

Out of state exposure visit in Tamilnadu, Andhra Pradesh and Jharkhand have been organized for officials of Irrigation Department, NGOs and WUA farmers.