



ARIAS SOCIETY

Assam Rural Infrastructure and Agricultural Services Society
(An Autonomous Body under Govt. of Assam)

Project Coordination Unit (PCU), World Bank financed Assam Agricultural Competitiveness Project (AAP),
Agriculture complex, Khanapara, G.S. Road, Guwahati-781022 (Assam, India)
Tel: +91 361-2332125; Fax: +91 361-2332564



Assam Agricultural Competitiveness Project

**& it's Additional Financing
(IDA Cr. 4013 IN & 5062 IN)**

PROJECT COMPLETION REPORT

(As on 15th March, 2015)

Compiled by: PCU, ARIAS Society

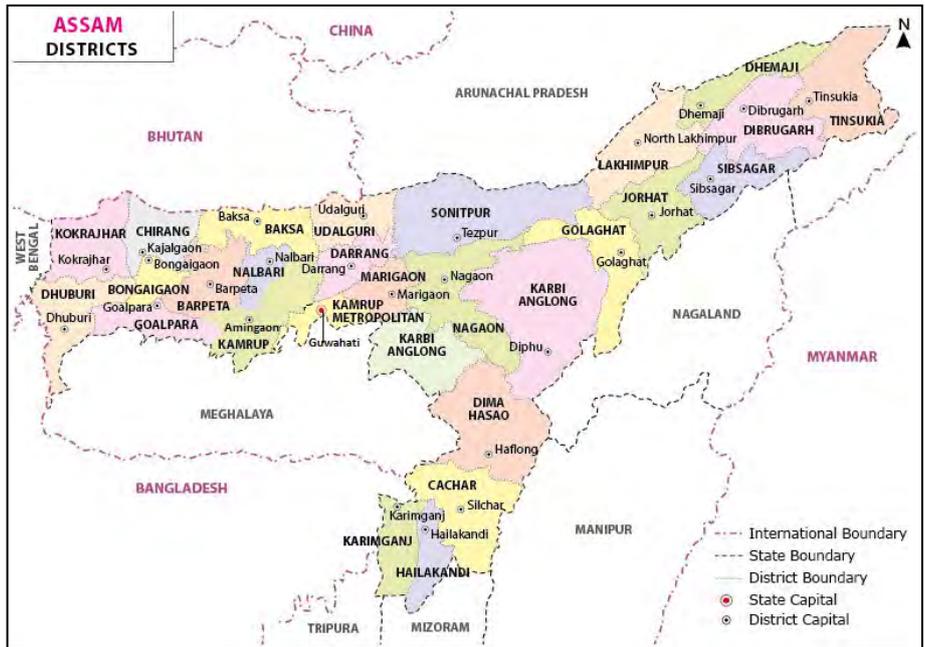


Assam Agricultural Competitiveness Project & its Additional Financing (IDA Cr. 4013/5062)

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ABBREVIATIONS AND ACRONYMS

AACP	Assam Agricultural Competitiveness Project	FRR	Financial Rate of Return
AAU	Assam Agricultural University	FSPC	Frozen Semen Production Centers
AF	Additional Financing	GOA	Government of Assam
AH&VD	Animal Husbandry and Veterinary Department	GOI	Government of India
AI	Artificial Insemination	ha	hectares
ALDA	Assam Livestock Development Agency	IBRD	International Bank for Reconstruction and Development
APC	Agriculture Production Commissioner	ICB	International Competitive Bidding
ARIASP	Assam Rural Infrastructure & Agricultural Services Project	ICR	Implementation Completion Report
ARIASS	Assam Rural Infrastructure & Agricultural Services Society	IDA	International Development Association
ASG	Agro Service Group	ILRI	International Livestock Research Institute
ATMA	Agricultural Technology Management Agency	KVK	Kisan Vikas Kendra
BDC	Beel Development Committee	LLP	Low lift Pump
BPL	Below Poverty Line	M&E	Monitoring and Evaluation
BTT	Block Technology Team	MANAGE	National Institute of Agricultural Extension Management
CAA&A	Comptroller of Aid, Accounts & Audit	MIS	Management Information System
CAS	Country Assistance Strategy	MOU	Memorandum of Understanding
CDD	Community Driven Development	MTR	Mid Term Review
CIFRI	Central Inland Fisheries Research Institute	NCB	National Competitive Bidding
CIG	Common Interest Group	NDDB	National Dairy Development Board
CSS	Central Sector Scheme	NGO	Non Governmental Organization
CTG	Community Tank Group	NIAM	National Institute of Agricultural Marketing
DADS	District Agricultural Development Strategy	NPV	Net Present Value
DDD	Dairy Development Directorate	OM	Operational Manual
DEA	Department of Economic Affairs	PAD	Project Appraisal Document
DOA	Department of Agriculture	PCU	Project Coordination Unit
DOEF	Department of Environment and Forests	PIU	Project Implementation Unit
DOF	Department of Fisheries	PRA	Participatory Rural Appraisal
DACC	District AACP Coordination Committee	PRJ	Panchayati Raj Institutions
EA	Environmental Assessment	PWRD	Public Works Roads Department
ECP	Environmental Codes of Practice	REOI	Request for Expression of Interest
EDGF	Enterprise Development Grant Fund	R&R	Resettlement and Rehabilitation
EMF	Environmental Management Framework	RARS	Regional Agricultural Research Station
EMP	Environmental Management Plan	SBI	State Bank of India
ERR	Economic Rate of Return	SFAC	Small Farmers Agri-business Consortium
FD	Finance Department	SHG	Self Help Group
FMD	Foot and Mouth Disease	SPCC	State Project Coordination Committee
FMTII	Farm Machinery and Tractor Technology Institute	SPD	State Project Director, AACP/ARIASS
FMM	Financial Management Manual	STW	Shallow Tube Well
		W.B.	World Bank

Conversions units

2.52 Bigha = 1 Acre
 6 Bigha = 1 hectare (ha)
 1 Gussi = 20 leaves
 1 Dishu = 20 Gussi/400 leaves
 1 Pon = 80 leaves/units
 1 Quintal = 100 kilogram (kg)
 1 Metric Tons (MT) = 1000 Kilogram (kg)
 Rs. 10.00 lakh = Rs.1.0 million.

Brief profile of Assam: (More details at Annex-1)

- According to the Census of India, 2011 the population of Assam stands at 3,11,69,272, of which 1,59,54,927 are males and 1,52,14,345 females (Source: Economic Survey, Assam, 2011-12)
- Assam's geographical area is 78,438 sq. kms. i.e, about 2.4 percent of India's total geographical area, and the State provides shelter to 2.57 percent population of the Country.
- Decadal growth of the State's population is 16.93 percent during the decade 2001-2011 as against 17.64 percent for the country as a whole.

Assam Agricultural Competitiveness Project & its Additional Financing (IDA Cr. 4013/5062)

1. Executive Summary

Key Project Data		Performance Ratings by W.B. (Feb. 2015)	
Board Date			
<i>Original Credit</i>	December 14, 2004	Development Objective	S
<i>Additional Financing</i>	March 08, 2012		
Effectiveness date		Implementation Progress	S
<i>Original Credit</i>	February 24, 2005		
<i>Additional Financing</i>	June 27, 2012	Financial Management	S
Revised closing date	March 15, 2015		
Project age	10 years and 2 months	Procurement	S
Original Credit	SDR 105.00 million		
Additional Financing Credit	SDR 26.08 million ¹	Overall Safeguard compliance	S
Amount Disbursed (as on 15 th Mar'15)		Project Management	S
<i>Original Credit</i>	SDR 104.18 million (99%)		
<i>Additional Financing</i>	SDR 7.41 million (29%)	Monitoring & Evaluation	S

Ratings: S=Satisfactory;

- a) The 'Assam Agricultural Competitiveness Project (AACP)', worth total Rs. 858 crore which include World Bank credit of US\$ 154 million, was taken-up from February 2005. In January 2012, AACP got an Additional Financing (AF) of US\$ 50 million² from the World Bank. AACP along with the Additional Financing would close on 15th March 2015.
- b) The **Project development objective** is to increase the productivity and market access of targeted farmers and community groups. The key indicators of success envisaged as increased yields of crops, fish, and livestock products - complemented by an increase in the proportion of marketed surplus. Although the over-riding objective is to stimulate growth of Assam's agricultural economy, project activities are predominantly pro-poor, directed primarily at small and marginal landholders, poor fishing communities and the landless. **Project activities are grouped into three components** and implemented by line departments of the State Government viz. Public Works Roads, Agriculture, Fisheries, Animal Husbandry, and Forest, and Assam Agricultural University:
- c) **Component-1: Investment Grant Scheme:** to address the constraint of lack of capital in farm and rural communities for productivity enhancing investments – focusing on private minor irrigation, farm mechanization, and fish production in ponds tanks and beels; (*Irrigation & Mechanization by Agriculture Dept. and Fish Ponds, Tanks, & Beels by Fisheries Dept.*)
- d) **Component-2: Agricultural Services and Market Chain Development:** to address the constraints of inadequate market-linked technology transfer; limited basic producer

¹ SDR 6.517 Million was cancelled in December 2013 as additional funds were available with the project due to exchange rate changes.

² US\$ 10 Million (equivalent of SDR 6.517 million) was cancelled in December 2013 as additional funds were available with the project due to exchange rate changes.

organizations with links to markets; and low productivity livestock resources – focusing on extension system reforms, upgrading programs for livestock and fish, improved marketing services and formation of milk cooperatives, and forestry; (*Applied Agricultural Research by Assam Agricultural University; Agricultural Extension Services by ATMA Societies; Market Extension by Agriculture Dept./PCU; Livestock/Cattle Development, Poultry, Duck, Goats and Pigs Development by AH & Veterinary Dept.; Fishery Development by Fishery Dept.; Milk Marketing by Dairy Development Dept.; Forestry by Environment & Forest Dept*); and

e) **Component-3: Infrastructure Development:** to address the constraint of a poor rural road network and inadequate market infrastructure – focusing on upgrading of rural roads and market-yards, and replacement of timber bridges (Rural Roads by PWRD and Market infrastructure Development by Agriculture/ PWRD).

f) **Major physical activities undertaken both under AACP and AF include:**

Sl.	Interventions	Unit	Project Target	Achievement
Component -1 : Investment Grant Scheme				
A.	Irrigation Development			
a	Assured irrigation developed under this project through -			
b	Commissioning of Shallow Tube Well (STW)	No	90000	100000
c	Installation Low Lift Pump (LLP)	No	20000	15220
d	Solar Power Irrigation	No	12	12
B	Farm Mechanization			
a	Agriculture Service Group mobilised for providing Tractor	Number	1815	2149
b	Agriculture Service Group mobilised for providing Power Tiller	Number	1500	1084
c	Farmers trained in operation & maintenance of machineries	Number	Not Targeted (NT)	7850
C	Micro Watershed Drainage Program (MWDP)			
a	Farmer group mobilised for MWDP	Number	NT	89
b	Waterlogged area made available for cultivation	Hectare	35000	31706
D	Fish Production			
a	Farmer pond rehabilitated for semi intensive fish production	Hectare	3300	3064
b	Community tank developed	Hectare	800	761
c	Beel developed for low intensive fish production	Hectare	1700	1760
d	Integrated Fish Farming demonstrated	Hectare	NT	540
e	Fish farmer training organised	Number	NT	41738
Component -2 : Agricultural Services and Market Chain Development				
1	Farm Advisory Services			
a	Establishment and operationalization ATMAs	Nos.	11	12
b	Setting up of Block Resources Centres	Nos.	214	208
c	On farm demonstration organised	Nos	NT	41757
d	Field days organised	Nos	NT	6729
e	Farmers trained	Nos	NT	15354
f	Exposure visits organised	Nos	NT	835
g	Pure breed bucks distributed under demonstration programme	Nos	NT	3053
h	Pure breed boars distributed under demonstration programme	Nos	NT	2505

Sl.	Interventions	Unit	Project Target	Achievement
2	Livestock Upgrading			
a	Gopal mitras trained	Nos.	166	164
b	Breeding bulls procured for Barapetta Bull Mother Farm	Nos.	12	12
c	Artificial insemination undertaken	Nos.	900,000	802113
d	Animal health camps organised	Nos.	2,611	2493
3	Fish Seed			
a	Improved mini hatcheries set up	Nos	19	19
b	Cage culture unit set up	No	20	20
4	Commodity Marketing			
a	Farmer Producer Organizations (FPOs) formed	Nos	25	25
b	Dairy Cooperative Societies (DCS) formed	Nos.	312	312
c	Milk Producing Institutions (MPIs) organised	Nos.	361	361
d	Pig rearer groups mobilised	Nos.	250	250
e	Goat rearer groups mobilised	Nos.	300	300
5	Forestry			
a	Afforestation area	Ha	7048	6844
Component -3: Infrastructure Development (outputs/outcome)				
1	Rural Road and bridge up-gradation			
A	Improved rural connectivity - by			
a	Road rehabilitation	Km	1000	900
b	Road up-gradation	Km	1000	836
c	Bridge up-gradation	Number	287	196
d	Market Linkage Road	Km	57	57
4	Rural markets			
A	Wholesale Markets	Number	49	46
B	Rural Haat (Periodical markets)	Number	48	47

g) The project directly benefitted about 565,745 beneficiaries across the sectors like agriculture, fishery, dairy, forestry, and livestock, as against the envisaged 410,000 beneficiaries. Small, marginal and land less farmers³ consisted 96% of the direct beneficiaries under the project.

h) **Significant Outcome of the project:**

The following table shows the significant outcome of the project as per the Impact Assessment Report of March 2015 by the independent Monitoring & Evaluation consultants:

PDO Level Results Indicators		Unit of Measurement	Baseline	End-of-Project Target	Achievement	% Achieved Over Baseline
Increase in Crop Productivity	Boro Paddy	ton/ha	1.5	5.0	5.5	267%
	Mustard	ton/ha	0.6	0.8	1.1	83%
	Cabbage	ton/ha	7.0	8.5	10.6	51%
	Cauliflower	ton/ha	5.6	7.0	9.8	75%
Increase in Fish Productivity	Ponds	ton/ha	0.485	2.75	3.5	622%
	Tanks	ton/ha	0.85	2.25	2.3	171%
	Beels	ton/ha	0.48	0.75	1.6	233%
Increase in Cropping Intensity		%	130	195	200	54%

³ Small farmers own 1-2 ha of land, Marginal Farmers : 0.5-1 ha, Landless: 0-0.5 ha, Semi-Medium: 2-4 ha

PDO Level Results Indicators		Unit of Measurement	Baseline	End-of-Project Target	Achievement	% Achieved Over Baseline
Increase in Crop Diversification	Area under cereals	%	83	80	65	-22%
	Area under high value crops	%	17	20	35	106%
Increase in marketed surplus	Paddy (Boro)	%	18	45	26.1	45%
	Mustard	%	17	45	64.5	279%
	Vegetables	%	28	65	99.5	255%
Increase in Milk Productivity	Cross-Bred Cow	Lpd/cow	5.45	6.81	6.32	16%

The IA Report has inter alia revealed that **(a)** farmers in the project areas started shifting from cereals to high value crops, as there is a reduction of 22% area under cereals and 106% increase in the area under high value crops over baseline; **(b)** cropping intensity went up to 200% and the crop productivity in case of boro paddy enhanced by 267% over baseline; **(c)** fish productivity at farmers pond and community tank enhanced by 622% & 171% respectively over base line; **(d)** Marketable Surplus in case of paddy, mustard and vegetables went up by 45%, 279% and 255% over baseline; **(e)** Total 8,843 non-beneficiary farmers adopted the demonstrated technology and 443 non-beneficiary farmers availed commercial bank loan to the tune of Rs.63.50 million; **(f)** road upgradation/rehabilitation and timber bridge conversion to RCC helped in improved market access and brought down transportation and travel cost and increased accessibility of health, and education facilities.

The project provided 100,000 pumpset, with 50% grant, to groups of farmers, for minor irrigation, through an innovative “community procurement” process. This farmer friendly process allows farmer groups to select and procure pumps of their choice, by themselves, from a pre-selected databank, drawn up by the project through a competitive process. This effort facilitated increase in average cropping intensity upto 200% from 128% at pre-project, with the highest recorded cropping intensity of 230% (for 30% of the groups). Concurrently, productivity of crops grown in the project area has also gone up, with a recorded increase in average productivity of Sali paddy upto 4.4 ton/ha from 1.5 ton/ ha at baseline. This was followed by a paradigm shift towards Boro paddy cultivation as a result of the assured irrigation, coupled with mechanization for time tillage and extension service through ATMA, an average productivity of 5.5 ton/ha was achieved against 1.5 ton/ ha at baseline. Similarly, productivity of major vegetables cultivated also got increased by over 51% for cabbage and 75% for Cauliflower.

AACP also boosted the fish production in the state by demonstrating improved technology and management of water resources in Farmer’s ponds, Community Tanks and the Beels i.e. the oxbow lakes. Farmers, as groups, contribute 50% costs of the civil works in kind and 10% cost of the inputs in cash. The average fish productivity in project areas has increased by 622%, 171% and 233%, in case of ponds, tanks and beels.

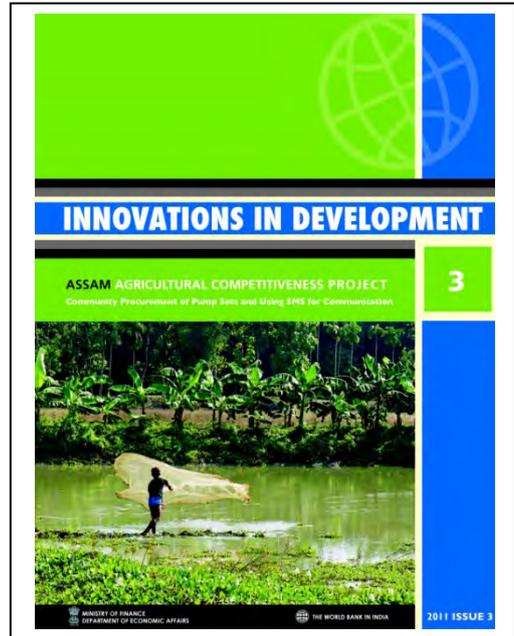
Towards upgrading the productive capacity of livestock dairy-herds through cattle breed improvement, 21,08,240 doses of semen resulted the birth of 788,513 calves and of which 394,257 crossbred females with production capacity on average 6.3 liters per day compared to 1.1 liters per day for the unimproved/indigenous cattle.

Rural roads are the life line for sustainable development of Agriculture & allied sectors and facilitate growth of essential modes of agriculture production, distribution and transportation to market. Towards this, the project upgraded 836 km of dilapidated rural roads to black-topped standard with conversion of 196 timber bridges on these roads to RCC. In addition, another 900 km of earthen/gravel rural roads was also rehabilitated. Project also constructed 57 km of small stretched roads connecting dairy/fishery production hubs and rural markets.



- i) Considering the immense recognized success of AACP, Government of Assam availed additional financing (US\$ 50 million in 2012) from the World Bank to sustain the momentum of development initiatives of AACP and also to broaden & deepen the coverage of original project, for enhancing the development impact. The World Bank's support for Assam's efforts to eradicate rural poverty is vital, not just for finance, but also for bringing the experience of good delivery practices that the Bank has gained from around the world. Closely monitored on-ground implementation, efficient mission mode project management, transparent procurement process, coupled with social audits, monitoring & evaluation facilitated embedding the delivery process of AACP into non-AACP programs.
- j) Apart from augmenting the community stewardship in planning, implementation, as a Finance-Plus approach, the additional financing period aims to convergence of all the extension services programs of the Government for agricultural & allied sectors under one platform, establishment of a Telemetry-based ground water management system, reforming the legal framework governing fisheries sector and collaboration with the private sector for marketing. While the convergence element has been accomplished, the other initiatives would be achieved shortly.

k) AACP has contributed in mainstreaming some of the good practices that were emerging from the project, into the operations of the various non-AACP schemes managed by government departments. All schemes are environmentally scrutinized and strictly monitored for any adverse environmental impacts. All STWS are tested for the presence of hazardous elements like Arsenic, Fluoride, and Hydrocarbon etc. Similarly all DPRs for roads and markets are also scrutinized from environmental angle. The innovations particularly in **Community Procurement** and the SMS as a tool for extension service has been documented and published jointly by the World Bank and the Government of India. The Government of India has formally advocated adoption of these good practices in other States of the country. AACP's performance has been rated consistently as satisfactory by the World Bank and its achievements were show-cased by the World Bank in their Newsletter of March 2011, through a topic "Tapping the vast agricultural potential of Assam for a new 'Green Revolution'" which became very popular.



l) The innovative farmer friendly community procurement model of AACP for irrigation, mechanization and fisheries component, gives authority of procurement decisions to the farmer groups. The World Bank and the Government of India (GoI) recognized this model as one of the 'good practices' and they jointly had published this in a document captioned "Innovation in Development". The GoI circulated this document to all the States of India for adoption as applicable. Further details in this respect are available in the web site of the World Bank, GoI and ARIAS Society



Similarly, the achievement under Irrigation component of AACP through Community Procurement was published by the IFC in the "Smart Lessons" International Finance Corporation (IFC) is a wing of the World Bank. The achievement under Fishery Sector was also published by the IFC. AACP has won 1st prize from the World Bank for the achievement under Fishery Sector under the 'Global Smart Solutions competition'.

**Assam Agricultural Competitiveness Project
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PROJECT COMPLETION REPORT**

2. Background

- 2.1** Assam is the largest of the eight North Eastern States of India, which as a group, is one of the most economically backward regions of India - because of its location and geography, compounded by a series of events over the last four decades that have seriously constrained the economic growth. It is only for the last thirteen years that there has been a prolonged period of economic stability in Assam. The State having 27 districts⁴, has total 27.50 lakh farm families, of which with 62% of farmers are classified as marginal (less than 1 ha land holding); and another 21% as small (1 to 2 ha), constraining farmers capacity to invest in both capital works and crop inputs.
- 2.2** To address a number of problems that constrain agricultural development and growth of the rural economy in Assam, the State Government has been putting in place a more enabling policy environment and linked to this reform initiative, the World Bank (W.B.) funded Assam Rural Infrastructure and Agricultural Services Project (ARIASP) (IDA Cr. 2733 IN) was taken up during the period 1995-2004. ARIASP was worth Rs.567 crore, with a W.B. credit of US\$ 126 million. The project was closed on June'2004, with a 'Satisfactory' rating by the World Bank, with an estimated ERR (Economic Rate of Return) of 24%.
- 2.3** After successful completion of ARIASP, the State took up the World Bank financed Assam Agricultural Competitiveness Project (AACP) and since 24th February 2005, AACP has been under implementation. The total project cost of AACP, excluding beneficiary share is Rs. 858 crore, including W.B. credit of US\$ 154 million. The original closing date of AACP was 31st March 2010, which was initially extended to 31st March 2012. In January 2012, AACP got an Additional Financing (AF) of US\$ 50 million from the World Bank and the closing date of both the AF and the AACP was established as 15th March 2015.
- 2.4** The **Project Development Objective** (PDO) of the AACP is to increase the productivity, and market access of the targeted farmers and community groups. Key success indicators of the project are increased yields of crops, fish, and livestock products - complemented by an increase in the proportion of marketed surplus. Although the over-riding objective is to stimulate growth of Assam's agricultural economy, project activities are predominantly pro-poor, directed primarily at small and marginal landholders, poor fishing communities, and the landless. During the AF period, the PDO remained the same as was in the original project.

⁴ List of district wise numbers of Civil Sub-divisions, Development Blocks, Gaon Panchayats, and Villages of Assam is furnished under Annexure.

2.5 AACP supports Assam Government's strategy for reducing poverty among the rural poor and other vulnerable groups, who are outside the reach of most development interventions. The project takes a holistic approach to raising farmer incomes and its multiple sectors include- Irrigation, Mechanization, Agricultural Extension, Community Forestry, Rural Roads, Markets, Dairy, Fisheries, Livestock, and Marketing Extension. The project follows a **Community Driven Development** approach and focus agricultural service delivery linked to market driven intensification and diversification of the agricultural sector. AACP aims at empowering targeted rural poor farmer-groups to become more competitive, so as to enable them in taking advantage of emerging commercial opportunities, increase productivity, and enhance market access.

2.6 The Additional Financing (AF) of AACP is consistent with the development objective of the original project, without any major changes to the PDO, design or implementation arrangements, and has been intended for scaling up the project's impact and development effectiveness through-

- (i) promotion of policy initiatives that build synergies and convergence with ongoing schemes of the Government of Assam (GoA) and the Government of India (GoI); establishing a system for sustainable use of groundwater; and mainstreaming project collaboration with the private sector; as well as
- (ii) Scaling up investments in irrigation, mechanization extension advice, rural haats and market access roads to increase production, productivity and market access in selected districts.

2.7 Activities under AF are skewed towards intensification of the impact in the districts, where the demand for investment during the original project was pronounced, by supporting the delivery of agriculture & marketing services, rural road connectivity, produce aggregation and development of farmer producer organizations etc.

The Project Appraisal Document (PAD) (November 2004) for AACP and the Project Paper (February 2012) for Additional Financing provide details about the project.

3. Project Components and Sub-components

3.1 Component-1: Investment Grant Scheme: to address the constraint of lack of capital in farm and rural communities for productivity enhancing investments – focusing on private minor irrigation, farm mechanization, and fish production in ponds tanks and beels, with the following subcomponents:

- a) **Irrigation development**
- b) **Farm Mechanization**
- c) **Micro Watershed Drainage**
- d) **Fish Production (Ponds, Tanks, & Beels)**

3.2 Component-2: Agricultural Services and Market Chain Development: to address the constraints of inadequate market-linked technology transfer; absence of basic producer organizations with links to markets; and low productivity livestock resources – focusing on extension system reforms, upgrading programs for livestock and fish, improved marketing services and formation of milk cooperatives, and forestry, with the following subcomponents:

- a) **Farm Advisory Services**
- b) **Livestock Upgrading**
- c) **Fish Seed**
- d) **Commodity Marketing**
- e) **Milk Marketing**
- f) **Forestry.**

3.3 Component-3: Infrastructure Development: to address the constraint of a poor rural road network and inadequate market infrastructure – focusing on upgrading of rural roads and market-yards, and replacement of timber bridges, with the following subcomponents:

- a) **Roads and Bridges**
- b) **Rural Markets.**

4. Project Overview, Targets, and Achievements

The component and subcomponent wise physical targets and achievements are shown in the Executive Summary. Summary of the Component-Subcomponent wise allocations and the corresponding expenditure is shown below:

Final Allocations and Actual Expenditure as on 28.02.2015 and Project/Committed Expenditure from 1.3.15 to 31.5.15 (Rs. Crore)

Project Cost By Component	AACP Period				AACP + AF Period				Total					
	Allocation at Appraisal (Govt+WB)	Allocation (MTR)	Allocation at Appraisal of AF (#1)	Expn. 31.12.11	Allocation at Appraisal of AF Jan 2012	Allocation post Dec.2013 (#-2)	Allocation post Jan.2015 (#-3)	Expn. till 28.2.15	Allocation at Appraisal	Allocation at MTR + Dec13 (AF)	Allocation (ACP+AF) Jan/15	Expn. till 28.02.15	Committed Expn. to be incurred w.e.f. 1.3.15 to 31.5.15	Total Expn. (Actual+Projected)
A	B	C	D	E	F	G	H	I	J=(B+F)	J=(C+F)	J=D+H	K(=E+I)	L	M(=K+L)
A. Investment Grant Scheme														
1) Irrigation	67.53	91.92	63.40	63.40	85.54	84.85	105.33	86.20	153.07	177.46	168.73	149.60	19.13	168.73
2) Farm Mechanization	18.22	22.01	16.61	16.61	16.20	21.00	24.07	19.82	34.42	38.21	40.68	36.43	4.25	40.68
3) Fish Production	38.07	42.74	40.06	40.06	36.08	36.08	36.08	27.44	74.15	78.82	76.14	67.50	5.49	72.99
Sub-Total	123.82	156.66	120.07	120.07	137.82	141.93	165.48	133.46	261.64	294.48	285.55	253.53	28.87	282.40
B. Agricultural Services and Market Chain Development :														
1) Agricultural Services	87.47	44.70	35.20	35.20	28.50	33.13	33.60	33.20	115.97	73.20	68.80	68.40	0.4	68.80
2) Marketing Extension	3.33	2.53	0.48	0.48	6.17	3.06	3.06	2.78	9.50	8.70	3.54	3.26	0.28	3.54
3) Livestock Upgrading	19.43	13.99	10.41	10.41	10.76	4.92	4.92	0.81	30.19	24.75	15.33	11.22	3.11	14.33
4) Fishery Upgrading	9.79	5.66	5.66	5.66	0	0	0	0	9.79	5.66	5.66	5.66	0	5.66
5) Milk Marketing	17.67	10.83	6.88	6.88	5.67	37.67	15.65	3.28	23.34	16.50	22.53	10.16	7.46	17.62
6) Forestry and	15.69	53.70	30.07	30.07	7.40	7.40	7.40	5.85	23.09	61.10	37.47	35.92	0.9	36.82

Final Allocations and Actual Expenditure as on 28.02.2015 and Project/Committed Expenditure from 1.3.15 to 31.5.15 (Rs. Crore)

Project Cost By Component	AACP Period				AACF + AF Period				Total					
	Allocation at Appraisal (Govt+WB)	Allocation (MTR)	Allocation at Appraisal of AF (#1)	Expn. 31.12.11	Allocation at Appraisal of AF Jan 2012	Allocation post Dec.2013 (#-2)	Allocation post Jan.2015 (#-3)	Expn. till 28.2.15	Allocation at Appraisal	Allocation at MTR + Dec13 (AF)	Allocation (ACP+AF) Jan/15	Expn. till 28.02.15	Committed Expn. to be incurred w.e.f. 1.3.15 to 31.5.15	Total Expn. (Actual+Projected)
A	B	C	D	E	F	G	H	I	J=(B+F)	J=(C+F)	J=D+H	K (=E+I)	L	M (=K+L)
7) Project Coordination Unit		31.81	30.17	30.17	26.93	22.06	22.06	10.76	26.93	58.74	52.23	40.93	11.3	52.23
Sub-Total	153.38	163.23	118.87	118.87	85.43	108.24	86.69	56.68	238.81	248.66	205.56	175.55	23.45	199.00
C Infrastructure Development :														
1) Road and Bridge upgrading	523.68	502.45	436.83	436.83	152.80	155.50	155.50	106.65	676.48	655.25	592.33	543.48	41.79	585.27
2) Market yard Development	28.54	35.83	26.15	26.15	92.70	91.80	89.80	63.64	121.24	128.53	115.95	89.79	26.16	115.95
Sub-Total	552.22	538.28	462.98	462.98	245.50	247.30	245.30	170.29	797.72	783.78	708.28	633.27	67.95	701.22
Total	829.42	858.17	701.92	701.92	468.75	497.47	497.47	360.43	1298.17	1326.92	1199.39	1062.35	120.27	1182.62
	1US\$= Rs. 46.35	1US\$= Rs. 49.72			1US\$= Rs.50	1US\$= Rs.61	1US\$= Rs.61		Claim Submitted to Bank			836.50		

#1 An amount of Rs. 156.25 crore (US\$ 25 million equivalent) was taken to the AF period

#2 Date of Cancellation of US\$ 10 million, Exchange rate change 1 US\$ = Rs.60/-

#3 Additional 10,000 STWs and 165 Tractors were taken up as agreed with the World Bank's August 2014 Mission

Overview of the Physical Achievements of Key Interventions as below:

Implementing Department wise Physical Progress of Key Interventions as on 15.03.2015								
Key Interventions		Unit	Target (Org. Credit)	Target (Org. Credit)	Targets (At AF)	Total Project Target	Achievement against Total Project Target	
			(at appraisal)	(at MTR)	(at appraisal)		(nos.)	(%)
A		B	C	D	E	(D + E)	G	H
A.	AGRICULTURE							
	1 Irrigation							
	(i) STW	nos.	60,000	60,000	30,000	90,000	1,00,000	111%
	(ii) LLP	nos.	20,000	20,000	0	20,000	15220	76%
	(iii) Drainage	ha	20,000	20000	15000	35,000	31,706	91%
	2 Mechanization							
	(i) Tractors	nos.	750	750	900	1,650	2149	130%
	(ii) Power tillers	nos.	1500	1500	0	1,500	1084	72%
	3 Market Development							
	(i) Wholesale markets	nos.	24	24	25	49	46	94%
	(ii) Rural Haat	nos.	50	18	30	48	47	98%
	4 ATMAS							
	(i) ATMAS	nos.	11	11	0	11	12	109%
	(ii) BRCs	nos.	123	123	0	123	117	95%
	(iii) FIAC	nos.	0	0	91	91	91	100%
B.	FISHERIES							
	1 Farmers Ponds	ha	1200	2500	800	3,300	3064	93%
	2 Community Tanks	ha	200	500	300	800	761	95%
	3 Beels	ha	3000	1000	700	1,700	1760	104%
	4 Integrated Fish Culture	ha	125	250	300	550	540	98%
	5 Improved Mini Hatchery	No.	12	19	0	19	19	100%
	6 Cage Culture	No	0	0	20	20	20	100%
C.	ROADS & BRIDGES							
	1 Road Rehabilitation	kms	1000	1000		1,000	900	90%
	2 Road upgradation	kms	1000	1000	0	1,000	836	84%
	3 Bridge upgradation	nos.	287	287	0	287	196	68%
	4 Market Linkage Road	Kms			57	57	57	100%
D.	AH & VETERINARY/ DAIRY							
	1 Gopal Mitras	nos.	400	166		166	164	99%
	2 Breeding Bulls	nos.	12	12		12	12	100%

Implementing Department wise Physical Progress of Key Interventions as on 15.03.2015								
Key Interventions	Unit	Target	Target	Targets	Total Project Target	Achievement against Total Project Target		
		(Org. Credit) (at appraisal)	(Org. Credit) (at MTR)	(At AF) (at appraisal)		(nos.)	(%)	
A	B	C	D	E	(D + E)	G	H	
3	Artificial Insemination	nos.	900000	900000		9,00,000	802113	89%
4	Animal health Camps	nos.	2611	2611		2,611	2493	95%
5	Pilot Pig SHG	nos.	0	0	150	150	250	167%
6	Goat SHGs	nos.	0	0	150	150	300	200%
7	Dairy Cooperative Societies (DCS)	nos.	250	312	0	312	312	100%
8	Milk Producing Institutions (MPIs)	nos.	0	300	61	361	361	100%
E.	FORESTRY							
1	Afforestation	ha	7048	7048	0	7,048	6844	97%
2	Maintenance of Created Plantation	ha	0	0	5400	5,400	6409	119%

A narrative summary of the physical targets and achievements is furnished below:

5. Component and Sub-component wise status

5.1 Component-1: Investment Grant Scheme

(Allocation: Rs.285.55 Cr or 24 % of Project cost, excluding beneficiary share; Total Expenditure: Rs. Cr including projected expenditure)

- a) Irrigation development focused on expanding dry season cultivation, leading to increased intensification and diversification of production systems, by promoting small scale irrigation systems using both ground and surface water resources and pilot testing new (Solar) irrigation technologies. With the installation of Shallow Tube Well (STWs) and Low Lift Pumps (LLPs) farmers have been able to grow Rabi crops (boro paddy, mustard, pulses, vegetables etc.) and thereby increasing the cropping intensity and productivity, as lack of timely water, together with low level of farm mechanization, hampered cultivation of crops during the dry season.
- b) This component targeted poorer sections of farming and rural communities, with limited access to capital, for promoting farm productivity enhancement *through* irrigation, mechanization, micro-watershed drainage, development of fish ponds, community owned tanks and beels (open water bodies) for fishing. All activities were taken up through farmer groups. The groups were formed, screened using an objective eligibility criteria to ensure that economically weaker sections of the farmers got preference. NGOs were actively involved in group identification and mobilization, and subsequent technical & management training to enhance sustainability of the group. The various elements of this component are as below:

5.1.1 Sub-Component-1.1: Irrigation

The 288,430 ha of irrigation command area created has facilitated enhancing cropping intensity to 200%.

Target and Achievement under Irrigation sub-component				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Shallow Tube Wells (STW)	60,000 nos.	30,000 nos.	90,000 nos.	100,000 nos.
Low Lift Pumps (LLP)	20,000 nos.	-	20,000 nos.	15,220 nos.
Sprinkler Irrigation Pilot	100 ha	-	100 ha	100 ha
Flow Irrigation	250 ha	-	250 ha	250 ha
Ground Water Monitoring Stations	-	208 nos.	208 nos.	187 nos.
Solar Power Irrigation Pilot	-	12 nos.	12 nos.	12 nos.
Micro Watershed Drainage Program	20,000 ha	15,000 ha	35,000 ha	31,706 ha

N.B: Against the target of 20000 LLPs, project could achieve 15220 Nos. due to poor demand from the farmers, considering the scarcity of perennial source of surface water during the dry season. In the Boro, Rabi Cultivation period, when the irrigation facility is mainly required, the surface water source in most of the areas of the state goes dry and hence irrigation through LLP is not possible. Hence the farmers preferred groundwater resources rather than surface water resources for irrigation purpose. The target of STW under AACP-AF has been enhanced by another 10,000 as proposed by the Project and agreed by the World Bank's August/2014 Mission.

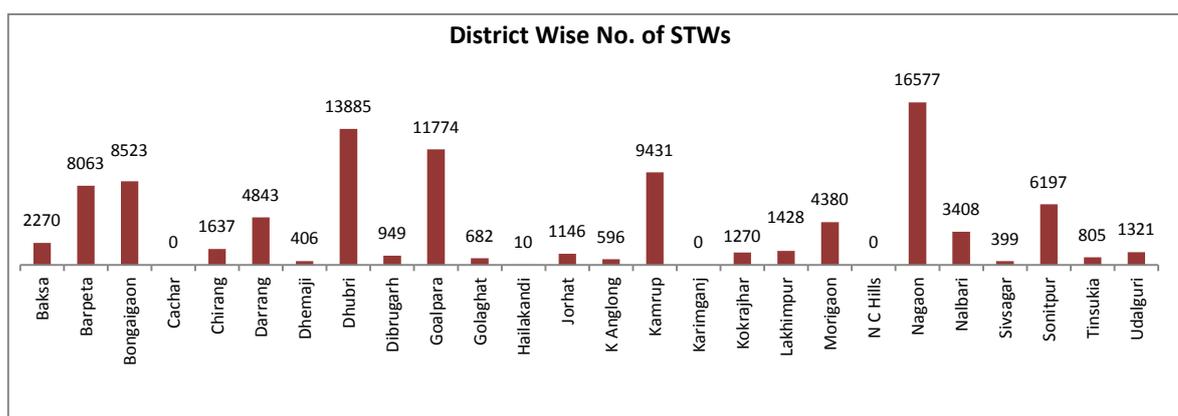
- a) Assured Irrigation increased cropping intensity, crop productivity, and thereby increased farm-income to small and marginal. Although Assam has an abundance of rainfall in the monsoon season and the land is fertile, farmers are unable to maximize income from their fields, because they lack access to water during the long dry winter months.



This is largely because they lack the capital to invest in shallow tube wells (STW) to tap into the region's high water table and abundant groundwater.

- b) Irrigation development focused on facilitating dry-season cultivation, leading to increase intensification and diversification of agriculture production systems, by promoting small-scale irrigation units, using both ground and surface water resources, and pilot testing new irrigation technologies. To enable farmers to irrigate their fields in winter, AACP sought to provide groups of 3-5, primarily small and marginal farmers, with irrigation pumps for shallow tube wells, for promoting small irrigation systems using ground water resources, to facilitate cultivation during the long the dry season coupled with extension service in the form of training, demonstrations, exposure visit, etc. by the line departments through the ATMA program, leading to increased intensification & diversification of agriculture production systems.

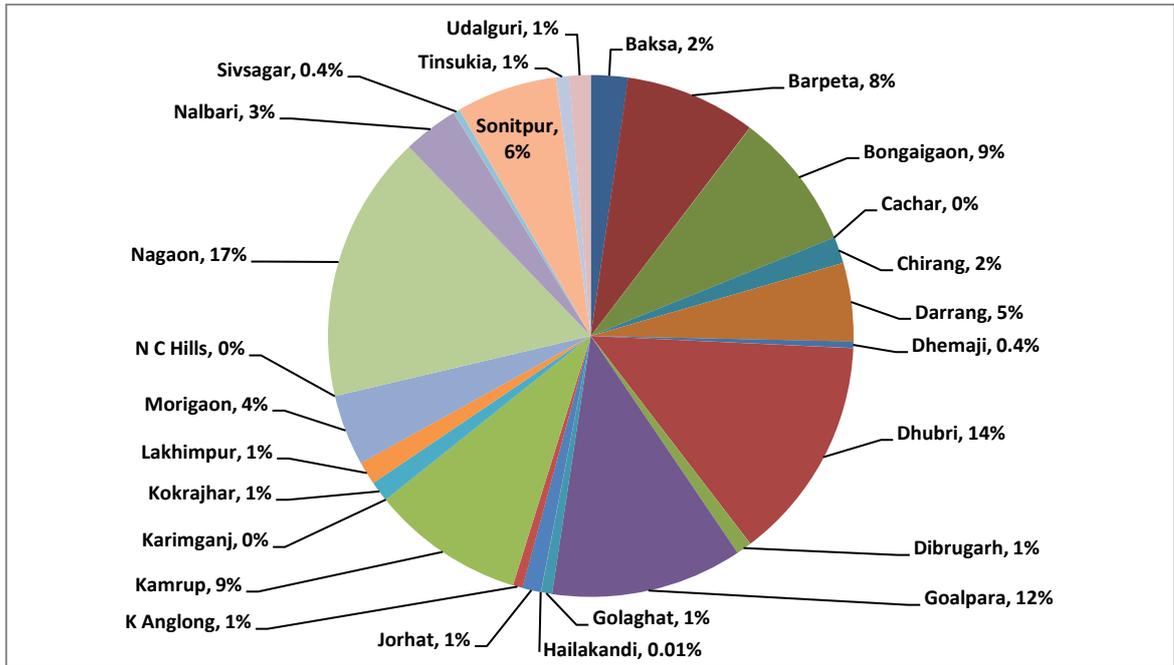
- c) Activities included - formation of 100,000 irrigation groups⁵, called Agro Service Groups (ASG), consisting of 3 to 5 farmers for acquiring Shallow Tube Wells (STWs) with 50% project grant, which has created assured irrigation facilities for about 250,000 ha in the areas where groundwater is available. Another 15,220 groups⁶ were formed for acquiring low lift pump (LLP) to irrigate about 38,050 ha in areas, with 50% project grant, where groundwater level is very low and not feasible for STW, but perennial source of surface water is available. Going by the success and demand from the farmer groups, the GoA took up a program on STWs under RKVY. In addition, project also took up pilot operations in micro flow/ sprinkler irrigation associated with STW or LLP to demonstrate water use efficiency. The pilot operation on sprinkler irrigation was successfully demonstrated, covering an area 100 ha of mustard cultivation and the two flow irrigation pilots covered an area of 250 ha. Subsequent to this pilot, the GoA scaled up through the Gol mission on micro irrigation and the same is under implementation in the State.



- d) Most of the STW & LLP were having diesel engine-operated centrifugal pump sets, due to poor grid network in the farm fields. However, during the AF period 450 nos. grid-electricity driven pumps were also commissioned on demand basis and depending on availability of grid-electrical connectivity. The farmer groups procured the pumpset following an innovative community procurement process, hitherto not introduced anywhere in the world, as delineate separately. Special attention was given to develop capacity of small & marginal farmers in respect maintenance of STWs and LLPs, as the beneficiary farmers are fully responsible for operation and maintenance of the STWs & LLPs. The average cost of an STW is Rs.44,000 each (in 2014), including the boring cost and that on an LLP is Rs.22,000 each (in 2011). District wise target and achievement of STWs and LLPs is given at [Annex-1. Analysis has shown that 87% i.e. 87,081 nos. STWs of the 100,000 STWs were absorbed in the 10 districts of Assam \(out of total 26 districts\).](#)

⁵ 60,000 ASGs under AACP plus 40,000 STW groups under the AF.

⁶ Target reduced from 20,000 LLPs due to lesser demand from Farmers and no LLPs were taken during the AF period.



e) Profile analysis of the STW beneficiaries demonstrates that there has been a positive discrimination in favour of small & marginal farmers. The proportion⁷ of small and marginal farmers in case of STW beneficiaries are 32% and 47%. Thus, small & marginal farmers have emerged as major beneficiary of STW program under the Project.

f) Outcome: According to the independent M&E consultant's Impact Assessment Report (March 2015), STW program under the Project have made a significant impact on raising agricultural production and household incomes primarily in case of marginal and small farmers. The outcome of the project intervention as given in the Impact Assessment Report is given below:

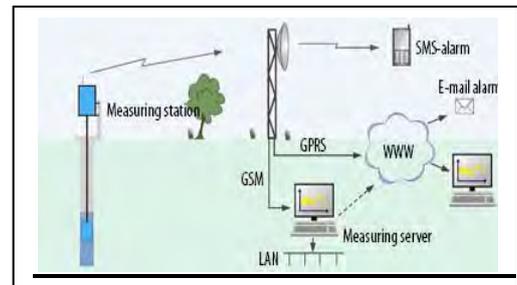


- Production of Boro paddy increased to 5.5 ton/ha against the corresponding yield of 2.2 ton/ha for the control group.
- Productivity of Sali paddy also went up to 4.4 ton/ha against the 3.6 ton/ha achieved by the control groups (Even though the STW is meant for dry season cultivation e.g. boro paddy, it also provided live saving irrigation during the dry spell of the wet season cultivation e.g. sali paddy).

⁷ Small farmer (owning 1-2 ha); Marginal farmer (owning 0.5-1 ha));

- Similarly productivity of mustard was recorded as 1.1 ton/ha by project beneficiaries while it was 0.7 ton/ ha for the control groups. Vegetable production was also found to be better in the fields of the beneficiaries at 10.6 ton/ha for Cabbage and 9.8 ton/ha for Cauliflower.

- g) On the **environmental safeguards**, the project conducted the mandatory testing for the presence of Arsenic, Fluoride, Iron, and Hydrocarbon in water samples of each & every STWs (barring the safe blocks, where 20% samples selected on random basis were tested). These tests were conducted in the laboratories of reputed educational institutions. Total water sample from 77,745 STWs has been tested. STWs that are found to have above permissible limits of these hazardous elements are painted in Red colour and the owners of the STW is enlightened about the same, including sensitization that the water from these STWs is not fit for potable purpose. Based on the water sample analysis installation of STWs in 25 blocks of the state was stopped for presence of Arsenic (18 blocks) and Fluoride (7 blocks) beyond the permissible limit.
- h) The project has also mapped the STWs through GPS and plotted the data in a Google based digital map. The GPS coordinates & relevant data of the STWs maps may be seen at www.arias.in .
- i) **Ground Water Monitoring (GWM) System:** For the first time, under the project the State has a 24x7 online Groundwater level monitoring system through Digital Water Level Recorders and GSM service. Assam has a good reservoir of ground water, with 22 out of 27 districts being located in Brahmaputra valley and also high recharge potential due annual average rainfall of above 2200 mm/year. Considering the



increasing number of installed STWs, a review of the groundwater scenario for sustainable groundwater management was taken up through a study on the safe yield of ground water in the State was done through the North Eastern Regional Institute of Water & Land Management (NERIWALM) in 2004. This study corroborated the fact that STWs may be installed safely in Assam, as was determined by the Central Groundwater Board, who had also indicated in 1985 and also in 2000 that there is nothing to worry due to the high Groundwater recharge rate in the State. However, in 2011 during preparatory phase of AF, it was decided to revisit the 2004- NERIWALM Study Report, considering the continuous number of STWs that were being installed. The fresh report indicated that at least in three districts of Assam (Bongaigaon, Dhubri and Kamrup-Rural), the groundwater scenario is either semi-critical or critical. Accordingly, project regulated the number of STWs in these districts. It was also decided that installation of STW needs to be done considering potential discharge & recharge phenomena.

- j) In view of this, setting up of a groundwater monitoring system was considered essential during the AF period to avoid over exploitation of groundwater, thereby ensuring its sustainable use. The comprehensive groundwater monitoring system is intended to support the Agriculture Department in taking strategic decision on future investments on STW programs, determine the density of STWs as well as groundwater recharge structures specific to hydro-geological regions, etc.
- k) The system comprises installation of 187 piezometers, with telemetric Digital Water Level Recorders (DWLRs) in each of the piezometers, and all linked to a central server at Guwahati through GSM network for 24x7 monitoring of groundwater level. In future, the ground water monitoring system will also be retrofitted with automatic weather monitoring facility at selected locations. The overall responsibility for the program and analysis of the data collected is vested with the Directorate of Agriculture.
- l) **Pilot program of using solar-power for running pumpsets:** The present setup of irrigation system in the State draws energy from fossil fuel run pump sets and electricity. Most of the pumpsets provided under the project were diesel engine driven, with a few grid-electricity driven pumps. Government of Assam decided to promote and alternate energy source and came up with a novel idea of tapping the abundant solar energy endowed to meet the power requirement. Accordingly during the AF period a pilot project on solar powered irrigation program with STW keeping in view the ground water potential of the State. The basic objective of this pilot was to ascertain the effectiveness of the solar powered irrigation system in Assam's conditions and also ascertain the techno-economic feasibility of such systems for irrigation in the State.
- m) The pilot program of providing solar-electricity-power driven irrigation pumps through Solar Photovoltaic (SPV) was completed in 12 locations viz. 2 nos. in each districts viz. Jorhat, Nagaon, Kamrup, Nalbari, Barpeta & Darrang. This pilot has been taken up with the ASGs who are having STW installed under the project.
- n) Two types of combinations under this pilot were tried, viz. Solar Photovoltaic inverter/battery based system for diesel 5 HP/electric 2 HP pumpsets and Solar Photovoltaic VFD based system without inverter for diesel 5 HP/electric 2 HP pump-sets.
- o) The early results from the pilot shows that solar power in Assam is adequate for generating enough power for running water pumps for irrigation and water discharge from the demonstrated water pumps are satisfactory and adequate.
- Utilising existing electric motor (Retrofitting) with solar system is found to be very expensive because of inverter, battery and additional panel required to operate the system. Further, the low voltage electric motors draw maximum current and quickly



drain out the battery and hence found to be unsuitable for the system. Hence, selection suitable electrical motor capable to operate with solar power is essential.

- Motors operated with a Variable Frequency Drive (VFD) with solar specific motor found to be more effective than the trial for utilising existing motor with battery & inverter. The variable frequency drive is very simple to operate and needs no day-to-day maintenance and the pump run from sunrise to sun set.

The systems successfully demonstrated that Solar Power is a viable alternative source of energy for irrigation. VFD based irrigation pumps are robust and cost effective solar water pumping solution. The system can operate under the variable solar radiation conditions, and can start pumping water since morning continuously with reference to the variability of solar radiations. However VFD based systems cannot provide power for household applications and can only be used for water pumping applications. The solar PV system will remain idle in case there is no water pumping requirement for the farmer.

Instead of using existing solar pump in the solar installations, it is better to install a new high efficiency solar pump, which relatively consumes low current. The cost of new water pump is lower as compared to the cost of increased array size to run the old inefficient pump through solar. The existing electric pumps are of low voltage motors operate at 170V, and are not suitable to operate through 220V single phase output of the solar inverter. Also for a VFD based system, electric pump has to be a three phase pump and hence existing low voltage single phase pump cannot be used with VFD based solution.

In case of Inverter/battery based system, the farmers can have flexibility of usage for other household applications. However the life of battery is only for 5 years and farmer will have recurring cost of about Rs. 60000 for battery replacement in five years. The systems installed were of tracking type, however considering the high water table in Assam, a fixed tilt structure can be robust and cost effective as compare to the tracker based array structure. The fixed type structure can be designed in such a way, that the same structure can be used for housing the inverter and systems. The pilot solar pumps have been installed with energy and water flow monitoring systems which will enable us to get information on the energy and water discharge from the solar water pumping system.

A typical 1 HP solar water pumping system has water discharge in the range of 4-5 LPS (Litre per Second) and a 2 HP system has water discharge in the range of 8-9 LPS. With reference to the available solar radiation, in Assam (4.77 kWh/M²/day), a 1HP solar pump can deliver about 60,000 Lt/Day of water, while a 2 HP pump can deliver a water discharge of 125,000 Lt/day. A 1 HP pump is suitable for irrigation of 2 Ha farm while a 2 Hp pump can be suitable for irrigation of up to 4 Ha farm.

5.1.2 Sub-Component-1.2: Micro-Watershed Drainage Program

Total 31,706 ha of water logged area drained and made available for cultivation

Target and Achievement under Micro Watershed Drainage program				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Micro Watershed Drainage	20,000 ha	15,000	35,000 ha	31,706 ha

N.B: The target under the original credit was reduced to 15,951 ha at MTR of the project from 20,000 based on the progress made till MTR. The target was reduced to 15951 ha considering the available time⁸ before the original closing date of 31.3.2010 for AACP. However, the target was enhanced with additional 15,000 ha during the AF period (with mechanized means for faster execution) based on the high economic return from this program.

- (a) Small farmers of Assam are disadvantaged as water logging further reduces their effective land holding and therefore the Micro-Watershed Drainage Program (MWDP) under the project was designed to assist the flood prone communities to restore natural drainage lines and reduce water logging and crop loss. Activities comprised of assisting flood-prone communities to restore natural drainage lines and reduce water logging and crop loss.
- (b) Drainage sub-basins were identified based on the demand from the farming communities. The work involved removal of vegetation and silt from existing drains, re-sectioning of drains where necessary. All works were carried out within the right of way of the existing drains, without any land acquisition. Active participation of the relevant farmers were ensured for each MWDP during the planning exercise in the planning, design and implementation stages, involving NGOs in social mobilization, environmental and social screening. Project also carried out rigorous environmental screening to avoid adverse environmental effects. During the AF period for expeditious execution considering the limited working season, farmer groups at their option are also allowed to use equipments like, excavators, backhoe loaders etc.
- (c) Against the total project target of 35,000 ha (20,000 ha under AACP and 15,000 ha under the AF), the project took up 32,706 ha of water logged area covering 276 km of drainage, involving total 24,683 farm families. With a mission mode awareness campaign



⁸ During AACP, MDWP program was executed manually by the beneficiaries and it required two working seasons.

during the AF through the NGOs engaged by the project had made the farmers enlighten about the benefits of this program, and along with a change in the grant pattern, all the targets were achieved, except 02 MWDPs in Cachar district. District wise details of MWDP are at [Annex- 2](#).

(d) Change: Under original credit, the project contributed 70% of the cost, while the balance 30% are provided by the farmer families in the form of cash or labour, or a combination and the maintenance costs were to be borne by the community themselves. However, based on overwhelming economic benefit that accrue from this program and also considering the sustainability & maintenance aspect, during the AF period the project grant pattern was changed to 100% project grant, with 10% of the project grant deposited into the accounts beneficiary farmer group's in the form of fixed-deposit, with a pre-condition that allows them to access the fund only after 3 years for maintenance of the drainage. Explanation for changes:

- i) Beneficiary Share: Since the beneficiary's share was 30% of the total project cost during original credit, which account for a substantial amount and the beneficiaries being of small and marginal category could not afford their share portion and hence the achievement was less under original credit.
- ii) Change in Costs: The estimates under original credit were prepared based on the prevailing approved Schedule of Rate (SOR) of the Departments of PWD and Irrigation of Assam. Most of the farmers though willing to participate in the program were reluctant to take up the project considering the lower rate (Rs.53.40/Cum & Rs.59.92/Cum) for the labour charge for excavation of earth work (which was the major item of MWDP) provided in the SOR, citing that it is far below the prevailing market rate at that period.

A success story: Kolajan Micro Watershed scheme:

Kolajan Micro watershed scheme is located in Amgurikhat, Titabor Dev Block. Prior to the project intervention, almost the entire area under the Kolajan micro watershed was submerged due to the high water table of the Kolajan stream. Sali paddy could be cultivated in only about 15% of the area.

After draining out of the stagnant water from the submerged area, 110 ha was made available for cultivation. Sali paddy was cultivated by the farmers in the entire area and a total production of 354220 kg with a yield of 3220 kg/ha has been achieved.

Further, vegetables were grown in 18 ha by using water from the Kolajan stream which is available throughout the year. A yield of 9726 kg/ha has been achieved.

- iii) The average cost of drainage development under the original credit was Rs.1252/ha and under the AF it was Rs.4860/ha. The unit cost difference is mainly due to adoption of mechanical means (using backhoe loader cum excavator) during the AF period to complete the works with the limited working season, as demanded by the MWDP beneficiaries and also on account of the updated SORs (As per the updated

SOR of PWD, Assam, the labour charge for excavation of earth work was Rs.104/Cum.)

- (e) Outcome: The Impact Assessment Report of March 2015 by the Independent Consultants Production reflects that Sali paddy in the fields of MWDP beneficiaries is 4.41 ton/ha and that in the fields of the control group is 3.95 ton/ha. Similarly, the productivity of mustard is 1.13 ton/ha in the fields of MWDP beneficiaries and that of the control group is 0.91 ton/ha. Vegetable production was also found to be better in the fields of MWDP beneficiaries at 10.9 ton/ha for Cabbage and 9.8 ton/ha for Cauliflower.

5.1.3 Sub-Component-1.3: Farm Mechanization

Total 46371 hp of additional farm power created through to facilitate timely farm operations and increasing cropping intensity.

Target and Achievement under Mechanization subcomponent				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Tractors	750 nos.	900 nos.	1650 nos.	2149 nos.
Power Tillers	1500 nos.	-	1500 nos.	1084 nos.

- (a) Expansion of farming potential in Assam has been a constraint posed by limited time available for preparation of land for the post kharif crops. To overcome this, mechanization is critical in order to boost the agricultural productivity and crop diversification efforts. The timeliness of operations, particularly land levelling and tillage assume greater significance in obtaining optimal yields from different crops, which has been possible only by way of mechanization. Farm machinery complement and enhance the returns to existing labour by (a) reducing the bottlenecks associated with time-bound cultivation operations; and (b) by providing a much needed form of transport, which links farmers not only to their fields but also to rural markets. Moreover, it allows small-scale farmers to adopt more power-intensive cropping systems, with higher potential returns, than they would otherwise have. In Assam, the level of farm power is below the national average and is very low comparing other States.
- (b) The Mechanization program under the project is for facilitating multiple cropping in areas of assured irrigation, by fostering the development of Agro-Service Groups (ASG) and assisting them to obtain farm machinery for their own use and also for hiring services to neighbouring farmers. Activities involved formation of ASGs made up of minimum 10 small farmers for acquiring tractors, and another 5



small farmers for acquiring Power Tillers, for own use as well as for contract farming and as a business, maximizing both on-farm and off-farm use.

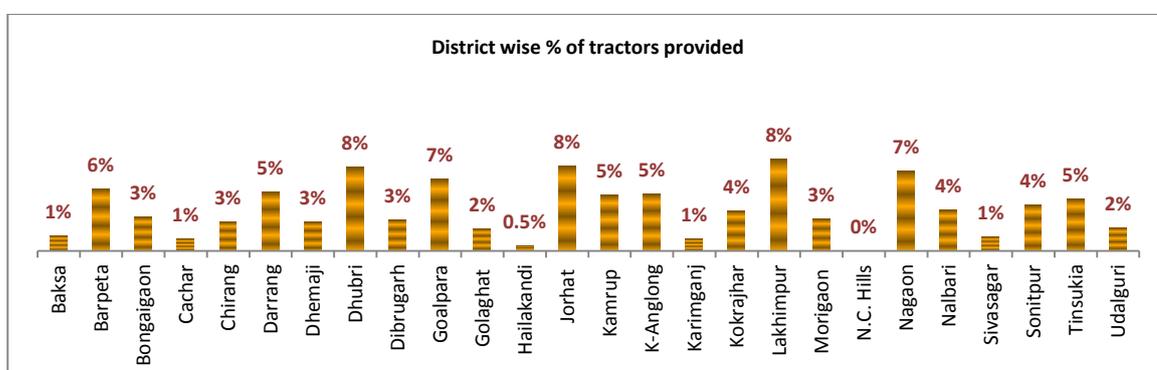
(c) **Change in Targets:** The target for tractor-ASGs was enhanced to 1084 after the MTR considering the overwhelming demand from farmers and also the farm power scenario in the State vis-à-vis in other states/national level. The target under AF period was formation of 900 ASGs for acquiring tractors. This target was further enhanced by another 165 tractors.

(d) **Capacity building of farmers:** Capacity of the Groups were built through NGOs to commercially manage the assets, and supported through appropriate training courses, to operate this machinery. Total 7850 farmers were trained on technical aspects of the tractors and power tillers in association with North Eastern Region Farm Machinery Training & Testing Institute, Biswanath Chariali.



(e) Project grants were given as per pre-determined cost-sharing formulae. The project contributed 30% for each Tractor/Power Tiller and the rest 70% is contributed by the ASGs, either on their own or through commercial bank loan. About 2132 farmers availed commercial bank loan to the tune of Rs.35.32 crore for availing tractors and power tillers. ASGs procured their tractor/power-tillers directly from the manufacturer’s local dealers according to individual preferences through the community procurement procedure similar to pumpsets as elaborated under the Procurement Section of this report.

(f) District wise details of Mechanization (Tractor and Power Tillers) are at [Annex- 1](#). Proportion of small and marginal farmers in case of tractor beneficiaries are 42% and 48% respectively.



(g) **Outcome:** According to the Impact Assessment Report of March 2015 the impact of mechanization through tractors is as below:

- There is an increase of about 249% in annual income for the beneficiary farmers in one hectare of agricultural land after they have received tractors. The average annual

income for the beneficiary households before project was INR 42,314/- for one ha of land as compared to INR 1,47,552/ha after the receipt of tractor from the project.

- The analysis indicates the positive impact of tractor which has enabled the beneficiaries to reduce land preparation time and cultivate Rabi crops.
- The findings also indicate that 41 out of 57 groups surveyed are using tractor for more than 750 hours (within a range of 750 to 1550 hours) in a year. This indicates that 72 % of the groups are using the tractor sustainably (more than 750 hours per year).
- The report also indicates that 86% of the beneficiaries reported that the use of tractor has enabled them to reduce the time for preparing land for second crop by 16-25 days and 10.5% reported reduction in time by 26 to 30 days.



5.1.4 Sub-Component-1.4: Fish Production (Ponds, Tanks & Beels)

Fish Intensification program improved the lives of 72,184 families through increased fish production.

Target and Achievement under Fish Production				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Farm Ponds	1200 ha	800 ha	2000 ha	3064 ha
Community Tanks	200 ha	300 ha	500 ha	761 ha
Beels (Open water bodies/oxbow lake)	3000 ha	700 ha	3700 ha	1760 ha
Integrated Fish Farming in Farm ponds (fish/horticulture and fish/livestock)	100 ha	300 ha	400 ha	540 ha

- (a) Fisheries Sector is considered as an important economic activity in the socio-economic context in the State of Assam. There are about 2.85 lakh ha of water area in the State in the form of beel, derelict water bodies and ponds and tanks besides 4320 km of waters in the form of rivers and tributaries. Although having great livelihood potential for

underprivileged communities, this sector mostly remained unorganized and underdeveloped. Despite the state being endowed with vast aquatic resources and enormous potential to become self sufficient in fish, Assam has been importing fish from other States to meet the deficit in demand. Fish is an essential cuisine item for the Assamese and considering 11 kg as per capita minimum annual requirement of fish, the state's fish



production can meet only about 75% of the requirement at present. The annual demand (2013-14) of fish in the State is over 325 thousand Ton against the production of 267 thousand tons. The deficit is met through inflow of fish from other states.

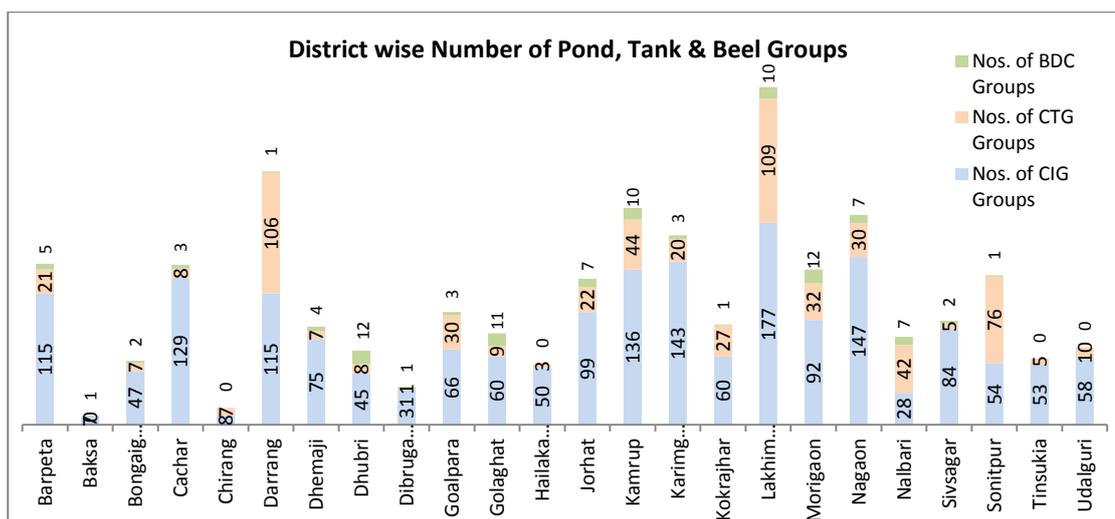
- (b) The baseline survey of AACP revealed that fish yields were low, about 0.485 ton/ha in ponds and 0.875 ton/ha in community tanks and 0.480 ton/ha in case of *beels* (oxbow lake). Typically, a larger number of fries were used to be released once in a year, with no regard for stocking density, quality or quantity and also the practice of feed application in culture ponds was very poor and there was no attempt to manage the pH of water and hence the productivity was low. There were a number of underlying problems that constrained the development and growth of the fisheries sector in Assam. AACP therefore sought to promote, facilitate, and secure a long-term development of fisheries sector in the State, conservation of fish biodiversity, and utilization of fisheries resources based on scientific & environmentally safe fish farming and fishing practices in an integrated & systematic manner, so as to increase competitiveness among landless, small and marginal fish farming communities dependent on fish for primary or secondary income generation as an effort to alleviate poverty with thrust on production.



- (c) Fish production activities of the project mainly focused on development and improved management of both private as well as public water resources. The project promoted Fish production activities through development and improved management of public and private water resources and three types of participants/activities were supported viz.
- Assisting 1879 Common Interest Groups (CIG) comprising 27,181 landless, small & marginal farmers to rehabilitate existing farm ponds covering 3064 ha for semi-intensive fish production against the target of 2000 ha at appraisal;

- Assisting 629 Community Tank Groups (CTG) comprising 19,182 landless, small & marginal and primarily of Below Poverty Line (BPL) people to undertake development of 761 ha of community owned tanks against the target of 500 ha at appraisal; and
- Assisting 103 Beel Development Committees (BDC) comprising 22,432 members to develop 1760 ha of beels, for less intensive fish production against the target of 3700 ha at appraisal.
- Integrated Fish Farming (fish/horticulture, fish/paddy and fish/livestock) in another 540 ha of ponds involving 3003 farmers against the target of 400 ha at appraisal.

Changes in targets are explained subsequently. (Target of beels was revised to 1000 ha during the MTR and the targets of pond & tank enhanced with additional 1300 ha and 300 ha respectively)



(d) **Rationale for change in target:** Cluster approach for development of ponds and tanks was adopted and large number of clusters with high and medium density of ponds and tanks were available and the groups were demanding for inclusion under the project. Accordingly, the original target of 1200 ha farmers' pond was enhanced by another 1300 ha. On the other hand, beel fisheries development was a very complex process requiring considerable social mobilization effort. The direct stakeholders of a beel were between 50-450 nos. depending on size of the beel, with diverse demographic profile, cultural/religious/political background, belonging to single to multiple villages. As the community mobilization in respect of development of publicly owned beels took considerable time and the whole process from community mobilization to initiation of development activities, followed by fish harvesting, required a time span of not less than 18 months, the target of beel fisheries was reduced to 1000 ha.

The targets under AF were 800 ha farmers ponds, 300 ha community owned tanks; and 700 ha community beels (as socially cohesive beel groups came forward seeking project assistance after awareness about the benefit accrued to the beel groups taken up under the original credit); and 200 ha of Pig-Cum-Fish Farming and 100 ha of Paddy-Cum-Fish Farming.

- (e) Civil works in case of ponds and tanks were restricted to cleaning weeds and desilting, and no new pond or tank construction was taken up. Local communities were assisted by NGOs to form community groups and develop and manage existing unused community ponds and tanks. A less intensive production system in case of beels was followed and unused & derelict beels were selected. Civil works in case of beels were to be restricted to water control structures to prolong the water body further into the dry season – and the beels were subjected to environmental screening during the planning phase. Development of community managed enterprise followed a three stage approach: social mobilization; civil works; and fish stocking, harvesting & marketing. Ponds, tanks and beels were developed in clusters and synchronized with project road upgrading activities to facilitate marketing. Capacity of the project beneficiaries were augmented through training, exposure visits, workshops etc. Further, training was also provided to non-project beneficiaries. The project provided one-off matching grants following agreed cost sharing formulae set out below, in a transparent manner balancing it with sound technical and management advice:

Investment Activity	Farmer/ Community Contribution % (Cash or Labour)	Matching Grant %
Farm ponds Community Tanks - civil works	50	50
1 st year inputs	10	90
Community Beels - civil works	30	70
1 st year inputs	30	70

- (f) AACP developed solutions that directly addressed the small farmers' needs. Based on the proven package of practices developed by Central Inland Fisheries Research Institute (ICAR) and modified by Assam Agricultural University (AAU), Jorhat under Assam's agro-climatic conditions, the project followed a semi-intensive production packages in case of ponds and tanks and extensive farming in case of beel fisheries. The main elements of the package of practices adopted under the project were specific stocking densities (6,000 fingerlings per ha), introduction of large size fingerlings, use of lime to de-acidify the water (600 kg per ha), and application of supplementary fish feed in case of ponds/tanks. Fish farmers were motivated to adopt the new package for adoption in their own ponds/tanks. The project used NGOs operating at district level, to mobilize CIGs (Common Interest Groups) and CTGs (Community Tank Groups) for collectively take up fish farming. These groups were provided series of training on pre-stocking, stocking, and post-stocking management of their ponds and tanks. Progressive local fish farmers have served as resource persons.. The project also supported training to non-beneficiaries adjacent to the CIGs/CTGs and farmers were motivated.



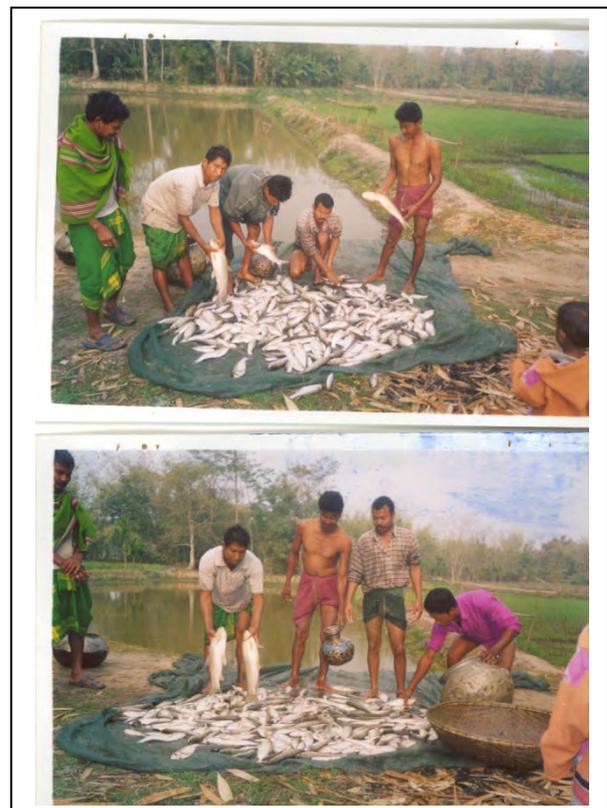
- (g) CIG comprised of 8-20 individual fish farming members each having a pond with water area ranging from 0.03 to 0.40 ha (The lower limit of pond was increased to 0.05 ha

during MTR). The CTG comprised of 20-40 fish farmers having a tank with water area ranging from 0.30 to 3 ha (The upper limit of tank was increased to 5 ha during MTR). The community members were selected through PRA and household survey by project NGOs on social issues and technical feasibility of ponds by the block level technical officers. The common issues like procurement of fish farming inputs, marketing of produce, etc when taken up jointly by the group members, which helped them in reducing input cost due to margin of scale and thereby helped in saving. A corpus fund for the community groups was developed through monthly contribution by each member, which is deposited to their bank accounts for future common use as decided in their general body meeting. The members were provided training on technical issues and record keeping and exposure visits were also taken up for better understanding on the management of their resources for achieving higher level of fish production. An Executive Committee of five members and Social Audit Committee with three members were formed for each group to oversee activities in a transparent manner. During training programs, farmers were made aware of the one-time opportunity to make “super profit” due to increased production, and a part of the revenue generated through sale of produce to be saved for utilization as working capital for fishery inputs in the following year. This approach motivated the poor farmers to adopt the new technology.

- (h) In respect of capacity building, 41738 farmers were provided short duration training (leaflets, brochures etc) on package of practices for enhancement of fish productivity, 185 farmers were given exposure visit to other states, 1159 Departmental officials were trained inside and outside state including in ICAR institutes and 23 officers undertaken international exposure visits to South East Asian countries like Thailand, Cambodia, Vietnam, Indonesia, China and Bangladesh.

- (i) As one of the learning from the International exposure visit, the project took up Cage culture for fish seed production, through introduction of 20 low cost bamboo cages in beel fisheries. Following the success achieved, this programme has already been taken up (320 cages) under the RKVY during 2014-15.

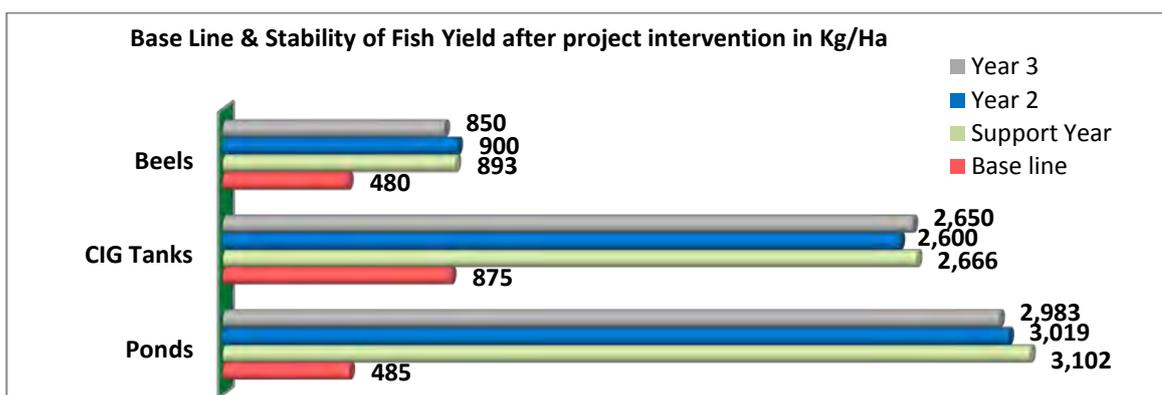
- (j) Outcome: According to Impact Assessment Report (March 2015) of the independent Monitoring & Evaluation



Consultant

- Productivity in case of project beneficiary's Ponds was 3.5 ton/ha as compared to the productivity of 2.1 ton/ ha among the control group (*increase of 622% over baseline, and 113% over control*). The beneficiary groups have managed to obtain an average income of Rs. 1,89,887/- from their ponds of size of 0.6 ha as compared to the control groups earning Rs.89,087 from their ponds of size of 0.3 ha. Yield area analysis of fish CIG for beneficiary and control ponds shows that about 33% of the beneficiary ponds are under mid-range of yield i.e. 3.4 to 3.5 ton/ha followed by 23% in next yield range i.e. 3.6 to 4 ton/ha- this indicates an opportunity for further increase in yield.
- In case of Community of the project beneficiaries the productivity was 2.3 ton/ha in comparison to 1.7 ton/ha among the control groups. Beneficiary groups earned an average income of Rs.2,74,179/- from their tank excluding fish consumed in beneficiary households, as against an average income of Rs.1,30,604/- by the control group.
- Similarly, productivity in case of beels of project beneficiaries was 1.57 ton/ha, in comparison to 0.8 ton/ha harvested by the control groups. Beneficiary groups earned an average income of Rs.20,03,145/- from beels (income exclude fish consumed at household), in comparison to the average earning of control groups of Rs.6,50,121/-.

(k) Adoption Effect: The yield sustainability graph below reflects the level of productivity maintained by farmers for consecutive three years after project withdrawal:



(l) Spread effect: 8843 fish farmers who have not received project grants (covering 546 ha) adopted the package of practices demonstrated by the project (i.e. 18% adoption rate) as shown below.

Particulars		Pond	Tank	IFF	Total
Project Beneficiary	Total Nos.	27181	19182	3003	49366
	Total area	3064	761	540	4365
Adoption	Total Nos.	7435	932	476	8843
	Total area	382	146	18	546

- (m) Considering the success in the fish farming practices demonstrated by the project, commercial Banks came forward to support 435 fish farmers and loan to the tune of Rs. 6.35 crore was availed mostly by the farmers who have not received project grants (covering total water area of 176 ha) for additional income generation.
- (n) The Directorate of Fisheries has initiated steps to carry forward the achievements of AACP through the UPNRM (Umbrella Project of Natural Resource Management) of National Bank for Agriculture and Rural Development (NABARD). NABARD has come forward to support the fish farmers considering the results of best fishing practices demonstrated by the project. Accordingly, NABARD has decided to support the fish farmers of the State under Gol program 'Umbrella Programme for Natural Resource Management' and so far Rs.0.25 crore has been provided as loan to 50 fish farmers through NGO.

A Cluster of Satdola Fishery

'Satdala' a village (about 60 km away from Guwahati), is one of the high density fishery Cluster. The total population under this cluster is about 1937 in 472 families with total water area of 65 ha with an average area of pond being 0.2 ha. The small and marginal farmers belonging to SC community constitute about 80% of population.

AACP took up three Demonstration programs under Common Interest Groups (CIG) in the year 2005-06 under Satdal Fishery Cluster namely - Hajo Satdala Meen Unnayan Got (4.23 ha, 16 beneficiaries) , Nayanjyoti Matsya Utpadan Got (3.20 ha, 18 beneficiaries) and Milijuli Matsya Utpadan Got (3.85 ha, 19 beneficiaries).

Production before and after AACP intervention respectively were as follows. Productivity of the Demo-farmers have sustained even after withdrawal of support by the project.

Name of the CIG, Water area and no of beneficiaries	Production before Intervention of the project (kg/ha/yr)	Production after Intervention of the project (kg/ha/yr)	Production after withdrawal of project support (kg/ha/yr)
Hajo Satdala Meen Unnayan Got (4.23 ha of 16 beneficiaries)	2000	4584	4500
Nayanjyoti Matsya Utpadan Got (3.20 ha of 18 beneficiaries)	1800	4200	4100
Milijuli Matsya Utpadan Got (3.85 ha of 19 beneficiaries)	1600	4150	4000

Their exceptional production was recognized and rewarded by the GoA in 2007. Other villagers from the adjacent areas have also adopted the demonstrated technology. Total 126 fish farmers (including 11 female farmers) have adapted this technology (covering an area of 41.44 ha) and their present annual production is about 4000 kg/ha/yr, which is almost double the annual average yield they got earlier.

In the year 2008, Fishery Department introduced ie. Matsya Mitra (private Village level Extension Worker) to motivate the rural youths for adopting fisheries for self-employment option. Three Matsya Mitras from this area have been working with the potential farmers and providing routine technical advice to the fish farmers. Going by the success, the State Bank of India has been providing loans to the fish farmers of the area.

The farmers auction the fishes two times a day (5 AM & 4 PM) during the harvesting season. The daily average fish landing at the auction market is about 2000 kg.

- (o) Global recognition: The achievement under Fishery Sector was also published by the IFC in the December 2011 edition as “Fish Farmers Meet New Technology Raising Aquaculture Productivity of Small Farmers in Assam”. AACP has won 1st prize from the IFC for the achievement under Fishery Sector under the ‘Global Smart Solutions competition’.



- (p) **Collaboration with Agri-business Company**: Project collaborated with an IFC supported agribusiness company dealing in (a) fishery and (b) dairy produce (milk), and (c) spices and (d) aggregation of horticulture crops. Recognizing the overlapping areas of interest & opportunities for synergies between the Agri-business Company & project beneficiaries, the ARIAS Society decided to introduce the project beneficiaries to the agribusiness company, particularly for produce aggregation, assured buyback of agricultural products and supply of improved inputs for fisheries, dairy and horticulture crops/spices. Accordingly, the project provided the list of beneficiaries to the Agri-business company, belonging to areas of the State where the company has agribusiness activities for collaboration, aggregation of products, technical guidance etc. The project provided 50,000 fingerlings of high yielding Jayanti Rohu to 10 (fishery) Farmers’ Producers Organizations in collaboration with the IFC supported Agribusiness Company.

5.2 Component-2: Agricultural Services and Market Chain Development

(Allocation: Rs. 205.56 crore i.e. 17% of total allocation;

Expenditure: Rs. 173.09 crore, as on 31.1.2015)

This component focussed promoting decentralized, pluralistic research and extension systems, upgrade the productive capacity of livestock and fish-stock, and strengthen farmers’ market knowledge and linkages, involving:

- a) Introduction of the Agricultural Technology Management Agency (ATMA) concept to revitalize the extension system, devolving extension to district level, promoting increased farmer involvement in planning & implementation of programs, promoting collaboration between line Departments, linking extension more closely to market requirements, and encouraging and facilitating partnerships with private service providers; farmer oriented agricultural research, with focus on natural resource management and biodiversity issues. The activities under Applied Agricultural Research through the Assam Agricultural University (AAU) focused on adaptive trials, research, studies, and upgrading the productive capacity of all agricultural activities;

- b) Upgradation of dairy herds of small holders and landless producers through an artificial insemination (AI) program operated by private service providers (known locally as paravets)– with smaller programs for poultry, ducks, pigs and goats; encouraging improved private fish hatchery operations to reduce detrimental hybridization of species and improve the quality of fingerlings sold to the fisher community;
- c) Improved commodity marketing through more effective information provision and extension focus; and improved milk marketing through the formation of 500 milk marketing cooperatives/self help groups (SHG), and provision of associated milk handling and chilling facilities for cooperative unions; and
- d) Pilot activities to test integrated approaches for forest community development and natural resource conservation through promotion of forest and non-forest livelihoods and improved market linkages and information access; and understand the marketing dynamics of sericulture products, especially eri and muga silk. *The pilot forestry sub-component was up-scaled during the MTR Mission, considering its success and pilot sericulture sub-component was dropped, based on a feasibility study under taken.*

5.2.1 Sub-Component-2.1- Farm Advisory Services

A new approach towards dissemination of agricultural technology through the Agriculture Technology Management Agency (ATMA) program facilitated diversification of agricultural production and increase in production.

Target and Achievement under Farm Advisory Services				
Activity	Target at Appraisal			Achievement Till 28.2.2015
	AACP	AF	Total	
Establishment of ATMA	11	1	12	12
Construction of Block Resource Centre (BRC)	123	-	123	117
Construction of Farm Information & Advisory Centre (FIAC)	-	96	96	91

- (a) The ATMA approach involves the creation of new management mechanisms, including an ATMA society and ATMA Governing Board (GB) at the district level, Farmer Advisory Committees (FACs) and Block Technology Teams (BTMs) at the block level, and producer / common interest groups at the village level. ATMA's are quasi-governmental registered societies. They have more flexibility than government line departments, because they can receive funds from both government and nongovernmental sources; enter into contracts. The ATMA's are controlled by GBs of stakeholders and receive guidance from FACs established at the block level. The BTMs are responsible for implementing and integrating



the extension activities across each block, thus, ensuring coordination among the different line departments. They work closely with the farmers/self-help groups.

- (b) Bottom-up planning and prioritization of extension needs are institutionalized under this new approach through the preparation of District Agricultural Development Strategies strategic (DADSs) approved by the GBs. Block Action Plans (BAPs) are prepared by BTMs within the framework of DADSs and approved by FACs. The block plans are aggregated to produce the district annual work plan.
- (c) This mechanism earlier pilot tested in 28 districts of seven states of the country under the World Bank aided “National Agricultural Technology Project” (NATP). Government of Assam had decided to pilot in 11 districts (now 12 districts after inclusion of Baksa district) under World Bank Aided project “Assam Agricultural Competitiveness Project (AACP)” with an objective to develop competitiveness of farming community. In this system, present process of planning and implementation of agricultural extensional activities replaced by a demand driven, location specific, decentralized, bottom-up planning process. One of key tasks is to prepare “District Agricultural Development Strategies” (DADS) of each district through participatory rural appraisal (PRA) methodology by involving all stakeholders to make it a demand driven, location and constraint specific. All such commodities, those are having comparative advantage over other prevailing commodities, are prioritized and strategies and activities finalized for each prioritized commodity & critical issue which help in achieving objective, when these are taken into action.
- (d) DADS of the 11 districts under AACP was prepared a joint and coordinated effort of agricultural scientists, extension workers and other relevant stakeholders involved in the field of agriculture and allied sectors like Agriculture , Fishery, Animal Husbandry and Veterinary and Sericulture. The major production opportunities and constraints (market, input supply, financial and social factors, natural resource base) was determined through various participatory tools and the major problems affecting the delivery of technology and limiting its performance were identified which were elaborately detailed in the DADS. This document has been developed with the bottom up approach giving more importance to the main clients i.e. the farming community, through collection of data and information by application of various participatory tools in the representative villages by the selected group of multi disciplinary team.
- (e) During preparation of DADS, strategies for research and extension issues were taken into consideration giving major thrust on farming system innovations and success stories in planning for intensification and diversification of existing farming system to increase farm

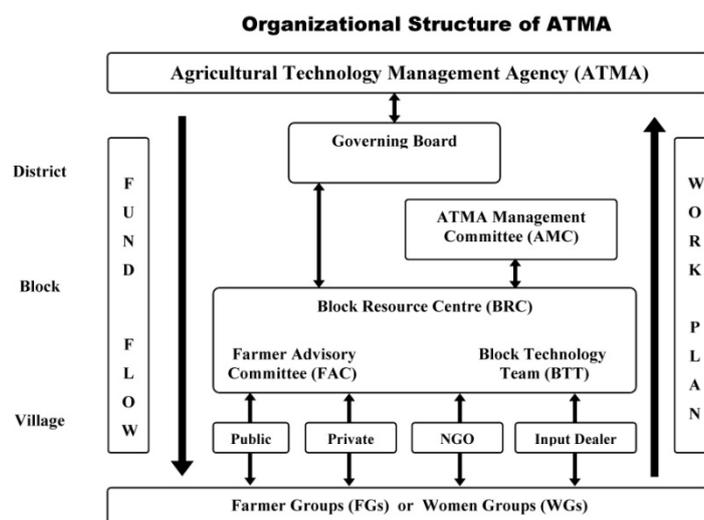


household income, to exploit scope for organizing farmers interest groups, to empower them to have access to technological gaps, to increase production and productivity and to suggest measures for natural resource management. The DADS identified the general objectives, specific action & implementation responsibilities for the both private & public sector. The DADSs were approved by the concerned GBs in all the 11 districts. Though the original target was 11 districts, due to one new district namely “Baska” created by the Government out of Nalbari & Barpeta district, the total number of district became 12 viz. Jorhat, Sonitpur, Nagaon, Hailakandi, Kamrup, Barpeta, Nalbari, Dhubri, Dibrugarh, Dhemaji, Karbi Anglong and Baksa. However, the total number of targeted Block remained the same.



The program under AACP was taken in two phases, viz. 1st phase covered 4 districts of Nagaon, Sonitpur, Jorhat, and Kamrup from the FY 2006-07 and the 2nd phase covered the 8 districts - Karbi-Anglong, Nalbari, Dhubri, Dibrugarh, Dhemaji, Barpeta, Hailakandi, and Baska.

- (f) All the district level ATMA were established with representation from concerned all line departments, Assam Agricultural University (AAU), farmers, fishermen, livestock producers, women groups, NGOs, input suppliers, marketing organizations, and banks, undertook assorted extension related activities as decided by the farmers and other stakeholders. The Governing Body (GB) of the ATMA Societies are the policy making body for providing guidance, reviewing & monitoring the functioning of ATMA. The number of members vary from 21-22, with 9-11 non-official members (such as Agriculture/horticulture farmers, livestock Producer, Fishery farmer, sericulture farmer, SC/ST farmer, NGOs, Input Supply associations etc.).



(g) At the Block level, Block Technology Team (BTT) with staff from line department were formed and Block Resource Centres (BRC) were established, which acted as the focal point for BTT members to interact amongst themselves and with farmers. Block Action Plans (BAPs) were prepared by BTT, approved by Farmer Advisory Committees (FAC) and thereafter District Agricultural Plans (DAP) were prepared for each district, setting out technical objectives with funding requirement for need-based technology dissemination and farmer organization/market chain development activities. The organization chart of ATMA is given below-

(h) Though all the districts of AACP-ATMA covered under this program are performing well, quality of performance varies amongst districts particularly in improving the competitiveness of farmers. Main emphasis has been given on five key thrust areas; **first**, to improve production and productivity of priorities commodities of Agricultural enterprises (Agriculture, Animal Husbandry, Fishery and Sericulture. **Second**, to improve accessibility of farmers to banking institutions. **Third**, to improve availability of qualitative inputs well in time especially of seeds & livestock under "Farmer- Farmer mode". **Fourth**, to improve market accessible of farmers. And, **fifth** is to foster farmer's organizations besides involvement of farmers in planning, implementation and supervision of field activities.

(i) Total 123 Block Technology Teams (BTT) & Farmer Advisory Committees (FAC) under the 12 AACP-ATMAs were constituted & operationalized. Several extensional activities such as Awareness campaigns, Trainings, Demonstrations, Field days, and exposure visits have been carried out. These activities helped in increasing productivity of prioritized crops, cropping intensity, and also expansion of area of economically advantageous commodities. This program has enhanced farmer's capacity through –



- 15354 trainings, 41757 demonstrations on different agricultural commodities at farmer's fields,
- 6729 field days at the site of demonstrations, conducted at village level.
- In addition, 835 nos. exposure visits were organized for farmers to various successful interventions.



- As an important achievement of this program , over 89,843 quintals quality of seeds (Certified/truthfully) of Paddy, Mustard/Toria, Potato, Black-gram, French-bean,

Sugarcane, Peas, Turmeric and Ginger were made available to fellow farmers at their door step, by those farmers to whom quality seed was provided in demonstrations under “Farmer-Farmer Extension mode”.

- Further, 4605 cross-breed Goat kids, 6976 cross-breed Piglets were made available to fellow farmers by the farmers who were provided 3053 pure-breed Goat & 2505 piglets.
- In the fishery sector, more than 15.99 lakhs quality fingerlings were made available to the fellow farmers by the demonstrated farmers.

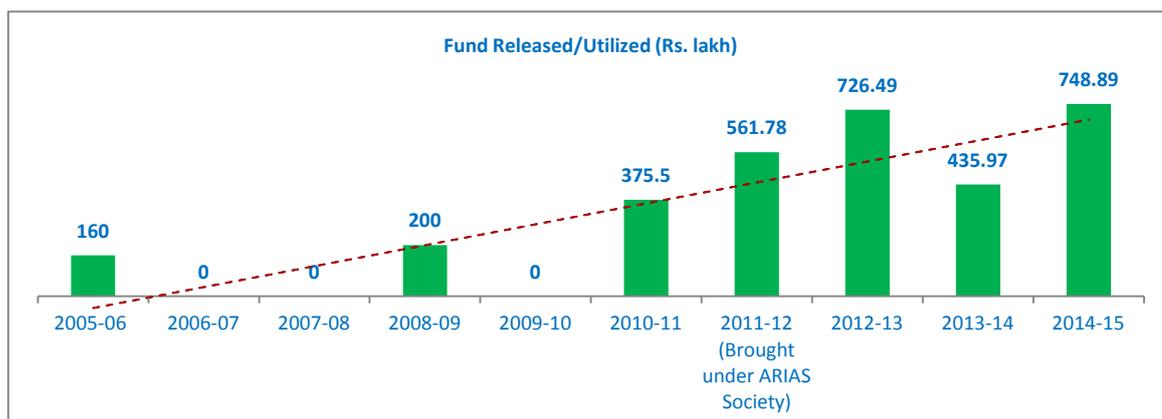


- A detailed report on the AACP-ATMA program is appended separately.

- (j) The ATMA programme in the state is being implemented from two different funding sources. One under the AACP covering 12 districts as mentioned above, and another Govt. of India funding Central Sector Scheme CSS-ATMA in 14 districts viz. Kokrajhar, Goalpara, Bongaigaon, Darrang, Lakhimpur, Tinsukia, Sivasagar, Golaghat, Dima Hasao, Cachar, Karimganj, Udalguri, Chirang and Morigaon.
- (k) During the AF period the CSS- ATMA districts was also brought under the project for coordination, management support . The ARIAS Society has been designated by the GOA as the State Nodal Agency for the implementation of CSS-ATMA and the State Project Director of ARIAS Society has also been designated as the State Nodal Officer for the implementation of CSS-ATMA.
- (l) The CSS-ATMA in Assam covering in 14 districts of Assam covering 96 blocks has started functioning in 2005-06. Initially the activities were Agriculture Department and progress has not been upto the mark and as a result the desired impact could not be achieved. Therefore, during AF it was decided to converge both AACP-ATMA and CSS- ATMAs, from 2012 CSS-ATMA was brought under the administrative control of ARIAS Society after January 2012. Since thereafter, the performances under CSS-ATMAs have improved in many folds The allocation of funds from the GOI had been increased from 2011-12 as shown below:

Status of Release of Fund/ Utilization under CSS ATMA by GoI since Inception		
#	Year	Fund utilized (Rs. lakh)
1	2005-06	160.00
2	2006-07	0
3	2007-08	0
4	2008-09	200.00
5	2009-10	0
6	2010-11	375.50
7	2011-12 (Brought under ARIAS Society)	561.78
8	2012-13	726.49

Status of Release of Fund/ Utilization under CSS ATMA by GoI since Inception		
#	Year	Fund utilized (Rs. lakh)
9	2013-14	435.97
10	2014-15	748.89
Total		3208.63



- (m) Demonstrations were carried out in crops like Summer Paddy, Winter Paddy, Maize, Mustard, Cabbage, Assam lemon, Watermelon Chilli, Pumpkin, Brinjal, Broccoli, Tomato, etc. Demonstrations in allied sectors were also carried out in composite Fish culture, Pig Breed upgradation, scientific goat rearing, Poultry farming, etc. Total 245 nos. farm schools were established in agriculture and allied sectors to provide vital link between achiever farmer and other farmers. The cumulative Monthly Progress Reports for each district under CSS-ATMA are uploaded regularly in to the GoI website <http://extensionreforms.dacnet.nic.in> by the 5th day of the following month and after ensuring that all the districts have entered their respective data, the State Coordinator validates the data for the entire state by 10th day of the following month.
- (n) ATMA wise cumulative physical progress report from the FY 2006-07 to 2013-14 is shown at **Annex-5** and ATMA wise details of additional production & income accrued by farmers from adoption of Demonstrated Technology are at **Annex-6**. Further, ATMA wise details of cumulative additional production & income accrued by farmers from Demonstrations are at **Annex-6.A**.
- (o) State Agricultural Management and Extension Training Institute (SAMETI) - During AF , the SAMETI was brought under ARIAS Society and thereafter SAMETI is functioning as a technical wing of the ARIAS Society. The SAMETI with the aim to conduct regular trainings and skills up gradation of state, district and block level extension functionaries for reaching out the grass-root level extension functionaries and



farmers. Since inception the SAMETI conducted 42 nos. Off Campus & 45 on-campus training programmes, total 3480 extension functionaries of ATMA were trained. Details of the training conducted are at [Annex- 6.B](#).

- (p) The research support for the ATMA program was provided by the Assam Agricultural University (AAU). As a part of Applied Agricultural Research through the AAU, seven research projects/studies were carried out on INM, IPM, seed storage, livestock, and fisheries, use of IT and Impact Analysis for providing crosscutting support to the production system. The university supported the ATMA program through training programs and also sharing results of adaptive trials for adoptions. Training were also conducted on improved production practices of rice, commercial cultivation of pulses/oilseeds/fruits & vegetables, commercial production of bio-pesticides, entrepreneurship development in dairy farming & fish production, Bee Keeping, mechanized crop production, post harvest management of fruits & vegetables, market led technology & extension, vermin-compost production, bio-fertilizer production and rejuvenation of citrus orchard, etc. Moreover, training programs were also for farm-women was also conducted on bee keeping, kitchen gardening, food and nutrition for women, strengthening of SHGs and improved method of silkworm rearing. During the AF activities under AAU was discontinued. A report on the adaptive research conducted by AAU is given at [Annex-7](#).

5.2.2 Sub-Component-2.2- Livestock Development

The 802,113 Artificial Insemination (AI) performed has facilitated production of sizable population of crossbred cattle with early maturity and better breeding efficiency, resulting in increased of milk productivity to average 6.32 lit/day against average productivity of 1.1 lit/day from indigenous cows.

Target and Achievement under Livestock Development				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Gopal Mitra	400	-	400	164
Artificial Insemination (AI) to Cattle	900,000	-	900,000	802,113

- a) Animal Husbandry is one of the most important sectors capable of causing rapid socio-economic development of Assam. The livestock development activities of the project were to focus on breed improvement with special emphasis to meet the deficit milk production in the state and milk marketing (a separate component), animal health and nutrition, meat and eggs production. It was envisaged that breed upgrading activities under the original credit to encompass:

- Development of a cadre of 400 para-vets(gopal mitras) based at village level to provide AI and animal first aid services to farmers in milk-shed districts on a custom charge basis;

- Refurbishment and re-equipment of 190 Artificial Insemination (AI) centers operated by Animal Husbandry & Veterinary Department (AHVD) in new milk-shed areas, to service the input requirements of para-vet program; and closing of an equivalent number of under-performing centers outside the milk-sheds;
- Support for the Assam Livestock Development Agency (ALDA) and the AHVD to improve the quality of AI services provided to farmers – through provision of initial working capital to increase local production of semen, and to procure frozen semen and liquid nitrogen (for semen storage and transport) from inter-state. Finance purchase of bulls for semen production and natural mating outside milk-shed areas. Achieved full cost recovery on sales of locally produced and procured semen and liquid nitrogen by the third year of the project;
- Poultry and Ducks: (i) training of selected village women to provide vaccination, deworming, egg candling etc services to farmers on a custom charge basis; (ii) procurement of Chare Chambali duck parent stock and distribution of crossbred progeny to farmers; and, (iii) formation of SHGs to facilitate surplus egg and broiler sales;
- Goats: (i) limited renovation of facilities at the Goat Farm, Panbari; (ii) procurement of Beetal parent stock and distribution of cross bred progeny to farmers; and (iii) formation of marketing SHGs;
- Pigs: (i) limited renovation of facilities at the Pig Farm, Khanapara; (ii) procurement of parent stock and distribution of cross bred progeny to farmers; and (iii) formation of marketing SHGs.

The physical achievements under this sub-component are given below:

- b) **Cattle Breeding** activities comprised - Engagement of Private AI workers (Gopal Mitra); Doorstep delivery of AI services to the farmers, Support to Frozen Semen Production Centre & AI centres and full cost recovery of semen, Support to ALDA - hiring of consultants for preparation of ALDA's business and management plan.



- c) Para-veterinarian (Gopal Mitra): The unemployed youth from the project area had been identified, grouped and trained at the training centers set up under ARIASP. They were offered hands on practical, problem-oriented training course of four months duration. The project provided basic equipment to each para-vet on the lease basis and stipend for first two years but on a declining scale (Rs. 1,000/- pm during first year and Rs. 500/- pm during second year).



They had also received an initial supply of semen, LN2, vaccines and miscellaneous first aids supplies required to establish themselves. Out of proposed 400 GMs to be trained only 164 nos of GMs were trained. According to the records, so far the 164 GM have done 65,933 nos of AI and 21,257 calves were born. Further induction of the GM was dropped by the project in consultation with the World Bank as the performances of GMs were not satisfactory at that point of time and their sustainability was at stake. However, out of the 164 GMs trained, at present 78 GMs are functional and they have been doing 20 to 100 AIs per month. The records of these GMs were maintained till 2007-08, after which the records merged with ALDA for overall AI records of GMs developed under ALDA including the 78 Nos. The following table shows the functioning GMs upto 2007-08 and their AI performance till then is shown at [Annex-8.A](#).

District	Nos. of GM presently functioning	District	Nos. of GM presently functioning
Kamrup	16	Karimganj	07
Barpeta	09	Cachar	07
Sonitpur	06	Nagaon	05
Darrang	08	Morigaon	06
Jorhat	14	Total	78

Successful Story of a Gopal Mitra

Name: Nimazuddin Ahmed from Bamunpara Village, Boko, Kamrup (Rural) district.

Sri Ahmed was an educated unemployed youth. During 2008-09 he was selected for training as GM and was given training of AI by the technical experts of the department and AI kits were provided. He has been receiving frozen semen and liquid Nitrogen from the ICDP centre, Bondapara of Kamrup district. At present he is doing 110 AIs/ month (average) and earning about Rs.22,000 per month (@Rs.200/AI). Thus, he is giving service to the local breedable cattle as well as earning livelihood for his family.

d) Experience showed that the private AI workers like Gopal Mitras being a new concept for the State, motivating the GMs for establishing themselves as a skilled AI practitioner needs longer period of handholding. Performance of 40 GMs from six District viz., Barpeta, Sonitpur, Darrang, Nagaon, Morigaon and Jorhat, out of the 164 nos. trained & equipped under the project were assessed on the basis of AI done per month and it was observed that the GMs have not been able to deliver their services properly to the farmers due to the following reasons –

- Lack of awareness amongst the farmers regarding the introduction of GM in the village areas and Farmers keenness to approach the regular departmental staff for AI instead of GMs.
- Lack of available travelling facility with the GMs to receive AI materials from AI centre (often a 30 km to and fro trip) regularly;
- Fixation of GM operational areas (3 km away from the departmental AI Centers).



- In some GM areas like Majuli, Morigaon and Sonitpur district, villagers are interested towards producing draught animals rather than for milk purposes.

Analysis of project investment made on GMs and the return:

i) Project Investment:

#	Activity	Physical		Financial (Rs. in lakh)	
		Target	Achievement	Target	Ach.
1.	Training of Gopal Mitra (GM)	400	164	60.00	22.64
2.	Stipend for GM	400	164	80.00	29.20
3.	Refreshers course for GM	400	164	8.00	2.65
				Total cost	54.49

ii) Return:

#	Particulars		(Rs. Lakh)
1.	Total calves born	21257 Nos.	
2.	Assuming 10% mortality (-2126), total calves survived	19131 Nos.	
3.	Assuming 50% calves to be female (viz. 9565 Nos.) and 50% male (viz. 9565 Nos.) the total return	9565 x @Rs. 1500/male calf + 9565 x @Rs.3000/female calf	429.00
4.	Farmers expenditure on AI and rearing @ Rs 500 /calf	19131 x Rs.500/calf	95.65
5.	Net return through GM	(Rs. 429.0 L – Rs. 95.65 L)	333.35
6.	Net value livestock assets created by GM	333.35 L – 54.49 L	278.86

- e) Bull Mother Farm Barapetta: Project supported the Bull Mother Farm at Barapetta in Barpeta district established under ARIASP with equipment and tools, feeding and maintenance cost of animals till the farm was transferred to ALDA. The total cost involvement was Rs.20.29 Lakh. The present herd strength of the Bull Mother Farm–

Sl	Purchased under ARIASP	Nos.
1	Jersey Cow (in Milch)	2
2	Jersey Cow (Dry)	4
3	Jersey Heifer	5
4	Jersey Calf (Male)	2
5	Jersey Calf (Female)	4
6	Jersey Bull	2

Sl	Cross Bred	Nos.
7	Crossbred Cow (in Milch)	20
8	Crossbred (Dry)	26
9	Crossbred Heifer	24
10	Crossbred Calf (Male)	21
11	Crossbred Calf (Female)	21
12	Crossbred Bull	14
Total		126

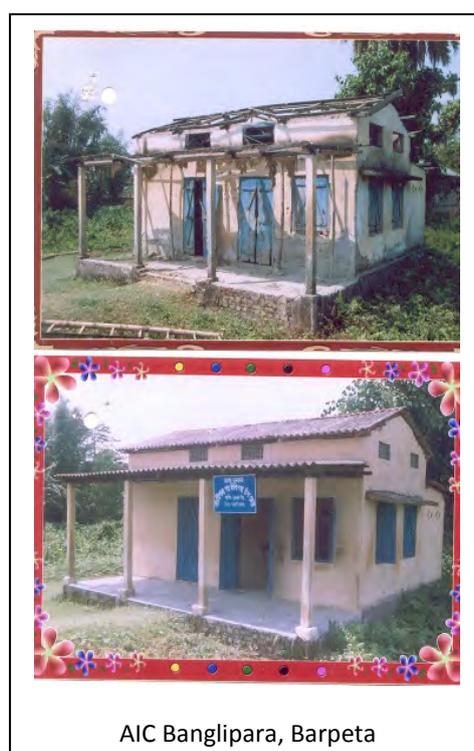
- f) Frozen Semen Production Centre (FSPC), Khanapara: The project supported FSPC for renovation. However, w.e.f. September 2013 operation in the FSPC is stopped, since as per the Policy of the GoI, production of Semen in the FSPCs graded as Grade-C should be discontinued. To maintain the regular supply of frozen semen, ALDA is now procuring FS from NDDDB and ULDP.
- g) Government of Assam through ALDA has simultaneously taken steps to set-up a new state-of-art Frozen Semen Bull Station (FSBS) at Barapetta, Barpeta district. Under the follow-up of NPCBB programme, total 16 Jersey Bulls were procured from CCBF, Sonapeda, Oddisa and 8 Nos. Holstein-Friesian Bulls procured from CCBF, Hessarghata, Karnataka stationed at FSPC, Khanapara have already been shifted to the new FSPC at Frozen Semen Bull Station in Barapetta and trial production will be started soon and after grading of the FSPC, production and distribution of FSD will be commenced

- h) Repairing of Artificial Insemination Centers (AIC): The project supported need based repairing of 121 AI centers (out the targeted 191 nos.) and provided equipments, hiring of vehicles and subsistence allowance to field staff for supervision of the activities. The total Nos. repaired are as follows-

Physical		District wise AICs Repaired	
Target	Achievement	Districts	No. of AIC
190	121	Barpeta	22
		Jorhat	12
		Sonitpur	17
		Nagaon	16
		Morigaon	19
		Darrang	10
		Kamrup	15
		Cachar	8
		Golaghat	2

As AIC were to be repaired in milk shed districts only, there were no more centres to be repaired in the milk shed districts. So no further AIC was taken-up for repairing works. Though it was agreed in the PAD to close down 190 AI centres of the department in non-performing AI centres outside the milk shed districts, but these AI centres were not closed as their performance enhanced due to regular supply of breeding inputs. Instead department expanded the breeding network from 513 to 1275 AICs.

- i) Support to ALDA: The project provided following support to ALDA - Procurement of 12 breeding bulls (pure and cross bred Jersey) for semen production frozen semen, equipment for FSPC and the Frozen Semen Banks (FSB); LN2 containers for storage and distribution of LN2; Start-up cost of ALDA for two years and support for preparation of ALDA's Financial and Management Plan /Business development plan through consultants.

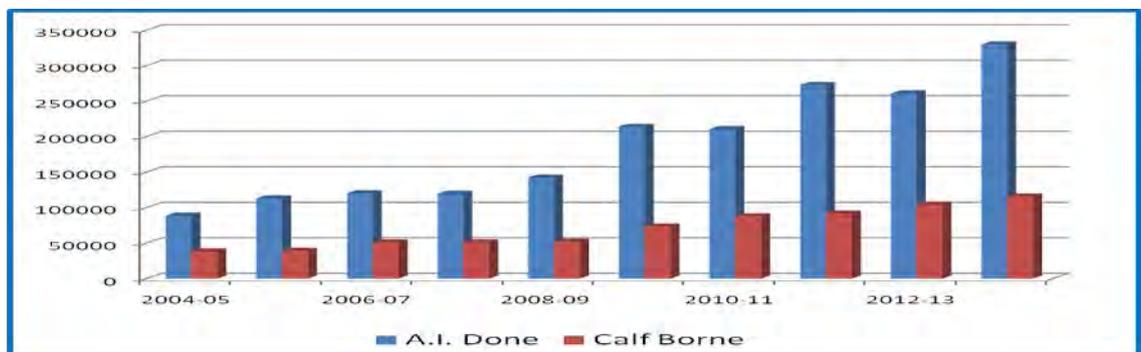


- The infrastructure development including supply chain management through ALDA by increasing liquid nitrogen availability by 2.5 times has enabled AI expansion and ultimately delivery of 21,08,240 doses of semen resulting in birth of 7,88,513 calves and an estimated 3,94,257 crossbred females with production capacity on average 6.32 litres per day compared to 1.1 litres per day for the indigenous/non-descript type cattle.

- Capacity for producing semen through bulls and equipment purchased enabled production of semen doses to increase by 3.4 fold from < 90,000 in 2004 to 330,000 in 2014, with remainder purchased outside the state.
- Coverage of breedable cattle increased to 10% in 2013-14 from 6.48% in 2004. Further, the project covenant to achieve full cost recovery of AI services resulted in revenue increase by ALDA of 12.5 fold. The most success were achieved in the middle Assam districts where demand for milk is high and availability of fodder and concentrate feed is relatively easy, the coverage of breedable population increased to 16.43% in 2012-13 from 6.48% in 204-05.
- The Business plan helped ALDA in establishment of the LN2 grid which streamlined economic distribution of LN2.; Expansion of breeding network; Introduction of Gopal Mitra for increase coverage of AI and to create self employment. The cost of frozen semen straw was Rs. 15/- during ARIASP period which was increased to Rs.26/- during AACP (Copy of the Notification of 2004 in this regard is at [Annex-8.B](#)). The production cost of FS straw including manpower, LN2, propulsion, and doorstep delivery is almost Rs. 46/-. Now the 8th GB meeting of ALDA has increased the price of FS straw to Rs.50/- with effect from 1st February 2015 resulting full cost recovery of FS straw (Copy of the Order of 2015 in this regard is at [Annex-8.C](#). Year wise AI Performance so far since inception of ALDA is shown at [Annex-8.D](#).



AIC Borigaon, Gohpur, Sonitpur



#	Name of Activity	Financial Year	Physical		Remarks	
			Target	Achievement	Animal Treated	Animal Vaccinated
4.	AHC & CR	2009-10	512	512	150369	117499
5.	CR	2010-11	51	51	9455	7301
		Total	2611	2493		

Under AF period the programme was undertaken up in Nagaon District as a related activity with Outsourcing of AI activities.

l) **Animal Nutrition – Fodder Development:** Fodder Development is an integral part of Animal Husbandry and Dairy farming. During AACP cultivation of oat as fodder was introduced. The most visible outcome of the fodder development program, particularly the oat cultivation, was seen in Barpeta Road, where a fodder market has come up. Considering the success of the programme, GoA has replicated it through RKVY scheme. Under this program, 29550 Subabul Seedlings and 3 bags of Subabul seeds were distributed amongst DCS members of Milk Shed Districts. In addition 5 kg oat seeds/ 0.43 ha were distributed amongst 1570 farmers. Further, members of some Dairy Co-operative Societies under the project were provided with 29550 Subabul seedlings and 3 bags of subabul seeds.



m) **Pig Development: under AACP:** Total 100 SHGs, comprising mostly woman beneficiaries from scheduled tribe community, of Kokrajhar district were supported on pilot basis, as the program envisaged women empowerment. Each SHG was supported with 2 male and 8 female pigs besides feed, medicines and insurance coverage. During AF, considering the success of the programme it was replicated in Kamrup district. Total 150 Pig Rearers' Groups (PRG) from Kamrup district were supported. All the beneficiaries were woman from economically backward families. Each PRG, having 5 members, was supported with 5 boars plus 10 Sows of improved breed besides feed, medicines and insurance coverage. As per design of this program each beneficiary is to provide one piglet as Pass-on-the Gift (POG) to other similar economically underprivileged women and so far 02 nos. have been done in Rani Block.



Success Story of Pig Rearer Group

The Jhargaon PRG under Dimoria Block started in 2013 – 14.

Smt. **Padmini Boro** (Group leader) (1 B, 1F & 13 piglets , 5 piglets sold, 3 Death, 7 M & 6 F) and members **Sidheswari Boro** (1 B, 1F & 6 piglets, 3 sold, 3 M & 3 F) and **Anita Boro** (12 piglets sold) has seen the face of success. Anita Boro has earned Rs.22,000 from the sale of 12 piglets. The other members **Suria Boro** and **Satyabati Boro** have their females pregnant

Income: Approximately 40,000/- by the 2 PRG members

Project Boar used for Outsourcing Breeding Services - Total 4 services 12 piglets from 3 non-beneficiaries. **Sidheswari Boro** reported that after the PRG formed in the year 2013-14, she had built the sty and took into pig rearing management under the advice from the local veterinary doctor and proper monitoring from the NGO. With the introduction of CB male pig into the unit, she had learnt to provide service to the local pigs of her unit and had availed better crossbred piglets with higher body weight. She is getting more benefits in selling the CB piglets than the local pigs. She has opened a bank account at State bank of India and has started depositing money, which she has earned from selling of piglets and she believes that in next 2-3 years she will be able to accumulate sufficient amount.

- n) Goat Development: under AACP: Total of 150 SHGs was supported in Jorhat, Golaghat, Kamrup and Barpeta districts. Each SHG was supported with 1 improved buck besides feed, medicines and insurance coverage. During AF, total 150 Goat Keepers' Societies (GKS) in Kamrup district, comprising woman beneficiaries from economically backward families were supported. Each GKS having 5 members was supported with 1 Beetal buck and 10 indigenous Doe besides feed, medicines and insurance coverage. The program envisaged women empowerment.



- o) Artificial Insemination (AI) for Goat: Total 1159 Vaginal Speculums were procured for Goat AI Programme, which were distributed to AI Centres in 11 districts viz. Kamrup, Barpeta, Jorhat, Nagaon, K. Anglong, N.C. Hills, Sonitpur, Sivsagar, Tinsukia, Kokrajhar, and Cachar. The AI programme on Goat was initiated by ALDA after receipt of Goat Frozen Semen Doses from the



College of Veterinary Science, Khanapara. Till Dec.2014 total 7991 AIs were performed on Goats and from the AIs done 2981 nos. Goat kids were born (*Male 1577 & Female 1404*).

- p) Duck Development: During AACP, the Govt. Duck cum Poultry Farm at Hajo, Kamrup district, was strengthened and continued with support during the AF. The farm started functioning during 2011-12 with introduction of Khaki Campbell ducks from Hessarghata, Bengaluru in the month of Feb.'2012. The farm supported the economically weaker duck

Rearers/women/SHGs mainly from the neighbouring areas and were supported with both the Khaki Campbell (KC) ducklings and hatching eggs. From the parent stock of KC of 700, total 16,656 fertile eggs were provided to Households (HH) with an average of 10 nos. /HH. The average of 3 Ducks in each HH produced 300 eggs/ year, which were sold at Rs. 5/egg resulting in a return of Rs. 9,300/- on an average /beneficiary/year.

- q) **Capacity building:** Women empowerment in livestock and poultry rearing during the project was ensured and duckery training among the women in Sivsagar, Darrang and Kamrup district, piggery in Kokrajhar district and goatery training in Golaghat, Barpeta, Goalpara and Kamrup district were organized. Exposure visit of dairy farmers were organized to Anand, Gujarat. Various capacity building activities under the Livestock Development are shown at [Annexure-9](#).

5.2.3 Sub-Component-2.3- Market Extension

Established 25 Agriculture and Fishery based 'Farmer Producers' Organizations' (FPOs) in four districts with total paid up capital of Rs.7.17 lakh by mobilizing 17,241 farmers, of which 9% are female.

- a) Activities under this component focused on assisting producers to adapt and compete more effectively in changing market situations, and made an effort to develop closer connections between extension activities and the market supply chain. This sub-component inter alia focused on: (a) amendment of the Assam Agricultural Produce Marketing Committee (APMC) Act to facilitate private sector involvement in contract production and development of wholesale markets and (b) piloting of an Enterprise Development Grant Fund (PEDGF).

- b) **Collaboration with Amalgamated Plantations Private Limited (APPL):** APPL, a subsidiary of

TATA group, is private a company incorporated under the Companies Act, 1956 and having its registered office at Kolkata. APPL's operations are mainly focused on the tea plantation business in Assam, but it is simultaneously developing an agribusiness comprising of the verticals of (a) fishery, (b) dairy produce (milk), both of which have strong local demand, and



(c) spices and (d) aggregation of horticulture crops, which have linkage to and demand in markets outside Assam.

- c) International Finance Corporation (IFC), a member of the World Bank Group, pursuant to a Cooperation Agreement with APPL, is providing some funding for technical assistance to APPL with respect to the expansion of its agribusiness in Assam. ARIAS Society recognizing the activities being undertaken by APPL on agribusiness & the activities of AACP and the overlapping areas of interest & opportunities for synergies between APPL & AACP, took an initiative to enhance the impact of the project. The project came decided to collaborate with APPL for furthering the project development objectives, particularly through aggregation, assured buyback of agricultural products and supply of improved inputs for fisheries, dairy and horticulture crops/spices.
- d) The collaboration with APPL in the areas of Dairy & Fishery sector has shown great potential in terms of linking AACP beneficiary farmers with the agri-business value chain. The synergy between APPL & ARIAS Society was initiated during World Bank Mission of September 2010. The project provided the list of beneficiaries to APPL, belonging to areas of the State where APPL has agribusiness activities for collaboration, aggregation of products, technical guidance etc.
- e) **Pilot Enterprise Development Grant Fund (PEDGF):** Under PEGDF, following activities were taken up.

- One market survey and test marketing of milk at Hojai Town by Surabhi Dugdha Unnan Samity , Nagaon amounting to Rs. 19425/-. In addition, one for Fodder market survey was taken up at Hajo by Hajo Dugdha Unnan Samity, Adhiarpara amounting to Rs. 18900/-. Moreover, support was provided for production and marketing of mushroom by a women SHG (namely Anandajyoti Mahila Atma Sahayak) of Uttar Bhomaruguri Village, Ambagan, under Koliabor Agriculture sub-division amounting to Rs. 8,505/-.



- Under the PEGDF the project also mobilized 491 marketing groups and 622 market study tour were organized and marketing extension trainings were provided to disseminate knowledge about market dynamics, price fluctuation and new opportunities. Under direct marketing, total 396 commodity groups sold about 165 tons of vegetables realizing about 13 to 14 % higher price over traditional markets. Similarly, under value addition, total 95 commodity groups sold about 241 tons of value added products, realizing about 34% higher price.

- f) **Farmer Producer Organizations (FPOs):** With the objective to strengthen backward and forward linkages across value chains for agricultural & fish products, along with ensuring remunerative prices to the producers / farmers, the

Project mandated a consortium led by Deloitte Touche Tohmatsu India (Pvt) Limited to establish 25 Agriculture and Fishery based 'Farmer Producers' Organizations' (FPOs) in 4 identified districts viz. Nagaon, Kamrup, Sonitpur and Nalbari in the state. As a part of the process for setting up FPOs, following activities have been undertaken by the project team:

- *Conducted baseline survey* (comprising around 6000 respondents including farmers, supply chain intermediaries, district officials, etc.) including Participatory Rural Appraisal (PRA) leveraging select tools like social mapping, problem ranking etc. across the 4 identified districts viz. Nagaon, Kamrup, Nalbari and Sonitpur to:
 - Identify potential production clusters and focus crops / fish varieties in terms of marketable surplus available
 - Identify and prioritize key issues faced by farmers with respect to access to (a) inputs, (b) credit (c) market linkages and (d) capacity building
 - Understand the supply chain and assess price build up from farm gate to end customers for focus crops/ fish varieties
- *Assessed skill levels of farmers* pertaining to (a) production and productivity of crops/ fish, (b) marketing of agro produce/ fish and (c) access to finance and identified their related capacity building requirements.
- *Conducted community mobilization in key production clusters* (i.e. block level) to form village level informal farmer collectives/ groups. This involved:
 - Conducting awareness campaigns through various communication aids to sensitize farmers on farmer collective/ group
 - Discussions with farmers/ opinion leaders to **(a)** understand key issues/ constraints pertaining to production and marketing of produce, **(b)** disseminate benefits of a farmer collective/ group to help address these issues and **(c)** build consensus among the farmers to organize themselves into informal village level farmer collectives / groups
- *Mobilized around 18000 farmers* and facilitated formation of *190 village level informal farmer collectives/ groups* (comprising around 50 - 100 farmer members in each group) across select potential blocks in the identified districts. Women farmers constituted around 9% of the total farmers mobilized with the share varying from 8%



in Nalbari to 10% in Sonitpur owing to variation in the demographic profile of the respective districts.

- Assisted federation/ aggregation of the informal village level groups into *25 large farmer collectives/ FPOs* at the village(s)/ Gram Panchayat level and assisted them in providing requisite documentation support (including preparation of bye-laws, etc.) to register as Cooperative Societies under the Assam Cooperative Societies Act, 2007 (Act IV of 2012).
- All *25 Farmer Cooperative Societies* have been registered; 5 agriculture based societies each in the districts of Nalbari, Kamrup & Nagaon and 5 fishery based societies each in the districts of Nagaon and Sonitpur.
- Reason for considering formation of Cooperative Societies over Producer Companies:

Key Differences & Advantages of Cooperative Societies over Producer Companies.			
Parameters	Cooperative	Producer company	Advantages of Cooperative over PC
Registration	Cooperative Societies Act.	Indian Companies Act	Easier to register
Objectives	Single object	Multi-object	Remain focused due to Single object
Area of Operation	Restricted, discretionary	Entire Union of India	Self developmental
Membership	Individuals and cooperatives	Any individual, group, association, producer of the goods or services	Aggregation of self help attitude
Share	Non-tradable	Not tradable but transferable limited to members on par value	Feeling of ownership amongst members.
Profit sharing	Limited dividends on shares	Commensurate with volume of business	Everybody will be eligible for participation/joining.
Voting rights	One member, one vote, but Government and Registrar of Cooperatives hold veto power	One member, one vote. Members not having transactions with the company cannot vote	Democratic system of operation – which is widely accepted.
Government control	Highly patronized to the extent of interference	Minimal, limited to statutory requirements	Confidence on Govt.
Reserves	Created if there are profits	Mandatory to create every year	Better chances of profit.
Borrowing power	Restricted	More freedom and alternatives	Excess burden/ Liability will be arrested.
Relationship with other corporate/business houses/NGOs	Transaction based	Producers and corporate entity can together float a producer company	Professional approach with others

- *Developed Training modules* on key themes viz. **(a) FPO Management**, **(b) Book Keeping** and **(c) Group Marketing** and facilitated training of 130 Community Resource Persons (CRPs) (including 5 women) identified across 25 FPOs to help them develop as master trainers of their respective groups.
- Prepared *Business plan for each Cooperative Society* based on discussion with Board of Directors and other farmer members incorporating **(a) Vision**, Mission and key Objectives; key issues and potential services & business model, **(b) Governance** structure and role & responsibility of key role holders and **(c) Implementation**

roadmap including key interventions and associated timelines to achieve envisaged objectives

- Assisted in providing documentation *support for opening of bank account* for each cooperative society; bank accounts have been opened for all the Cooperative societies to facilitate (a) deposit of share capital and (b) transactions for business activities
- Facilitated *collection of share capital* from the farmer members and deposited it in the bank account of respective Cooperative Societies. A total of around 7.2 lakhs has been collected as share capital across 25 cooperative societies. Brief particulars of the FPOs are furnished below, detailed list is at [Annex-10](#):

#	District	Name of the Cooperative Society	Number of farmers of the Society	Number of Women farmers	Paid Up Capital
1	Nalbari	Brahmaputra Krishak Cooperative Society Limited	796	72	30,200
2		Adarsha Krishak Cooperative Society Limited	400	35	24,000
3		Sonali Krishak Cooperative Society Limited	350	32	27,000
4		SiraSeuj Krishak Cooperative Society Limited	1100	85	45,000
5		Mahabahu Krishak Cooperative Society Limited	726	55	38,500
6	Nagaon (Agri)	Tubuki Jarani Panchagram Krishak Samabai Somity Ltd.	496	45	24,000
7		Bhurbandha Seug Krishi Unnayan Samabai Somity Ltd.	600	55	39,200
8		Bogamukh Krishi Unnayan Samabai Somity Ltd.	545	49	18,800
9		Annapurna Krishak Unnayan Samabai Somity Ltd.	600	52	20,000
10		Lakhonabandha Seuj Krishi Unnayan Samobai Samity Ltd.	491	50	11,400
11	Kamrup	Nabajyoti Utpadankari Krishak Cooperative Society Limited	1200	120	40,000
12		Hatipara Rajoni Krishak Cooperative Society Limited	1100	110	16,000
13		Sarbo Unnayan Krishi Samobai Samitee Limited	850	75	10,000
14		Green Valley Krishi Utpadak Samobai Samitee Limited	700	60	9,000
15		Pragati Krishi Samobai Samitee Limited	700	50	5,000
16	Nagaon (Fishery)	Rawmari Bhai Matchya Utpadak Samobai Samity Ltd.	800	75	62,000
17		Katahguri Rupjyoti Matchya Utpadak Samobai Samity Ltd.	617	54	61,000
18		Tuktuki Jilmil Matchya Utpadak Samobai Samity Ltd.	1200	115	23,000
19		Dhaniabheti Milan Jyoti Matchya Utpadak Samobai Samity Ltd.	1250	120	44,600
20		Batadrava Seuj Matchya Utpadak Samobai Samity Ltd.	900	85	23,000
21	Sonitpur (Fishery only)	Sootea Meen Palon Samobai Samitee Ltd.	250	25	32,000
22		Milon Jyoti Matchya Utpadak Samabay Samiti Ltd.	500	45	42,500
23		Naduar Min Palan Samabay Samiti Ltd.	320	25	16,000
24		Sanjukta Matchya Utpadak Samabai Samiti Ltd.	300	35	35,000
25		Adarsha Matchya Utpadak Samabai Samitee Ltd.	450	50	20,000
		Total	17241	1574	717200

- Assisted in providing documentation support to obtain *Trade license* for all Cooperative societies foraying into trading; Trade licenses have been obtained by all the Societies for trading in key agricultural inputs like seeds, fertilizers, pesticides and sale of fish.
- The FPOs were linked to 15 wholesale distributors of agriculture inputs, including fish feed, thus facilitating competitive access to input markets, resulting in savings in agriculture inputs by about 10% to 38%. Similarly, the FPOs were also linked to 49 number of wholesale traders of agriculture commodities, enabling direct marketing, resulting in higher price realizing by about 7% to 10%. Conducted Training of Board members on management/ governance of Cooperative Societies. Also, facilitated (a) training cum exposure visit program at Central Institute of Fisheries Education (CIFE),

Kolkata and (b) linkage with Amalgamated Plantation Private Ltd. (APPL) for distribution of high yielding 'Jayanti Rohu' variety of fingerlings for a group of 50 progressive fish farmers selected by the Board of Directors of the Cooperative Societies from Sonitpur and Nagaon.

Naduar Min Palan Samabay Samiti Ltd. is a fishery based producer owned business enterprise registered under the Assam Cooperative Societies Act, 2007 (Act IV of 2012) representing Gram panchayat(s) - Dakshin Silabondha, Madhya Silabondha and Paschim Borbhugia, located in Naduar block in Sonitpur district. As part of the initiative to strengthen the backward linkages, the farmer members of this Co-operative Society have initiated a tie-up with Lakshmi Agriculture Multipurpose Project at Phaboi for procurement of fish seedlings. The farmer members have availed a discount of around 18% vis-à-vis prevailing market prices at the retail level on purchase of 200 Kg of fish seedlings valued at Rs. 45,000. In terms of socio-economic impact, this initiative has helped the farmers in reducing the cost of inputs significantly thereby resulting in increase in their income.

- Assisted in providing documentation support to procure farm equipments like Tractors leveraging AACP scheme for all agriculture based Cooperative Societies to enhance farm mechanization.
- Assisted in providing documentation support to obtain *KCCs for around 700+ farmers* across all the FPOs

5.2.4 Sub-Component-2.4- Milk Marketing

Target and Achievement under Milk Marketing				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Formation of Dairy Cooperative Societies (DCS)	250	-	250	312
Formation of Milk Producing Institutions (MPIs)	**	61	61	361

** 300 MPIs were included during MTR

- (a) Dairy in Assam has been characterized by mostly rural smallholder production, using indigenous cattle and buffalo, with pockets of improved dairy cattle in some rural and peri-urban areas. Organized marketing of milk in the State remained relatively insignificant. The milk marketing sub-component of the project therefore was designed to address the issues concerning organized milk marketing, for better remunerative price to the dairy farmers of the State. This sub-component envisaged upgradation of the productive capacity of livestock and strengthen farmers market knowledge and linkages, improved commodity marketing through more effective information provision and extension focus; Milk producers in eight nominated milkshed districts were envisaged to be assisted to organize themselves into village level Dairy Co-Operative Societies (DCS) (eventually federating into District Milk Unions), based on the successful Anand model developed in Gujarat. The target under the original credit:



- Formation and nurturing of 500 milk marketing DCS/ SHG (250 DCS & 250 SHG) by spearhead teams trained in the successful techniques developed by the National Dairy Development board (NDDDB), and provision of associated milk handling and chilling facilities for cooperative unions; training to about 10,000 milk producers in efficient milk production;
- Establishment of 20 Bulk Milk Cooler (BMC) units at strategic locations to match the progress of formation of DMUs; and eventual transfer of 03 existing (but now non-functional) government owned milk processing facilities and 05 chilling plants - seed capital to enable new DMUs;
- Construction of a milk testing laboratory at the Central Dairy, Khanapara;
- Training and certification programs for traditional milk market agents,



(b) Change in Targets: During MTR, it was decided that formation of DCSs in three project districts viz. Kamrup, Morigaon and Nagaon will be frozen and instead a smaller informal group i.e. Milk Producer Institution (MPI) will be formed in those three districts. Accordingly, the target for DCS/SHG had been revised. 300 MPIs were to be formed under AACP. The SHGs already formed were to be upgraded to DCSs and the revised DCSs target was 350, which were again re-revised to 312. Summary of the change in targets with reasons:

Sl	Activity		Target		Reasons for change in target
	AACP	AACP-AF	Original	Revised	
1	Formation /Support to DCS/SHG		DCS-250,SHG-250	DCS-350 SHG-150 DCS-312 MPI-300	Decisions to upgrade the SHGs to DCS and to freeze DCS formation /MPI formation in three project district
2	Seed Capital to Dairy Plants(DP) and 5 Chilling Plants(CP)		Dairy plants-3 Chilling plants-5		In existence of three milk unions formed by Co-operation Department, the DCS formed under AACP could not be federated into new DMUs. As other alternatives were not finalized, the savings in these heads were carry forwarded to the AACP-AF activities
3	Bulk Cooler building /Equipments		20	3	Decision was taken to establish BMCs only on the basis of DCS land contribution and feasible business plan
4		Installation & commissioning of Dairy plant at Hojai	1	Dropped	As Milk Union in Nagaon district could not be formed to operate proposed Dairy plant, it was decided not to go ahead with the proposed Dairy plant at Hojai
5		Establishment of demonstration farm at Kathiatoli, Nagaon	1	Dropped and new activity of 4 BMCs approved	Support of BMCs is more beneficial to avoid milk curdling and financial loss

Reasons for shifting from DCS to MPI: After NDDDB taken over the management of the WAMUL (the Guwahati milk processing plant), WAMUL developed a plan to increase milk procurement from some 3,000 liters per day to reach 35,000 liters, largely through milk routes around informal milk producers groups. WAMUL accordingly started

promoting informal producer organization called Milk Producer Institutions (MPI). Formation of MPI is cost effective and less time consuming when compared to DCS. Based on the mutual agreement between the World Bank and the GoA, it was agreed that in the districts of Kamrup, Morigaon and Nagaon, DCS formation would be frozen and project would support the formation of MPI in these districts.

Revision in DCS & SHG: After the MTR, the revised EOP target for the DCS & SHG formation was as follows-

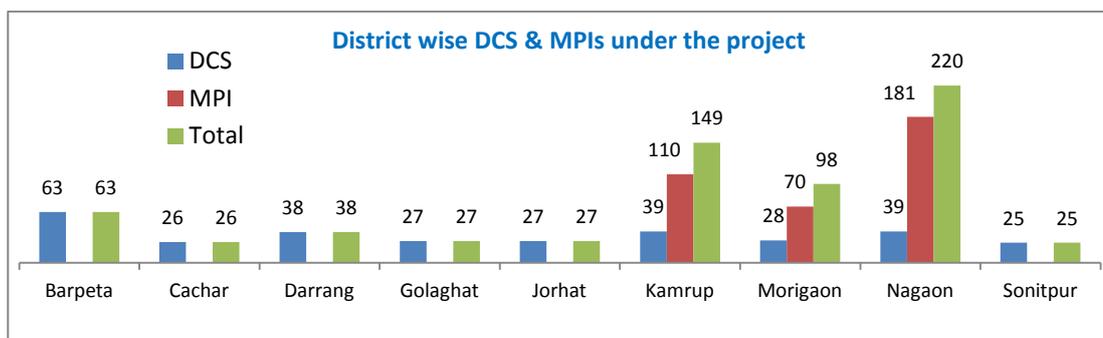
Sl	District	Pre MTR Target for DCS	Post MTR Target for DCS	Pre MTR Target for SHG	Post MTR Target for SHG
1	Kamrup	40	67	40	30
2	Nagaon	30	45	30	15
3	Morigaon	20	32	20	10
4	Barpeta	50	68	50	42
5	Sonitpur	40	34	40	15
6	Darrang	30	44	30	16
7	Cachar	15	20	15	10
8	Jorhat & Golaghat	25	40	25	12
	Total	250	350	250	150

Further, since November, 2008 the formation of DCS in the three specified districts has also been frozen and the project target of DCS and the MPI is again revised as follows-

Sl	District	Post MTR Target for DCS	Re-Revised Target for DCS	Post MTR Target for MPI
1	Kamrup	67	39	110
2	Nagaon	45	39	120
3	Morigaon	32	28	70
4	Barpeta	68	63	-
5	Sonitpur	34	25	-
6	Darrang	44	38	-
7	Cachar	20	26	-
8	Jorhat & Golaghat	40	54	-
	Total	350	312	300

- (c) The target under the AF: Formation of 61 MPI in Nagaon district only and supporting them with milk collection inputs, capacity building, and milk processing infrastructure (4 BMCs).
- (d) The physical achievement under this subcomponent is furnished below:
- Total 312 Dairy Cooperative Societies (DCS) were formed in the aforementioned districts and supported with dairy inputs, capacity building, exposure visit outside the state, market linkages etc, benefiting around 9575 dairy farmers. DCSs of Jorhat, Golaghat and Barpeta districts formed under AACP were federated into 3 (three) District Milk Unions (DMU).
 - Similarly, in addition, 361 Milk Producers Institution (MPI)⁹ were formed as a informal dairy group and supported in Kamrup, Morigaon & Nagaon district, benefiting *around* 2527 dairy farmers/beneficiaries.

⁹ 300 MPIs under AACP plus 61 MPIs under the AF.



- As per records, 187 DCSs are collecting more than 100 lts. of milk per day. Details are provided at [Annex-10A](#).
- At the initiative of AACP during July 2004, the Powers of Registration of Dairy Cooperative Societies was conferred/ delegated to the Director, Dairy Development under section 4 of Assam Cooperative Societies Act, 1949.
- A "Comprehensive Study of the Dairy Sector of Assam" was conducted by International Livestock Research Institute (ILRI), of Nairobi, Kenya. The study facilitated in realigning the priorities in this sector, including handling and marketing of clean & hygienic milk.
- A well equipped Milk Testing Laboratory, Khanapara was established for ascertaining the quality milk being marketed.
- Project also provided total 07 Nos. Bulk Milk Coolers (BMC) to the better performing DCSs.



Project		Capacity (Lts)	Location	Status
AACP	AF			
	BMC	1000	Tezpur	Functioning
	BMC	1000	Jorhat	Functioning
	BMC	500	Furkating, Golaghat	Functioning
	BMC	1000	Bhimarali, Hojai, Nagaon	Testing and commissioning has recently been completed
	BMC	1000	Singgaon, Kisma Barkola, Nagaon	
	BMC	500	Chalchali, Samaguri, Nagaon	
	BMC	500	Phulaguri, Jakhlabandha, Nagaon	

- Initiative to improve the hygiene and quality of milk produced and marketed by Informal Milk vendors in Guwahati city:** For milk consumers, quality and safety about informal milk marketed has always been an issue. Realizing the fact, the project along with ILRI and Department of Health, Guwahati Municipal Corporation (GMC) etc. constituted a Joint Coordination and Monitoring Committee for improving milk quality and safety marketed by informal market actors. Programs on training,



monitoring, certification and licensing programs were organized for 263 milk vendors and 356 milk producers in and around Guwahati city on clean and hygienic milk production, handling and marketing. More such programs are being taken up under RKVY and other Government schemes.

- Summary of the key achievement is given below:

Key Activities	Target & Achievement						
	Physical				Achievement		
	Unit	AACP	AF	Total	AACP	AF	Total
Formation & support to Dairy Cooperative Societies(DCS)	Nos	312	-	312	312	-	312
Formation & support to Milk Producers Institution(MPI)	Nos	300	61	361	300	61	361
Milk testing laboratory	no.	1	-	1	1	-	1
Establishment of Bulk Milk cooler	no.	20	4	24	3	4	7
Establishment of Milk selling booths in Nagaon & Hojai Town including deep freeze etc	nos.	0	10	10	0	9	9
Pre-fabricated Milk Vending Tricycles(120 Ltrs) for clusters of MPI(5 MPI/cluster)	nos.	0	35	35	0	35	35
Billboards on hygienic milk production and consumption	no.	30	30	60	30	30	60
Generic milk campaign /f	LS	10	25	35	10	0	10
ILRI consultancy for developing pro poor concept	no	1	0	1	1	0	1
Feasibility and design of treatment plants	no.	1	0	1	1	0	1
Study of the peri-urban dairy farms for improving quality of milk and environment	no.	1	0	1	1	0	1

(e) Outcome: As per Impact assessment report (March 2015) of the independent Monitoring & Evaluation Report-

- There is an increase of about 310% increase in daily income for the project beneficiary farmers from crossbred cows in comparison to indigenous cows (.after deducting average daily expenditure on animal). The average annual income for the beneficiary household was reported to be INR 84,075/- as compared to INR 9,171/- in the control group
- In the case of indigenous cows, the average milk productivity is 1.7 litres per day but in the case of cross-bred cows, the comparative average productivity is 6.5 litres per day
- Yield and herd size of MPIs shows that about 50 percent of the beneficiary cross bred cows is producing in the range of 6.1 to 7 liters of milk per day per cow..



**BEFORE AND AFTER SNAPSHOT OF A DCS
SWARNADHENU DCS, Phalegichuk, Titabar, Golaghat**

Particulars	Before project intervention	After project intervention & convergence					
Legal Status	Dispersed individual farmers	Dairy Co-operative Society, a legal entity					
Milk Collection	No organised collection	520 litres .					
Milk Marketing	Unorganized	Organized					
Procurement price	Rs. 10.00-15.00 /litre	Rs. 32 to 37 litre at present					
Training	Nil	1. Secretary Training at ICM , Guwahati 2. Exposure visit outside the state 3. Training for Paneer Making (Value addition under DDD 4. Milk producers training under RKVY 5. AI training under AACP .					
AACP inputs	Nil	Against community procurement					
AI facility	Nil	At subsidized rate					
Mode of transportation.	Nil	7 nos milk carrying Bi-cycle with Aluminium cans / Milk Van/ 3 wheelers Pick-up Van.					
Support for enhancement of milk production	Nil	19 farmers provided subsidized loan under CM's EGM 7 farmers were provided loan @ 50% subsidy under RKVY 25 farmers covered for Bank loan through IDBI					
Convergence	Nil	Milk Collection centre, AMCU , Bulk Milk Cooler , DG Set , proposed sale booth at Titabar Town under RKVY .					
Support on cattle feed	Nil	PDS quota wheat bran at subsidized rate . One time cattle ration under Annual Plan to the 70 farmers during 2012-13 & 2013-14.					
#	Year wise milk production in litres.						
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Month wise average	3300	6900	10800	11400	12600	13950	15600
Daily average	110	230	360	380	420	465	520
Payment mode- Weekly payment is made to the producers online through NEFT							



(f) Outsourcing of AI and Milk marketing support through WEST ASSAM MILK PRODUCERS' COOPERATIVE UNION LTD (WAMUL)

- The WAMUL, popularly known as *Purabi Dairy* is a cooperative organisation, which came into existence under the Operation Flood programme of National Dairy Development Board (NDDB). WMAUL was registered on 18 August 1976 under Assam State Cooperative Societies Act, 1949 and became functional since 1981-82. However, due to various reasons, the activity levels of WAMUL remained low since its inception. The operations of WAMUL came down to very low levels in the year 2007-08 when its liquid milk procurement came down to 400 Kg per day and sale came down to 700 litres per day. During that time the Union was left with only one functional DCS.

- **Restructuring and Rehabilitation of WAMUL:** Seeing the importance of the WAMUL in creating market for milk producers as well as provisioning of quality milk to the consumers, the World Bank and the State Government mutually agreed to hand over its management to the National Dairy Development Board (NDDB) for reviving its operations. Accordingly, a tripartite agreement, between the State Government, NDDB and WAMUL, was signed on April 2008. As per the tripartite agreement NDDB took over the management of the WAMUL and constituted a management committee to monitor the daily progress of the Union in its functional areas. Seeing the progress made by the Union during the period of



tripartite agreement, the State Government on 26 September 2013 decided to extend the agreement by another period of five years till 2018.

Fund Received for Capital Expenditure

WAMUL got financial assistance under Central Sector Scheme which was shared between GoI & GoA. The year wise assistance to WAMUL for meeting its capital expenses mainly for Refurbishment of Dairy Plant:

Rs Lakh

Year	GoI	GoA	Total
2008-09	0	0	0
2009-10	50.00	0	50.00
2010-11	174.00	40.00	214.00
2011-12	77.00	40.00	117.00
2012-13	0	0	0
2013-14	0	8.14	8.14
2014-15	0	0	0
Total	301.00	88.14	389.14

Working Capital Loan Assistance

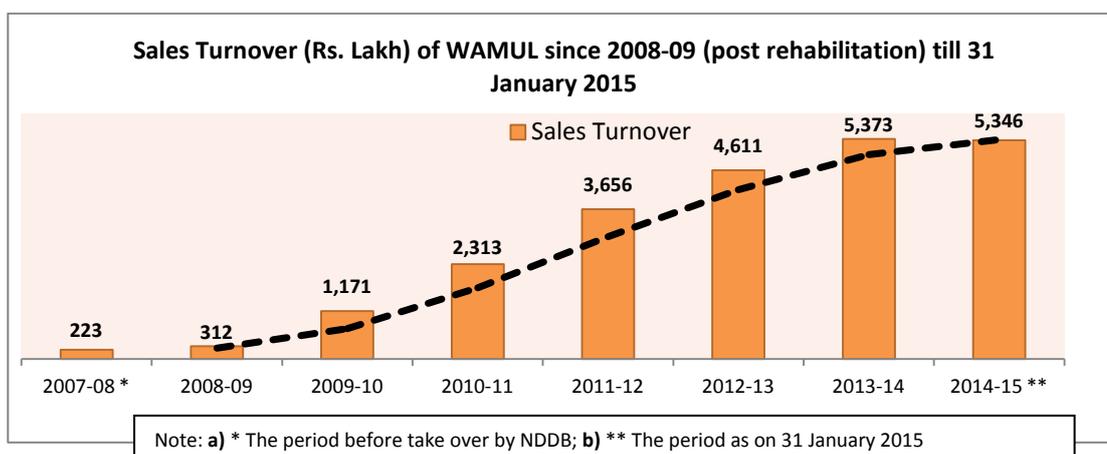
Initially WAMUL was not able to mobilise any working capital assistance. Its daily operation was met through its own generation. Latter, NDDB extended Working Capital Loan support to WAMUL from 2011-12 onwards:

Rs Lakh

Year	NDDB's Working Capital Loan
2008-09	0
2009-10	0
2010-11	0
2011-12	100.00
2012-13	500.00
2013-14	554.00
2014-15	186.00
Total	1340.00

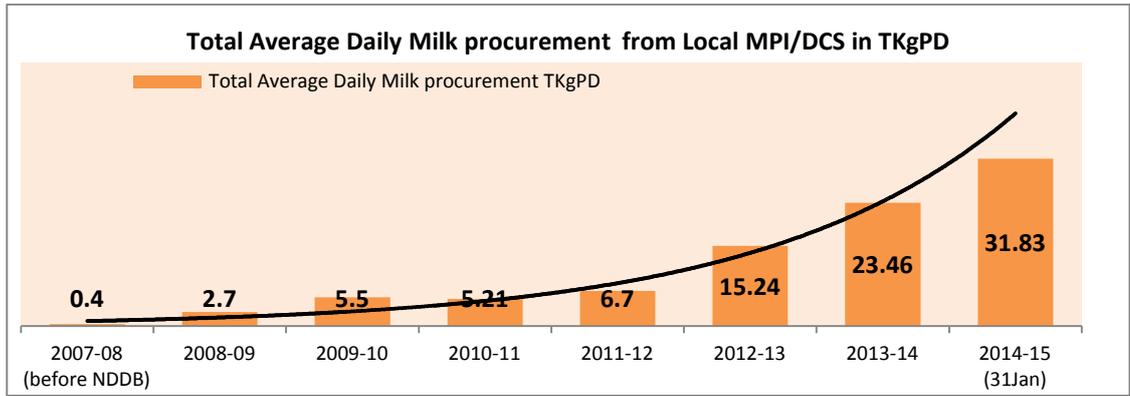
- NDDB through its management committee undertook steps for reviving the operations of the Union such as: (a) Positioning of key manpower including MD, (b) In-depth study of Procurement, Marketing and other major operations of the Union, (c) Carried out complete Engineering audit of liquid milk processing plant, (d) Carried out comprehensive training for the Union’s employees and staffs across all functional areas in reputed Co-operative Milk Unions of the country, (d) Chalked out Revival Plan for WAMUL and “PURABI” Image building, (e) Refurbishment of liquid milk processing plant in two phases, (f) Procurement Network revived in 3 milk routes, (g) Quality based payment for milk introduced, (h) Initiation of direct payment of milk bills to milk producers in a cycle of 10 days by opening individual bank accounts of the milk producers and (i) Re-organisation of marketing and distribution network by making functional 33 milk distribution routes.
- **Effect of reviving WAMUL’s functional area of operations:** Since its revival, the WAMUL started procuring 2700 litres of fresh raw milk per day from three functional routes having around 1200 milk producers. Although the Union initiated its milk procurement operations through 6 DCS but its main emphasis was on organisation of MPIs. The Union adopted a strategy of creating a robust system of quality testing for maintaining transparency and milk bill payment to its milk producers by distributing testing equipment like AMCUs, DPMCUs and Milk analysers to its MPIs. This helped the Union to regain its faith upon the milk producers by maintaining transparency. The Union directly transfers the milk bill amount to be paid to the milk producers in their savings bank accounts. Apart from the milk price, the WAMUL also gives quality incentives to its MPIs and DCS for maintaining quality of raw milk as per FSSAI norms. Over the years the Union has created 6,000 litres of bulk milk cooling (BMC) unit at Pathsala in Barpeta district and that of 5,000 litres at Amlighat in Morigaon district. In this way the Union has been able to create a village level bulk milk cooling capacity of 11,000 litres.
- After revival, WAMUL catered well to the ever surging market demand for liquid milk in the State by reviving its milk distribution routes and retail outlets and was able to achieve a significant share in the liquid milk market due to the efficient handling and processing of the procured quantity of raw milk by its liquid milk processing plant with an installed capacity of 60,000 litres. The packaging capacity of the processing plant was increased with the help of two double headed packaging machines.



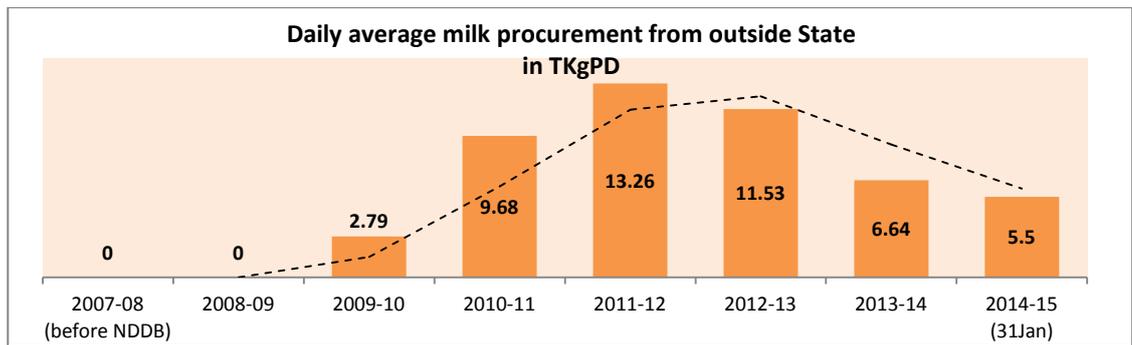


- **Impact of WAMUL's revival on its affiliated milk producers:** The efforts made by the Union to revive its operations have immensely helped its affiliated milk producers in the following manners:
 - The remunerative and consistent pricing by the Union by providing a round the year market to its milk producers has helped them immensely. As the milk bill is deposited directly to producers' account, Bank has come forward to offer loan to the milk producers. Around 231 milk producers in *Pathsala* route were able to avail bank loans due to this pricing system.
 - The supply of by-pass feed and mineral mixture, procured from other state cooperative unions, to the milk producers have helped them in increasing their per animal milk yield and also improved the quality of that yield.
 - The milk producers started to receive better exposures by attending training and capacity building programmes like Farmer's Orientation and Induction programmes at NDDB Anand.
 - Considering the important role played by women milk producers in the field of cooperative dairying and animal husbandry, the Union began to recognize and reward them during its Annual Milk Day celebrations that commenced since December 2012.
- **Scenario of current operations of WAMUL:** The Union at present is procuring an average quantity of 32,000 litres of fresh raw milk every day from around 3800 milk producers, of which around 400 are women milk producers, covered by 141 functional MPIs¹⁰ in the districts of Kamrup (Metro), Kamrup (Rural), Morigaon, Nagaon and Barpeta.

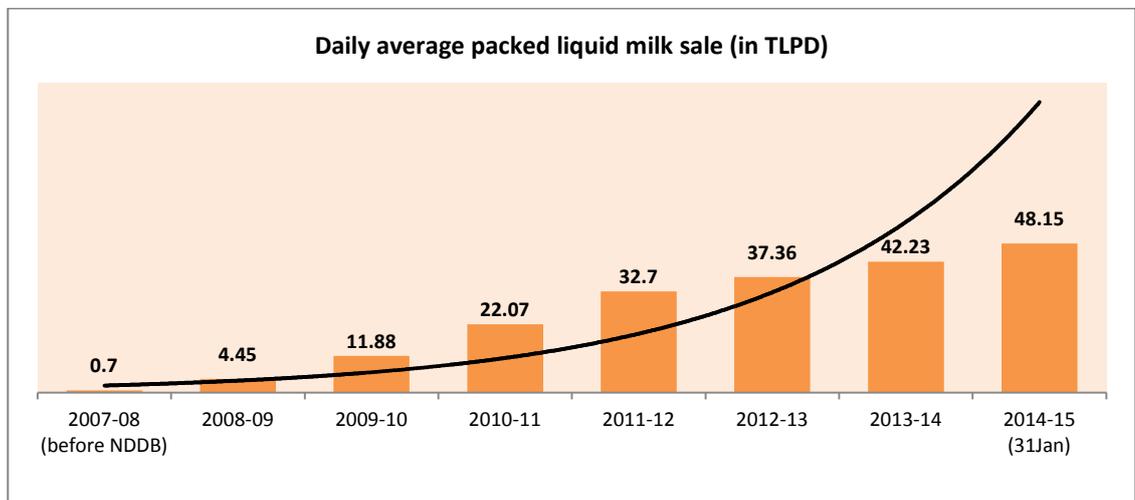
¹⁰ MPIs: Milk Producer Institutions



- WAMUL is also procuring milk of around 5,000 litres per day from cooperative dairies located at nearby states like Bihar and West Bengal to meet certain portion of the milk demand. However, procurement of Milk from outside Assam has decreased considerable as shown in the following chart:



- At present, the Union is selling around 48,000 litres per day of packed liquid milk in the markets of Guwahati and other important towns like Nalbari, Nagaon, Tezpur, and Shillong etc. Besides packed liquid milk the Union also markets milk products like *Paneer*, sweet curd, plain curd, cream, flavoured milk, Mango lassi, ghee etc. that have gained good popularity among the consumers in the market.



5.2.5 Sub-Component-2.5- Fishery Upgrading (Fish Seed)

The Mini-Hatcheries that were improved has facilitated availability of quality fish seed.

Target and Achievement under Fishery Upgrading/Fish Seed				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
State Brood Bank	5	-	4	4
Improved Mini-hatchery	12	-	12	19
Low cost Bamboo Cage for production fish of seed	-	20	20	20

(a) This sub-component targeted to encourage improved private fish hatchery operations to reduce detrimental hybridization of species and improve the quality of fingerlings sold to the fisher community. Moreover the subcomponent focused on addressing the serious problem of erosion of Assam's fish stock biodiversity by the detrimental hybridization of species in fish hatcheries, by supporting:

- Propagation of fresh water mussel farming for pearl production;
- Development of five Fish Brood Banks on selected departmental farms, which by proposed legislation, would in future have sole responsibility for collection of wild spawn for distributed to private hatcheries;
- Matching grant support to twelve private demonstration mini-hatcheries - replacing the existing incubator system used by most private hatcheries that does not meet the hygienic standards required for production of quality seed;
- Training of all hatchery operators in quality fish seed production; and media and extension campaigns to raise awareness among nursery operators, fish producers and the general public about the environmental the hazards of hybridized fish; and
- Demonstrations of poly-culture air-breathing fish; indigenous ornamental and endangered fish breeding.

The achievements under this sub-component are given below:

(b) **State Brood Bank:** The project successfully commissioned 4 State Brood Banks (SBB), under the quality fish seed production & distribution in the Departmental seed farms. Wild fish seed in the form of spawn collected from Brahmaputra River were raised in the SBBs and were distributed to the 12 hatchery operators of Dhubri, Bongaigaon, Goalpara, Kamrup and Nagaon districts for raising future brood stock for quality seed production. Moreover, another 12 hatchery owners have been distributed with yearling/ brood fish of riverine origin from the SBBs. The 04 nos. SBB supported under the project are running successfully with average annual production of 245 million spawn. As an effort to maintain fish bio-diversity in rivers a Government notification was issued in the year 2006 declaring riverine spawn collection at Dhubri Centre of River Brahmaputra as Fish Sanctuary.

- (c) **Improvement of Mini-Hatchery:** The project successfully commissioned 12 improved mini hatcheries (IMH) targeted under the original credit and replaced the existing incubator system used by most private hatcheries as it does not meet the hygienic standards required for production of quality seed. Based on the tremendous success of the mini-hatchery programme for quality fish seed production, during AACP 7 more mini-hatcheries (6 IMC & 1 magur) were commissioned as recommended by MTR. Fish seed production¹¹ by the 19 private hatcheries in 18 districts has facilitated the fish farmers of the relevant districts in getting quality fish seed to a considerable extent.

The programme has highly motivated the seed growers in the state and there was high demand of hatcheries from private sector. Accordingly, 57 additional mini hatcheries (7 under State Plan during 2012-13; 25 under Rastriya Krishi Vikash Yojana (RKVY) in 2011-12 and 25 under RKVY in 2012-13) were commissioned under private sector. Further, 37 more hatcheries will also be commissioned under RKVY during 2014-15.

- (d) **Pilot program on Breeding and propagation of indigenous ornamental and endangered fish species:** The pilot program on Breeding and propagation of indigenous ornamental and endangered fish species was taken up at Nagpota Fish Farm, Guwahati. Successful breeding of Pavo and Magur and rearing of seed was taken up. This was followed by imparting training to 50 farmers for dissemination of the technology. Further, due to growing demand of ornamental fishes in the state, one Ornamental Fish Breeding cum Research Centre has also been commissioned in the farm campus of Regional Fisheries Training Institute (RFTI), Amranga in Kamrup district.
- (e) **Demonstration program on poly-culture of air-breathing fish (magur) with Indian Major Carps (IMC):** Demonstration program on poly-culture of air-breathing fish (magur) with IMC was taken up in 03 Departmental farms. Magur fish was cultured along with Catla & Rohu. Encouraging result with productivity of average 2950 kg/ha/yr was achieved from the two farms. The success of the programme necessitated commissioning of magur hatchery and accordingly, one private magur hatchery was supported in Barpeta district under the project. Annual production of seed of magur in the farm during last three years was as follows- spawn 3.7 million, fry 0.06 million and fingerling 0.03 million. Considering the success achieved under the project, the GoA decided to establish one magur breeding unit at RFTI, Amranga under RKVY during 2014-15.
- (f) **Cage Culture:** Scarcity of fingerling of standard size of adequate numbers in actual time of stocking is a hindrance in achieving potential fish production in beel fisheries in Assam. Transportation of bigger seed from distance places also causes mortality and loss. To mitigate this, Cage culture was taken up on a pilot basis during the AF period as practically observed during the International exposure visit to south-east Asian countries. Growing of desired size of fish seed in adequate numbers at proper time is considered to

¹¹ Spawn 305.76 Million, Fry 51.05 Million, Fingerling 14.28 Million In 2012-13; Spawn 197.59 Million, Fry 34.25 Million, Fingerling 13.80 Million In 2013-14; And Spawn 197.20 Million, Fry 38.19 Million, Fingerling 15.59 Million in 2014-15

be one of the most important management strategies for sustainable management of wetlands. The objective of the pilot project was - (i) raising of fish seed from the stage of fry to fingerling for stocking in beel fisheries, and (ii) raising of fingerling to table size fish. The seeds were reared in low cost bamboo cages (total 20 nos.) in the marginal area of the beel itself with less cost and without mortality. The pilot programme was taken up in Thekera and Charipunia beel of Morigaon district and Shantijan beel in Nagaon district with technical support from the College of Fisheries, Raha, under AAU. The first batch of fish seed was successfully harvested from these Cages after 50 days of culture and fish seed size of 10-15 cm has been obtained with survival rate of 90%. The Beel Committee as well as the surrounding fish farmers purchased the fish seed produced in the cages.

- (g) **Capacity Building:** The project also took-up intensive Capacity Building of departmental staff as well as fish farmers and Institutional Development activities. Total 41738 farmers were imparted training under the project on the package of practices by the officials of Fisheries Department and nodal NGOs in the community sites. Further, training on community procurement procedures was imparted to the executive members of CIGs, CTGs and BDCs with the support of NGOs at field level. Leaflets/pamphlets were distributed to farmers during training and awareness programmes. In addition, normal calendars with dates and indicating month wise farming package as well as fish conservation measures were also printed and distributed to farmers and other stake holders. Over 1159 departmental officers & staffs were imparted training on different aquaculture development and managerial aspects like training on composite fish culture and integrated fish farming at CIFRI (ICAR), Barrackpore; management on ornamental fish culture at CIFE (ICAR), Kolkata; design and construction of freshwater aquaculture at CIFA (ICAR), Bhubaneswar; computer training and training management at Assam Administrative Staff College, Khanapara, Guwahati; district level orientation of project staff; polyculture & integrated fish farming at College of Fisheries (AAU), Raha; World Bank procurement procedure at Administrative Staff College of India, Hyderabad etc within/outside the state.

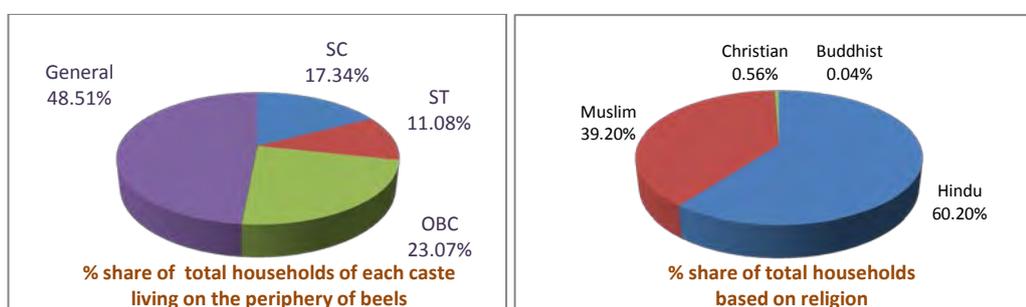
Total 185 Progressive Fish Farmers/ Matshya Mitras/BDC Secretaries & Presidents undertook exposure visit outside state in Andhra Pradesh, Orissa and West Bengal and in the beel fishery sites managed by communities in West Bengal. In addition, 202 mass awareness campaigns were organized on matters such as- effective management of aquaculture pond, conservation of natural water resources, community management of Beel fisheries including awareness on Assam Fish Seed Act and Assam Fishery Rule. During the AF, the project imparted training to another 3867 non-beneficiaries on pre-stocking and post-stocking management of ponds in advanced piscicultural practices. All the Presidents and Secretaries (103) of the BDCs were imparted residential training on sustainable management of beel fisheries at the Aquaculture and Biodiversity Centre at Gauhati University, with practical demonstrations. In addition to these, all the Accounts

staffs of project districts was imparted two-days training on accounts and record keeping under the project at the Directorate of Fisheries.

- (h) As part of reforms, under the aegis of the project, **(a)** the Assam Fish Seed Act was adopted in 2005 and the Assam Fish Seed Rules was enacted in 2010 with the objective to maintain quality in fish seed production by private hatcheries through a set of regulatory measures; and **(b)** In respect of Legal Review of Fishery Rules and formulation of Comprehensive Legal Statute, the project initially engaged two consultants in 2003. The consultants conducted series of discussions with all stake holders and workshops in different districts in the state and made 31 recommendations and 11 general suggestions. Subsequently, a Review Committee notified by the Government agreed to the 26 recommendations and all the 11 general suggestions for acceptance by Government.

Amendments to the existing Assam Fishery Rules, 1953: As a first step, the GoA notified few amendments of the Assam Fishery Rules, 1953 in the form of Assam Fishery (Amendments) Rules, 2005 vide notification No.FISH.2/2000/171 Dated 31/03/2005. Subsequently, the Project engaged a senior advocate from Gauhati High Court in 2010 to formulate further amendments to the Assam Fishery Rules to accommodate the recommendations accepted by the Review Committee. The draft amendments submitted by the consultant in 2012 did not fulfil the requirements. Later on, the draft amendments have been finalized through a series of consultations with the World Bank in 2014.

As a part of the amendment process, the project conducted a Study to understand the demographic pattern of the communities dwelling upto 2.0 km from the periphery of almost all the beels in the State having water are of above 5 ha. Total 1098 beels covering an area of 30,944 ha and 2,84,021 households were surveyed within a period of three months, through 222 enumerators provided by the NGOs working with the project within a very limited given time.



Draft amendment to Assam Fishery Rule, 1953 has been prepared. The important amendments proposed are:

- Modification of definitions of Fishery, Authority, Fishermen, Government Fishery, Registered Fishery, Bill Fishery Neighbourhood, etc.
- Revenue Department to be the sole authority for settlement
- Discontinue the Leasing of Beels to individuals

- AFDC (Assam Fishery Development Corporation) to develop water bodies and hand over asset to Revenue for settlement after 5 (five) years
- Sequencing existing sections of the Rules for easy reference

The proposed amendments are now under active consideration of the Government of Assam for further decisions.

5.2.6 Sub-Component-2.6- Forestry

Total 6844 ha of forest area re-generated by involving forest fringe communities.

Target and Achievement under Forestry				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
JFMC	10 Nos.	-	10 Nos.	47 Nos.
Peoples Nursery (Alternate livelihood activity)	10 Nos.		10 Nos.	47 Nos.
Afforestation (Plantation)	1625 ha	-	1625 ha	6844 ha
Maintenance of Created Plantation	-	5400 ha	5400 ha	6409 ha
Forest Road	60 km	-	60 km	188 km
Infrastructure Support to Forest Department	74 buildings	-	74 buildings	74 buildings

- This sub-component of the project is 'Natural Resource Management & Integrated Livelihoods' (NaRMIL). NaRMIL's main objective was to support the livelihoods of the forest fringe dwellers by forming Joint Forest Management Committees (JFMC) and through improved natural resource management with community participation.
- Community Participation:** Initially the program was taken up on pilot basis in 2 divisions namely Kamrup West Division and Nagaon South Division where 15 numbers of villages were constituted into 10 Joint Forest Management Committees (JFMC). Enhanced participation of female members was ensured by taking the unit membership to comprise of a male and a female member. The activities include working with the forest fringe communities in selected divisions for integrated JFMC community development and natural resource management, involving demand-driven micro-planning for community livelihood opportunities in both forest and non-forest activities and improve linkages between forest communities and the market for non timber forest products. Social Audits by the communities of their own activities was institutionalized and is very popular due to its effect in enhancing transparency in public works. All activities under this subcomponent were fully financed by the project so as to attract their interest in the project.
- More than 50% of the people of the target villages belong to Scheduled Tribe community and the balance are mixture of OBC and General Caste Community. More than 90% of the people of these villages live below poverty line (BPL).
- Change in targets: Subsequent to the good performance of the of the 10 JFMCs of the two pilot divisions, the target of the project was enhanced during the MTR of AACP to include 5 JFMC in the original two divisions and 6 more divisions viz. Digboi, Lakhimpur,

Kokrajhar, Parbatjhora, Nagaon and Karimganj with 33 more JFMC's. However, one JFMC of the original pilot 10 JFMCs (viz. *Taralansu* under Nagaon South Division) was dropped and thus total 47 JFMCs (9+5+33) were taken up. A few minor activities were dropped, as they could not be taken up due to field constraints. The list of JFMCs is furnished below:

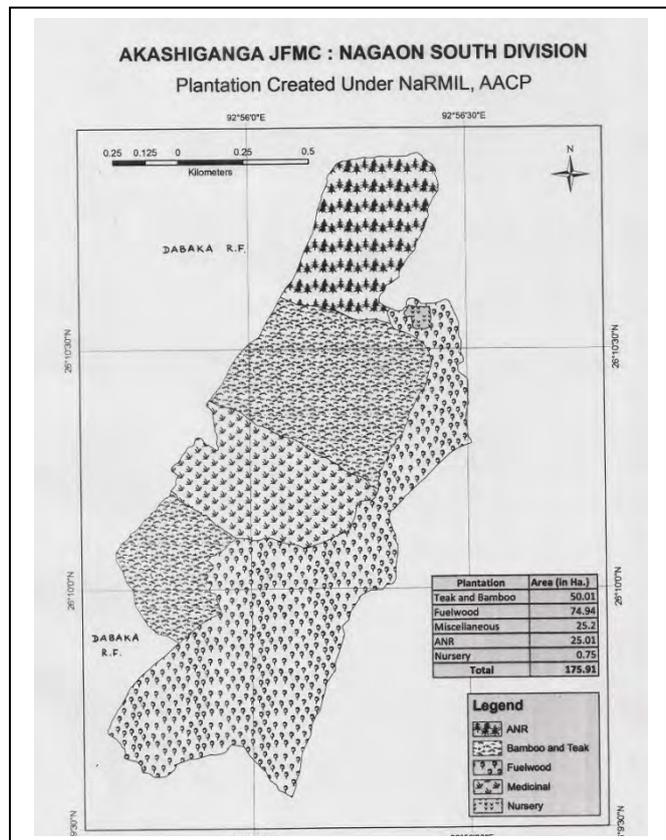
List of JFMC created under NaRMIL Project						
Name of Forest Division	Name of JFMC					
	1st Phase		2nd Phase		3rd Phase	
Nagaon South (Hojai)	1	Lankajan	1	Christan Basti	1	Syam Jadu
	2	Kathaltoli	2	Akashiganga	2	Sadhukhuti
	3	Nahargaon	3	Nakhuti	3	Hatikhuli
	4	<i>Taralansu (later dropped)</i>				
Kamrup West	5	Alukhunda	4	Mirjakhat	4	Dewan Beel
	6	Kalabakra	5	Nowapara	5	Pokapam Bogaline
	7	Nalapara				
	8	Dekapara				
	9	Dhupguri				
	10	Samuka				
Digboi					6	Nazirating
					7	Baraphutia
					8	Bhitorpowai
					9	Borbil no.3
Lakhimpur					10	Gulajuli
					11	Rampur Deori
					12	Kakoi Dhekiajuli
					13	Joyhing
Nagaon					14	Hatigarh
					15	Maisam
					16	Udmari
					17	Awlia Mazika
					18	Seuj Pahar
					19	Borghat
					20	Sivasthan
					21	Dhulpahar
					22	Amguri
Haltugaon					23	Swmkwr
					24	West Bishmuri
					25	Nijiraguri
					26	Tilbhum
Karimganj					27	Srirampur
					28	Sakalpur
					29	Jugicherra-Sobri
					30	Banyaguri
Parbatjhora					31	Khoraghat
					32	Khorkhori
					33	Panijani
		10-1 dropped=9		5		33
		Total 9+5+33 =47 JFMCs				

- e) Financial transparency was achieved by transferring the money to the community account from the forestry account. This intervention gives key impetus in having post project sustainability. GIS based coloured maps have been prepared with active participation of the communities who have these in their custody. The maps are duly signed by the department and hence bring transparency in the forest management besides giving the true feeling of ownership of the natural resources to the communities.
- f) The benefit sharing of the community from the harvesting of the plantations was enhanced for the project JFMCs from existing 25 % to 50% of the net revenue. This was done by a special Government Notification (Copy is at **Annex-11.A**) addressing this issue.

Subsequently a drive was carried out by the department to sign MOU with each JFMC to this effect. Each JFMC has also been given an authentic document stating the expenditure incurred in raising the plantations. This will pre-empt any conflict between the JFMC and the state actors over the quantum of benefit sharing from the plantation harvest in the future. The state is now actively considering for extending this benefit to non-project JFMCs by another government notification.

g) **Plantations:** Plantation activities by the JFMC community members in 6844 ha were completed against target of 7048 ha. Division wise list of 47 JFMCs with the plantation area in *ha* is at **Annex-11**. Further, the types of plantations created over the years (*ha.*) are at **Annex-12**.

h) After formation of JFMCs, the community members were motivated to become more cautious and to help in conservation and management of the naturally / artificially regenerated forests. The degraded areas of the RF were decided by the JFMC to be covered by plantation of the species of short rotation, which can generate



income to the members. For example, plantation of 'Som' for rearing Muga Silk Worm, Bamboo plantation, etc. The JFMCs have helped in conserving the forest by raising, mapping, maintaining and protecting plantations in the reserve forests. Entry point Activities like community hall, fishery tank, Ring wells /deep bore wells were taken up to motivate the communities and to develop the community infrastructure. During the AF period the 4634 ha of plantation out of 6844 ha created under original project, have been maintained and livelihood support continued through intercropping.

i) **Capacity Building** of the communities was done successfully by providing trainings, conducting workshops, seminars, demonstrations, and also by exposure visits of the JFMC members within the state and to other states. Investments like community hall in each JFMC area, construction/maintenance of village roads, raising plantations and nurseries creation, community based fishery activities and promoting the SHGs encouraged the communities and built a relationship with the forest department, and helped them to rehabilitate themselves with alternative livelihood options.

j) On similar lines the forest department staffs were also trained in the modern technologies like GPS, GIS, Survey and forestry law with special emphasis on community involvement for forest and natural resource management. Senior management was given international exposure by a visit to Mexico. The exposure provided insights in good examples of community forestry and comparing them with the ones in practice in Assam.

k) **Alternate Livelihood activities:** A total of 47 Peoples’ Nurseries were raised by the JFMCs at a location of their choice. Peoples’ Nurseries were raised and through the sale of poly pots seedlings income is generated by the community. The JFMCs raised supplementary plantations of medicinal & aromatic herbs and shrubs in the gaps between main plantations.



This was for the immediate income and livelihood of the forest based communities. The JFMC members participated in identification of land for creating short rotational income generating crops like Ginger, Turmeric, Bamboo as well as land for fisheries, nurseries etc.

Indira Priyadashini Vriksha Mitra Award (IPVM)

DFO Nagaon South Division received the prestigious Indira Priyadashini Vriksha Mitra Award (IPVM) in Nov/2009 – By MoEF, Govt of India for involving forest fringe communities in joint forest management. The work on supplementary plantation and buy back arrangement from private companies to ensure economic security of the communities was especially appreciated.

The work also received appreciation from the State Assembly on 18-07-2008, fetched the **International Gold Star Award** and the **Bharat Jyoti Award** – by India International Friendship Society.



l) To support the alternative livelihoods of the JFMC communities through fish farming practices with community participation, a Livelihood programme has been implemented at the fishery potential area of 21 JFMCs formed (covering total 69.77 ha of existing

water area) under AACP in 4 Divisional Forests (Karimganj, Lakhimpur, Nagaon South and Nagaon) of 3 Districts (Nagaon, Lakhimpur and Karimganj) covering total 546 JFMC members. The schemes taken up were Farmers Ponds (32 CIGs), Community Tank Groups (9 CTGs) and Integrated farming Groups (2 CIGs). All the beneficiaries were selected as per norms of the project with active participation of NGOs, President, and Secretary of concerned JFMCs and Technical persons from Fisheries and Forest Department. A four phased training program was conducted through NGOs for social mobilization for the groups and to enhance their technical as well as marketing knowledge. The concerned Divisional Forest Officers released funds to the Group's Bank Account as per requirement and recommendation of concerned Fishery Officers. A dedicated Fishery Technical Official was engaged to each group to render technical support to the groups during the project period. The Harvesting of ponds/tanks are shown below:

Sl	District	Water Area (ha)	Groups (No)	Beneficiaries (No)	Production (Kg/ha/yr)
Common Interest Group (CIG) under Farmers Pond Development Scheme					
1	Karimganj	19.43	8	101	3210
2	Lakhimpur	1.84	2	24	2598
3	Nagaon	37.30	23	344	3380
	Sub-Total	58.57	33	469	3063 (av)
Common Interest Group (CIG) under Integrated Farming Scheme (Pig-Fish)					
1	Lakhimpur	3.60	2	25	3882
	Sub-Total	3.60	2	25	3882
	Total (CIG)	62.17	35	494	3473 (av)
Community Tank Group (CTG) under Community Tank Development Scheme					
1	Karimganj	6.00	4	44	2948
2	Lakhimpur	1.60	2	20	2809
	Total (CTG)	7.60	6	64	2879 (av)
	Grand Total	69.77	41	558	3275 (av)

PPP in Parbatjhora Division

Citronella inter cropping by the community in Parbatjhora division has attracted the attention of a private buyer who has installed at the site an oil processing plant as an investment at its own cost. It has also entered into an agreement with the community to buy their citronella produce. The value addition is done at the site itself. The forest department has facilitated the effort. The move has augmented the income of the JFMC members.

- m) Before commencement of AF, performance of all the JFMCs was analyzed in an objective manner. Compiled JFMCs wise performance grading is at **Annex-13**. Depending on their grading 7 divisions were selected for Inter cropping of 500 Ha. Inter-cropping plantations of Cintronella, Ginger, Turmeric, etc. were taken up in JFMCs to enhance and augment the income of the community members.



n) **Infrastructure:** The project provided infrastructure support to the forest department by construction of 74 nos. of new buildings (1 Nodal Office, 3- Project Offices, 40 - Range/Beat Offices, 30 - Range/Beat Officer's/ Forest Camp Normal/Chang Type). Construction of 3 Range/Beat offices took place during AF period. In addition, 188 kms of Forest and Village Road was repaired/renovated against the target of 212 km.



o) **Consultancies:** Independent consultancies on “Energy Study with Special Reference to Wood Balance Situation in Assam”, “Review of Existing Forest Acts, Rules, Regulation and Policy Development to strengthen Community Natural Resources Management in Assam”, National Consultancy services for Livestock/Grazing study in Assam”, “National Consultancy for Formulation of a Marketing Framework, Training and Extension Support to the Joint Forest Management Committees (JFMCs) on Marketing of Non Timber Forest Products (NTFPs)” and “Consultancy to the study on variations in group formations rates across JFMCs under NaRMIL” were commissioned and completed. The recommendations were put to use to the extent possible.

p) **Performance:** Performance of the NaRMIL subcomponent is satisfactory. Several types of plantations and their maintenance were taken up by the communities to address their multiple needs. Combinations of Teak, Hollong and Gamari with Bamboo plantations were taken up besides aided natural regeneration, medicinal, fodder, cane and fuel wood. Average plantation survival over 62% is due to community ownership feeling. Accordingly, plantation harvest benefit sharing for the community has been enhanced from existing 25% to 50% of the net revenue. They created People's Nurseries and raised supplementary plantations vide inter cropping of medicinal & aromatic herbs and shrubs for immediate income. EPAs like building community halls, repairing roads etc harmonized community and department relationship. Sizeable wages from these activities raised the standard of living of the communities.



Capacity development of the communities was achieved for income generating schemes and alternative livelihood options. Inputs were based on prosperity through SHG formation, value addition, marketing linkages, nursery techniques and were administered with multi techniques viz. by providing trainings, conducting workshops, seminars, demonstrations, and also by exposure visits of the JFMC members within and outside the

state. SHG formation was significant and various activities especially fishery got a good response. Forest staff and officers were trained within and outside state like forest management involving communities, monitoring and evaluation, seed certification, procurement procedures, using GPS, GIS and Total Stations.

Each JFMC now has a self owned, independently operated community account for financial independence. Benefits from sale of future timber harvest, of firewood and NTFP, inter-cropping shall flow to them and strengthen their financial independence. Improved consciousness of the JFMC members towards the forest has resulted in their involvement in the forest activities and has brought reduction in grazing and deforestation.

5.2.7 Sub-Component-2.7- Pilot Project on Sericulture

Under this sub component, a study was done through the Central Silk Board (CSB) to identify possible interventions. The study included dynamics of the production and market for Eri and Muga silk in 4 districts of Assam, identification of the major production enters of Eri and Muga, a market study to build up market intelligence, a baseline survey on Sericulture in the districts of Kamrup (Rural & Metro), Goalpara, Udalguri and Sivasagar. The study report along submitted by CSB was placed before the MTR Mission. However, the MTR mission did not agree to the recommendations in the report and suggested dropping of this pilot, and accordingly this pilot was dropped.

5.3 Component-3: Infrastructure Development

This component was included for addressing the constraint of inadequate rural road network in the State and inadequate rural market infrastructure. Under this subcomponent activities relating to upgradation of selected rural roads, and replacement of timber bridges to RCC (Reinforced Cement Concrete) bridge, rehabilitation of gravel roads and infrastructure development of rural markets, have been undertaken.

5.3.1 Sub-Component-3.1- Rural Roads

Provided connectivity to Agricultural production hubs and rural market

Target and Achievement under Rural Road sub-component				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Rural Road Upgradation	1000 km*	- #	1000 km	836 km
Rural Road Rehabilitation	1000 km	-	1000 km	900 km
Conversion of Timber Bridges to RCC	287 nos.	- #	287 nos.	196 nos.
Road with innovative technology/ensuring connectivity to markets	-	57 km	57 km	57 km

113 km of leftover roads and 29 bridges of original credit was targeted under the AFy.

- (a) Development of rural roads is vital for agricultural produce to reach the market. Therefore, the rural road component of the project is considered a critical activity for

achieving the development objective of AACP. The activities under AACP focused in nine districts viz. Barpeta, Dhubri, Goalpara, Hailakandi, Jorhat, Karimganj, Morigaon, Nalbari, and Sonitpur, selected on the basis of population density, concentration of below poverty line households, area under agriculture, and number of STWs.

(b) **Targets:** The focus under the original credit (AACP) for this sub-component was to upgrading the rural road and bridge network and rural markets, involving:

- upgrading 1,000 km of roads to blacktop standard including replacement of about 287 wooden bridges with concrete structures – and rehabilitation of a further 1,000 km of gravel roads;



- maintenance planning for all rural roads in project districts, with the work being financed from GOA own budgetary resources; and,

The target under AF was to – **(i)** investments in rural roads (about 113 km), covering areas not covered by the PMGSY in selected districts; **(ii)** Road construction with Innovative Technology (25 km)/demonstration of low-cost road construction and innovative bridge designs, and **(iii)** the low-cost construction technologies to connect smaller habitations and linking agriculture production with markets (32 km) in a cost-effective manner

Project financing covered engineering designs and civil works; supervision and quality control technical assistance; information technology equipment; staff training; and incremental operating costs.

(c) **Selection of Roads:** The projected selected the rural roads for upgradation based on an objective selection criteria. The section criteria *inter alia* focussed concentration of agricultural activities and linkage to rural markets. The selection criteria are attached at [Anex-14.A](#).

(d) **Reason for change:** Under original Credit (AACP): The target for upgradation of existing rural road to black top standard under AACP was reduced to 715 Km. Further, the target for replacement of Timber Bridge with RCC Bridge was reduced to 181 nos. Similarly, the target for rehabilitation of rural link/feeder earthen roads to gravel road including repair of timber bridges in the roads was reduced to 900 Km. The key reason for change in the targets of AACP is basically due to increase in the unit costs as given below:

- **Increase in Bridge cost:** Per Rm (Running meter) cost of the Bridges as per estimate at the time of appraisal had increased from Rs. 1.5 lakh/ Rm to Rs. Average 2.50 lakh/Rm as per actual. Moreover, total length of the bridges had increased by 620 Rm

for 181 Bridges as per design. An additional amount of Rs. 4392 Lakhs was thus involved.

- **Adoption of the revised/ updated Scheduled of Rates (SOR)** published from time to time by the department in preparation of DPR .Average cost of the DPRs based on prevailing SOR increased by 20-25% more than the cost assessed at the time of appraisal.

- **Consideration of minimal earthwork (EW) in raising pavements during project preparation:**

The per Km cost of road of Rs. 24 lakhs for raising road level and widening of road to IRC standard and making road pavement at the time of appraisal was based on rough estimation . The DPRs were prepared and cost was estimated as per



actual requirement of earth and pavement structures and that was based on detailed survey and investigation of road.

- Moreover, the construction supervision consultants reviewed the DPR before commencement of works as per the contract with the consultant and suggested some changes which resulted in overall increase in per Km cost of road by Rs 6 to 7 Lakhs.
- **Higher bid prices quoted by bidders for some districts:** In works within the districts like Jorhat Hailakandi, and Karimganj and specially in Majuli (river island), contractors had quoted higher rates, because of remoteness of the roads and higher cost of transportation of materials and equipments which resulted in increase of cost by 15%.
- An additional amount was required for Price escalation during the period of contract as per contract clause. Average 8% of cost increased due to price escalation.
- There were physical variations to the quantities of works during execution of contracts. Average 3% of cost increased due to physical variations

Change in targets: under AF: The target length of upgradation of roads to black topped standard was enhanced to 169 km from 113 km based on actual. The roads taken up under AF were the left over roads selected for upgradation under original credit. Accordingly, the estimates were prepared in the year 2005-06. While preparing the updated DPR for the roads in the year 2012, it was seen the length of roads that required upgradation is more than that of the 2005-06 DPR, as the yearly floods had damaged the roads considerably.

Out of 29 Timber Bridges selected for conversion to RCC, 06 have already been taken up in other schemes of the department, and hence the target was reduced to 23 nos.

Considering the overwhelming demand for connectivity to the markets developed under the project and also for connectivity to the dairy/fishery production hubs, it was decided during the World Bank mission of June-2013 that Roads earmarked for ensuring market connectivity would also include roads connecting community fishery production centres developed under AACP and AF and approach road to Dairy Cooperative Societies (DCS).



- (e) Baring at few small stretches, most of land for road upgradation has come from voluntary land donation process by the people living by the roads, as outlined in the Resettlement & Rehabilitation policy framework.
- (f) **Physical Achievement: Road Upgradation:** Out of total target of 1000 km for upgradation, 675.90 km road works along with conversion of 173 Timber Bridge to RCC Bridge was completed & opened to traffic under original credit. List of Roads taken up for upgradation during original credit is at [Annex-14](#).

Road upgradation works under AACP covered under 66 packages					
#	District	Planned		Achievement	
		Package Length (Km)	No. of Bridges	Package Length Completed (Km)	No of Bridges Completed
1	Barpeta	47.61	25	40.39	24
2	Dhubri	82.08	18	82.08	18
3	Goalpara	74.60	28	74.60	28
4	Hailakandi	68.08	29	48.06	23
5	Jorhat	133.46	23	133.46	23
6	Karimganj	51.35	17	50.56	17
7	Morigaon	59.50	11	59.50	11
8	Nalbari	97.02	24	94.39	24
9	Sonitpur	101.72	5	92.84	4
10	Darrang	-	1	-	1
	Total	715.42	181	675.90	173

Further, 160.10 km road works along with conversion of 23 Timber Bridge to RCC Bridge was completed & opened to traffic under the AF Status of the targeted 169 km of roads under AF (2 pkg of length 9.09 km in Nalbari district terminated).

Road upgradation works under AACP-AF covered under 22 packages					
#	District	Target		Achievement	
		Package Length (Km)	No. of Bridges	Package Length Completed (Km)	No of Bridges Completed
1	Sonitpur	23.19	2	23.19	2
2	Goalpara	49.59	16	49.59	16
3	Nalbari	35.84	1	26.60	1
4	Barpeta	12.34	1	12.34	1
5	Jorhat	10.00	0	10.00	0
6	Sivasagar	13.35	0	13.35	0
7	Karimganj	25.03	3	25.03	3
	Total	169.34	23	160.10	21

List of Roads under upgradation completed during AF period is at [Annex-15](#).

- (g) Physical Achievement: Road Rehabilitation: Total 899.53 i.e. about 900 km of gravel roads were rehabilitated under the original credit and opened to traffic.

Road Rehabilitation works under AACP				
#	District	Package Length as per DPR (Km)	Package Length as per execution (Km)	Package Length Completed
1	Barpeta	107.15	79.30	79.30
2	Dhubri	96.30	64.72	64.72
3	Goalpara	123.00	93.68	93.68
4	Hailakandi	31.75	20.90	20.90
5	Jorhat	112.64	90.39	90.39
6	Karimganj	53.94	49.34	44.54
7	Morigaon	122.20	104.92	104.92
8	Nalbari	123.33	100.35	100.35
9	Sonitpur	98.93	97.41	97.41
10	Udalguri	24.30	24.27	24.27
11	Kamrup	8.50	5.87	5.87
12	Dibrugarh	50.40	50.40	50.40
13	Cachar	17.00	17.00	13.25
14	Kokrajhar	78.54	78.54	78.54
15	Sivasagar	21.50	21.50	21.50
16	Tinsukia	5.00	5.00	5.00
17	Nagaon	4.50	4.50	4.50
	Total	1078.98	908.08	899.53

- (h) Physical Achievement of Market Linkages to rural markets, production hubs of dairy & fisheries: All the 57 km of roads targeted for ensuring dedicated all weather connectivity to the rural markets, production hubs of dairy and

beel fisheries to support the movement of the agricultural produce in 13 district have been completed. These are basically small stretch roads to ensure connectivity from the main roads to the markets areas or the dairy & fisheries hubs. List of Roads taken up for connecting rural markets and production hubs of dairy & fisheries during AF is at [Annex-16](#).



hubs. List of Roads taken up for connecting rural markets and production hubs of dairy & fisheries during AF is at [Annex-16](#).

- (i) **Contract Supervision consultants (CSC)** were engaged to supervise the AACP civil works, administer the contracts, as well as to build capacity of PWD staff. In terms of quality assurance, project management, contract administration, and project preparation. Departmental 47 engineers were deputed to work under the CSC.

On expiry of the contract with the CSC, the balance works of AACP & AF have been supervised by the field divisions of department, with the guidance of individual Technical Consultants. The Technical Examiners (Individual consultant) were engaged for overall guidance to the field staff and to monitor the progress.

NGOs have been deeply involved in transact walk during topographical survey and social & environmental impact assessment of roads and bridge prior to finalization of DPR. Road Management Committee comprising members of the Panchayat and local villagers were constituted to resolve the local issues encountered during execution of works.

Major Achievements

- First time in the state pre-cast pre-tensioned RCC Bridges have been introduced under AACP. Though it could not be implemented in all districts due to transportation difficulty in carrying heavy weight precast superstructure deck unit (more than 18 Tonne of each unit) manoeuvring sharp curvatures of the rural roads and weak timber Bridges/pavement, 16 nos Bridges have been constructed in Hailakandi district.
- In line with the pre-cast pre-tensioned RCC Bridges in order to reduce cost and time, segmental precast box culverts were also constructed avoiding RCC Hume Pipe culverts comprising of large face walls and protection works. The pre-cast box-culverts demonstrated under the project have been adopted by the PWRD in other schemes of the department.

(j) **Road Maintenance:** Maintenance of the core rural roads in the project area, through departmental funds was ensured. As was agreed during the negotiations, GoA ensured adequate funding each year for maintenance of the rural roads in the nine project districts. As PWRD took up a program to establish a computerized road maintenance management system to facilitate preparation of annual maintenance plans through the World Bank



funded Assam State Roads Project, this activity was not taken up under AACP. PWRD also took up a program for executing maintenance works through Performance Based Maintenance contract through the Assam Road Board. The status of allocation for Annual Road Maintenance Fund (ARMF) during the period 2004-2011, as envisaged in the Minutes of negotiation with the World Bank for AACP, vis-à-vis as actual expenditure made by the GoA (PWRD) is shown below:

Financial Year	As envisaged in minutes of negotiation (Rs. Crore)		Expenditure (Rs. Crore)	
	Total ARMF for the State	Total ARMF for 09 Project Districts	Total ARMF for the State	Total ARMF for the 09 Project Districts
2004-05	60.00	20.00	54.16	20.00
2005-06	65.00	21.50	79.75	20.15
2006-07	70.00	23.00	89.81	33.35
2007-08	75.00	24.50	158.04	59.22
2008-09	80.00	26.00	129.23	48.42
2009-10	85.00	27.50	163.92	61.42
20010-11	90.00	30.00	234.39	87.83
Total	525.00	172.50	909.30	330.39

Note: Expenditure on Road Maintenance during the rest years of the project: 2011-12: Rs.237.84 Cr; 2012-13: Rs.138.80 Cr & during 2013-14: Rs.192.77 Cr.

(k) **Capacity Building:** As per design, the project was to support expansion of the GIS developed under ARIASP, and innovations in PWD design practices for rural roads and bridges. Capacity building of PWD staff was supported through the CSC in planning, surveys and investigations, material evaluation, design of roads and bridge works, preparation of detailed project reports, quality assurance, maintenance management, and contract administration. PCU provided support in procurement, financial management, and management of social and environmental issues. Based on the institutional assessment of the PWRD done through a consultant, the entire organization was revamped for improved efficiency in planning, design, procurement, execution, and management. *The concept of capacity building of the PWD engineers through AACP has been well reflected in the World Bank funded project 'Assam State Roads Project', where the detailed design of roads, Bridges, preparation of DPR and procurement are being carried out in-house, resulting in substantial saving in cost of hiring consultancy services.*



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(l) The sub-component further provided for upgradation of the Road Research Laboratory (RRL) under PWRD (The RRL is now renamed as 'Assam Road Research & Training Institute'). The RRL of the department, upgraded with the World Bank funding, has attained the status of a 'Centre of Excellence' in the North Eastern India for training & capacity building of the engineers, field staff, contractors etc. associated with road & bridge construction in diverse subjects and is recognized as one of the best laboratory in Assam with the help.



(m) **Outcome:** -

- The Impact Assessment report (March 2015) of the independent Monitoring Evaluation Report mentioned that -analysis of the traffic densities indicates that there has been an increase of about 351% in vehicular movement on the 57 km of market linkage roads and on an average these roads are connecting 3.6 villages. (N.B. The consultants monitoring survey was in the month of January 2015 and by that time the project roads, except the 57 km of market connecting roads, were not fully completed. Hence, the M&E consultants engaged during the AF period could not assess the impact the roads upgraded during the AF period).
- **Impact of roads upgraded under the Original Credit:** As per the Impact Assessment Report (September 2012) of the Independent M&E consultant of the original credit,

the average increase in traffic density on the improved roads is about 4 times of those at base line stage. This increase (302%) is more than double the anticipated increase (200%). Travel time reduced on an average for motorized vehicles by about 41.47%.

5.3.2 Sub-Component-3.2- Rural Markets Development

The Rural Markets developed under the project better remunerative prices to the farmers due to more foot-fall of traders in these markets.

Target and Achievement under Market Infrastructure Development sub-component				
Activity	Target at Appraisal			Achievement
	AACP	AF	Total	
Rural Wholesale Market (WSM)	24*	25	49	46
Rural Haat (RH)	50*	30	80	47

* Target during MTR was reduced to 24 WSM and 18 RH

- (a) Inadequate infrastructural facilities in the rural markets to function efficiently are a one of the foremost problems afflicting agriculture in Assam. This puts the farmers of the State at a great disadvantage in comparison with their counterparts elsewhere in the country. With few markets to sell their output, coupled with less number of trader's foot fall in the markets, farmers have little incentive to improve productivity and production by adopting modern farming techniques and increasing input use efficiency. In this context, the rural markets of Assam, be it rural wholesale market or the primary retail haats, are an important element in the value chain for onward distribution of agricultural produce. Rural markets along with adequate facilities provide a space where farmers, traders, and even retail buyers can interact in the price discovery process, or else farmers would lose out to the relatively organised traders, especially on account of transportation costs and in such a situation farmers would restrict their cultivation to meet their self-consumption needs. This sub-component of the project was therefore designed to improve the infrastructural facilities of the rural markets, as complementary to other interventions, so that the farmers get better marketing facilities and remunerative price for their produces.

- (b) Target and envisaged implementation modalities: The target under original credit was to develop existing 74 rural markets selected on the basis of their expanding sales volumes - provided that (i) the market site is owned by the Panchayat without encumbrances; (ii) there is sufficient area available for development; and (iii) that the Panchayat will contribute 20% to the development costs and undertake all future



maintenance. Under AF the target was to develop another 25 WSMs and 30 RHs based on a demand driven approach.

(c) Change in target and implementation modalities under original credit (AACP): The Design

consultancy report submitted by NIAM (National Institute of Agricultural Marketing) (engaged for preparation of site specific standard design of 6 wholesale markets & 6 rural haats), indicated that the unit cost of Rs. 16 lakhs/ Rural Haats (RH) & Rs. 60.50 lakhs/ wholesale markets (WSM) provided in the appraisal was grossly



inadequate for the cater for the development of minimum infrastructure (such as at least one covered shed, improving roads & lanes, earth filling in selected low lying areas, drainage, toilet block etc.). Hence, GoA and the Bank agreed during the MTR to reduce the target under the original credit to 21 WSM and 17 RH from 24 WSM and 50 RH. It was agreed to revise the unit cost of WSM from to Rs. 110 lakhs from Rs. 60.50 lakhs and to 45 lakhs for RH from Rs 16 lakhs.

Original target	Original allocation	Revised target	Revised allocation	Remarks
74	16 lakhs/RH 60.50 lakhs/WSM	42	45 lakhs/RH & 110.00 lakhs/WSM	<ul style="list-style-type: none"> As funds earmarked during project appraisal was grossly inadequate MTR mission of W.B revised the unit cost Due to non availability of land free from encumbrances as per operational guide lines of the project, revised target could not be achieved.

During the MTR it was mutually agreed that the contribution of the Panchayat towards the development cost would be 10% instead of 20% as envisaged in the PAD. Moreover, it was agreed that the Panchayat being a Government body, the required contribution of 10% towards the development costs is essentially a contribution by the GoA only. Since the project is claiming 90% of the cost of the markets and 10% is the GoA's share as per the Development Credit Agreement, a separate contribution from the Panchayat is not necessary for the purpose. It was also agreed that the Panchayats will set aside 10% of the Annual lease value received by the concerning Panchayat for each market for maintenance .

(d) Design: To establish a broad guidelines for selection of the markets and to identify the infrastructural needs and prioritize them, for developing the existing rural markets in the State, MART (Marketing and Research Team) was engaged in 2004 as consultants (during the retroactive financing period of the original credit) to conduct a study on the 16 existing rural markets located in 5 districts. As per MART's design guidelines for layout of components, the following elements were recommended in order of priority:

- | | |
|--------------------------|------------------------------|
| 1. Shed Structures | 8. Drainage System |
| 2. Movement Lanes | 9. Waste disposal |
| 3. Platforms | 10. Storage and special shed |
| 4. Parking / cycle stand | 11. Landscape / trees |
| 5. Street lights | 12. Overnight Shelter |
| 6. Urinal /Toilets | 13. Entrance / exit |
| 7. Drinking water | 14. Open spaces |

Based on the priorities recommended by MART, the National Institute of Agricultural Marketing (NIAM) (Jaipur) was engaged as a consultant for providing standard market layout and design and Master Plan for 12 markets (6 wholesale and 6 rural haats) selected for infrastructure development under the original credit. Taking this standard design as model, site specific layout & design for the rest 26 markets were prepared in-house by the Agriculture Department. During the AF, the design, drawings etc. for the markets were prepared through 6 Architectural firms' engaged as consultants, keeping the prioritized infrastructural requirements as recommended by MART. Master Plans were prepared for each of the markets and only a part of the same was taken up under the project.

The main criterion for the selection of markets were- volume of trade, Panchayat owning the market site without any encumbrances, sufficient area for development, willingness of the Panchyats for formation of Market Management Development Committee (MMDC) and to keep aside 10% of the lease amount in a dedicated Bank Account for maintenance of the markets post-development. Construction of the Markets under the original credit was done through the Agriculture Department and subsequently through the PWRD under the AF.

(e) Physical Achievements: The project took up total 47 Rural Haats and 46 Wholesale Markets as shown below:

Activity	Target at Appraisal of AACP	Target at AACP at MTR	AF	Total	Achievement
A	B	C	D	E=C+D	F
Rural Wholesale Market (WSM)	24	21	25	46	46
Rural Haat (RH)	50	17	30	47	47

The project signed Memorandum of Understanding (MoU) with the respective Panchayats for each market. Moreover, Market Management and Development Committee (MMDC) were constituted for every market for transparent and efficient management of the markets developed under the project. MMDC's opened Bank account and Panchayats deposited 10 % of the annual lease value for each into the concerning MMDC's Bank account for maintenance and further development of the market.

List of Markets taken up under original credit is at [Annex-17](#) and those taken up under AF are at [Annex-18](#). The following infrastructure in the rural market was developed:



- paver block provided in entire market area changed the earlier slippery and muddy condition and thereby facilitated better trading ambience;
- Toilet block having separate facility for men & women facilitated cleanliness & hygiene in the markets
- Well engineered internal & external brick drains removed water logging
- Drinking water facility
- Parking facility & loading/unloading area
- Internal roads & approach roads improved
- Permanent sheds & raised platforms

(f) AACP also collaborated with NIAM for a comprehensive study on the markets and the agricultural commodities of Assam. The Study identified the major production centres in the State, important agriculture & horticulture crops, livestock, fish, milk, and the markets, product flow channels, the demand and prospects of individual products. The Study also collected information on important agri-businesses,



traders and relevant trader associations, and a market intelligence document of the State was prepared. Based on the report the GoA is considering a project with funding from NABARD to develop the infrastructure of all the rural markets in Assam

(g) **Outcome:** As per the [Impact Assessment Report \(March 2015\)](#) of the M&E Consultant, the analyzed data on the markets developed during the AF period indicates that:

- The traded volumes of agriculture produce in the markets have increased by 50.2 percent and 50 percent increase in the number of market traders.
- The market fee collection has increased by 46.9 percent.

6. **Project Grants/Subsidies to the Beneficiary farmer groups**

(a) Development of community managed enterprises under the Component-1 (Investment Grant Scheme) followed a three stage approach, viz. social mobilization/substantial capacity building, community procurement, matching grants for farm equipment and civil

works & inputs for fish stocking/feeds. Financial assistance, as grants to supplement beneficiary contributions was envisaged as per the following cost sharing formulae:

Investment Activity	Farmer/Community Contribution % (Cash or Labour)	Commercial Bank Loan %	Matching Grant %
Irrigation Development-			
STW/LLP	20	50	30
Drainage Schemes	30	-	70
Farm Mechanization			
Tractor/Power-Tiller	20	50	30
Fisheries-			
Farm ponds/ Community Tanks -			
Civil works	50	-	50
1st year inputs	10	-	90
Community Beels -			
Civil works	30	-	70
1st year inputs	30	-	70

(b) Change in the grant pattern for Irrigation and Mechanization Sub-component: While there was no change in the grant pattern for fishery related activities, the grant for Irrigation, Mechanization and Drainage sub-components were changed as stated below:

(c) **Irrigation (STW/LLP):**

- The funding pattern for the irrigation (STW) & mechanization sub-component of ARIASP was 70% Grant and 30% from ASGs, with no linkage to commercial bank financing/loan to ASGs. However, the funding pattern for the STW/ Mechanization under AACP was modified to 30% Grant and 70% contribution from ASGs (which include mandatory 50% from commercial Bank as loan to the ASGs). Thus AACP envisaged that for irrigation and farm mechanization, grants would be made in association with loans from commercial bank to the ASGs. ARIAS Society has signed MoU with two leading commercial Banks in this respect viz. State Bank of India and the United Bank of India.
- Officials representing the GoA during the negotiation of AACP with the World Bank had expressed apprehension about this aspect, and stated that such substantive reduction in the Grant pattern might not be practical and the farmers might not be attracted to the program unless the Grant is increased to atleast 50%, and given the past rural credit scenario in Assam, implementation of these two sub-component would be constrained, if commercial bank's loan to ASGs didn't forth come as expected.
- As per Minutes of Negotiation for AACP, it was agreed that by March 2006 the implementation performance of the Investment Grant Component would be reviewed focusing farmer's uptake and performance of the commercial banks extending loans to the ASGs. And, in the event of lack of demands from the farmers or weak response from commercial bank, adjustment/ appropriate change in the

Grant/ modalities of implementation will be made based on mutual agreement between the World Bank and the GoA.

- As prearrangement project signed agreement with two leading commercial Bank (SBI & UBI) to provide loans to the farmers for the STW/LLP programmes. Farmers approached the commercial Banks for loans and the Government grant portion was back loaded through SBI. The project's success depended on the implementation of STW component which is pivotal to achieve higher productivity and diversification of crop. But the programme *inter alia* was depended upon the performance of the commercial Bank in sanction and disbursement of the loan. Despite numbers of meetings and repeated assurance from the senior Bank officers, no noticeable progress could be achieved. As against target of 6170 applications cleared by the Department and sent for loan sanction & disbursement, the Banks upto mid 2006 could only sanction and disburse loans only for 470 Nos. STWs. The project's inability to accelerate the installation of STW had generated serious concern in the State Government, as the state was passing through a severe drought in 2006 and farmers badly needed irrigation even for transplanting Kharif paddy crops.
- This issue was raised before the World Bank's Supervision Mission of February 2006 and also during the Mission of August/September 2006, and as was agreed GOA formally raise this issue with the Bank with full details on 22nd September 2006, with the suggestion that – **(a)** to enhance the project grant from 30% to 50% with a maximum ceiling of Rs. 10,000/- for STW and Rs 7000/- for LLP and **(b)** ASGs would have an option to finance the balance 50% either through "internal fund" or by way of borrowing from any financial institution or commercial banks and **(c)** Bulk Procurement of Pumpsets for STW/ LLP to reduce the unit cost through NCB/ICB. Following detailed examination the W.B. had agreed to the proposed changes through letter of 27th September 2006.
- Even after this change, the STW/LLP program was not progressing well. Based on the discussion with W.B., a detailed report was sent to the Bank on 19th June 2009 on procurement of pumpsets for STW/LLP captioned as "Advantage-Disadvantage-Risks in ICB vis-à-vis Community Procurement". Following further discussions with the W.B., on 8th July 2009 it was informed to the W.B. that for expeditious distribution of pumpset, it was essential to create an enabling environment without any element of financial coerciveness, so as to motivate the farmers to obtain pumpsets as per their choice of brand & model. It was also mentioned to the W.B. that interactions with the farmers and NGOs, had revealed that the upper grant ceiling (*i.e.* Rs. 10,000/- for STW and Rs. 7000/- for LLP) was one of the key bottlenecks for less acquisition of pumpset, and hence, it was proposed that the upper ceiling be removed, keeping 50% the Grant intact. The Bank had concurred to the same vide email of 22nd July

2009, and the upper ceiling was removed thereafter and project grant for STW/LLP changed to 50%.

(d) Mechanization (Tractor/Power Tiller): The only change that was made in this subcomponent that the mandatory commercial bank loan was made optional after the MTR Mission, considering the poor performance of the commercial banks of Assam in extending rural credits.

(e) Micro watershed Drainage:

- Under AACP, the funding pattern for this sub-component was - 70% of the total cost as grant by the project, with the balance 30% coming from Farmer groups in the form of cash or labour, or a combination.
- Under Additional Financing period, the funding pattern for this sub-component was changed to - 100% of the total cost as grant by the project, but 10% of the grant would be deposited into the Commercial Bank of the Farmer groups as fixed deposit, with withdrawal facility after three years for maintenance/cleaning works of the drainage. This change was proposed to the Bank considering the experience of maintenance aspect of the drainage, for sustainability of the benefits of the investments made.

(f) Grants for Fisheries related activities:

- Unit cost for development/civil work for Farmers Pond (FP) and Community Tank (CT) were Rs. 50,000/ha of water area with 50:50 sharing of fund between the project and beneficiary. In case of Pig-Fish farming (IFF), the unit cost for development of pond and construction of pig-sty was Rs. 1,40,000/ha with 70:30 between the project and beneficiary. In case of beel fisheries, it was 70:30 between the project and beneficiary on different components of civil work. An enhancement of unit cost for development was proposed and approved during the MTR because of increase in the prevailing market cost of the activities, and the unit cost became Rs. 75,000/ha for FP and CT, Rs. 1,75,000/ha in case of Pig-Fish farming.
- In case of piscicultural inputs, the unit cost per ha of water area in case of FP and CT was Rs. 75,000 which was enhanced to Rs. 1,00,000/ha during the MTR as proposed. In case of Pig-Fish farming, the enhancement during the MTR was from Rs. 1,25,000/ha to Rs. 1,45,000/ha. However, no change in sharing pattern or in grant percentage between the project and beneficiary was made under any activities of fishery component during the whole project period.

7. Implementation Process:

(a) Implementation, coordination and monitoring:

The project was implemented at the field level by the line Departments of the GoA within their area of responsibility. The various agencies involved in implementing the different components and subcomponents of the project:

- **Component-1: Investment Grant Scheme:**
 - (i) Irrigation development, farm mechanization and micro watershed drainage - Department of Agriculture, Agricultural Engineering Wing;
 - (ii) Fishery production - Department of Fisheries.
- **Component-2: Agricultural Services and Market Chain Development:**
 - (i) Farm advisory services - Through the district level ATMA Societies with officers from the Departments of Agriculture, Fisheries and Animal Husbandry & Veterinary;
 - (ii) Livestock upgrading - Department of Animal Husbandry & Veterinary;
 - (iii) Outsourcing of Artificial Insemination – Department of Cooperation through WAMUL
 - (iv) Milk marketing - Dairy Development Directorate;
 - (v) Forestry - Departments of Environment & Forests.
- **Component-3: Infrastructure Development:**
 - (i) Market-yards Development: Department of Agriculture, Agricultural Engineering Wing during the original credit and PWRD during the AF period;
 - (ii) Rural roads and bridges - Public Works Department;

(b) District Level Implementation monitoring & Coordination:

A District AACP Coordination Committee Cell (DACC) chaired by the Deputy Commissioner was formed, comprising all the district level officers of the implementing department in the respective districts as Managers. The DACC main responsibility is to ensure - (i) project beneficiaries selection criteria are adhered by all line Departments; (ii) convergence of complementary activities is maximized; (iii) nominate the lead NGO for the district, to facilitate identification of project beneficiaries social mobilization and associated capacity building of the selected and monitor the performance of NGOs against agreed milestones and (iv) certify the quarterly invoice of NGO for payment by the PCU.

To strengthen the Technical Man power of the implementing Departments project provided hiring of staff on contractual basis, such as Junior Engineers for Agriculture, Fisheries and PWRD, and Fisheries extension officers.

(c) State Level Implementation monitoring & Coordination

- At the State level the project is coordinated and monitored by Assam Rural Infrastructure & Agricultural Services (ARIAS) Society, an Autonomous Registered Society under the Govt. of Assam, created in 1998 for implementation of the World Bank aided Projects in the State through three specific bodies viz. **(i) the Project Guidance Council (PGC)** head by the Chief Secretary to the Govt. of Assam, with all the Commissioners & Secretaries of the line departments as members, along with the Finance and the Planning and Development Departments; **(ii) the Governing Body (GB)** of the ARIAS Society headed by the Agriculture Production Commissioner (APC), with all the Commissioners of line departments as members; and **(iii) the State Project Coordination Committee (SPCC)** headed by the State Project Director, with all the Heads/Chief Engineers of the line departments as members. The Organization chart of the ARIAS Society is at [Annex-19](#). The ARIAS Society functions as per its Memorandum of Association, Rules of Business and Byelaws. These were duly amended from time to time and first revision took place in March 2006 and the second revision was effected in April 2012.
- The day-to-day works of the project at the apex level is coordinated and monitored by the Project Coordination Unit (PCU) of ARIAS Society, headed by the State Project Director. The role of the PCU is purely monitoring and administrative coordination, and to provide technical support to the Line Departments. The PCU is supported by officers looking fiduciary aspects of financial management, procurement, and environment & social mobilization safeguard aspects. In addition PCU is supported by coordinators for agriculture (2), fisheries (1), rural roads (1), livestock & dairy (1), and forestry (1) to liaise with the respective line departments, process sanction & fund release proposals from respective line Depts. and monitor the use of project funds. Further PCU has marketing adviser to promote and coordinate marketing/FPO activities; an extension adviser to coordinate ATMA district and mentor district extension coordinators; a civil works adviser to coordinate upgrading of rural markets; and a systems management specialist to operate MIS. The Organization chart of the PCU is at [Annex-20](#).
- The SPCC meet on a monthly basis to monitor progress of the implementation and resolve any issues that is hindering implementation progress. Further, monthly review meeting of the NGOs are held in the PCU to review the performance of the NGOs and also to take stock of the ground implementation. The project's feedback mechanism through the NGOs, who have been involved in project implementation performed very well. Given that NGOs have special social and organizational skills to work with the famers, proactive and results-oriented involvement of NGOs have improve the governance and accountability performance and reduced many of the perceived project risks. The monthly interaction between the PCU and NGOs has

provided important feedback to monitor the performance of the project on the ground as well as the implementation problems.

- As the project is demand driven, the farmers, farmer groups and communities (the beneficiaries) played a very important role in making sure that the project gets implemented according to the plans. Among others, the formal and informal organizations include Common Interest Groups (CIGs), Community Tank Groups (CTG), Agro-Service Groups (ASGs), Agriculture Technology and Management Agency (ATMA), Joint Forest Management Committee (JFMC), Market Committees, Road Committees etc. The project NGOs worked closely with all these farmer and community organizations to help them mobilize, organize and train. Project extensively utilized the services of district level NGOs, for the activities where community groups are required to be formed and the group's capacity is to be built such as ASGs, MWDPs, CIGs, CTGs, BDCs, DCSs, MPIs, JFMCs, etc. covering activities like irrigation, mechanization, ponds, tanks beel under fisheries, micro-watershed drainage, dairy cooperative societies, milk producers institutions, etc. NGOs were also involved in road management committees consisting of the beneficiary of the roads taken up under the project.
- The checks and balances in the fiduciary (financial management and procurement) arrangements in the PCU have been robust enough to be able to detect/prevent the likely irregularities in procurements under the project. PCU has been proactively using the governance and accountability framework established by the World Bank to address the underlying critical operational issues. The project's fiduciary system and its robust built-in checks and balances have performed very well in detecting any irregularities in financial management and procurement activities and there has not been any financial loss due to irregularities in contracts.

(d) Operational Guidelines

- The project has been implemented as per the Operational Guidelines (OG) agreed with the World Bank. The OG was modified during the MTR Mission of 2008 and the same was further modified in 2012 to cater to the requirement of the activities under the Additional Financing. The OG describes the roles and responsibilities of district officials of the line Departments, NGOs and PCU for all the project activities, selection criteria for participating groups etc.
- To expedite the collection of applications from beneficiary groups for STWs/Tractors under AF and also for transparency, project gave wide publicity through advertisement in Newspapers, seeking applications from the farmers groups. To supplement this approach, project took up mission mode specific awareness camps through the NGOs, resulting in collection of sufficient numbers of application in these camps.

(e) Collaborations

The project has collaborated with various agencies and educational and research institutes for enhancing the developmental impact of various initiative.

- Collaboration was made with the **National Dairy Development Board (NDDB)** for taking over the management of largest yet sick Milk processing plant of the State in the public sector viz. West Assam Milk Union Limited (WAMUL) at Guwahati. This has brought a paradigm shift to the WAMUL and the plant which was sick, under capacity utilization and running in losses is now utilizing 80% of its installed capacity of 45,000 lts and is making profits. The milk procurement routes of WAMUL include the DCS and MPIs formed under the AACP/AF.
- The project collaborated with the **National Institute of Agricultural Extension Management (MANAGE)**, Hyderabad, a premier National level Institute under the Government of India, having first hand experiences of the ATMA under NATP, to provide technical back-stopping for rolling out the ATMA program under the project. For this purpose contract agreement with MANAGE was signed in 17th June 2005. MANAGE provided technical as well managerial and capacity building support to the initial ATMAs in 11 districts of Assam, and provided support in assessing and identifying the needs, prioritize same and developing a framework for implementation of the ATMA program. DADS (District Agriculture Developmental Strategy) for 11 districts, along with District Action Plan (DAP)/ Block Action Plan (BAP) etc. were prepared. After providing support till 16th June 2007, MANAGE latter provided a State Extension Adviser to the PCU.
- AACP collaborated with the **National Institute of Agricultural Marketing (NIAM)**, Jaipur, a reputed National level Institute of the Government of India, for a consultancy assignment relating to conducting a comprehensive Market study of Agriculture & Horticulture Sector and agricultural commodities of Assam. The contract was signed with NIAM on 12th December 2006. The objective of the Study was to identify the major production centres in the State, conduct a survey on important agriculture & horticulture crops, livestock, fish and milk in Assam to build up a pool of market knowledge, the production resources in the state and on markets, product flow channels, demand and the requirement and prospects for the individual products, To collect information on important agri-businesses, traders and relevant trader associations, and to prepare market intelligence document. The report submitted NIAM has been has paved the way for a project being considered by the GoA with funding from NABARD to develop the infrastructure of all the rural markets in Assam.
- AACP further collaborated with the **NIAM**, for a consultancy assignment relating to Market Layout & Infrastructure Design of 6 (six) Rural Wholesale Markets and 6 (six) selected Rural Haats selected for taking up under the project. The contract was signed in Dec' 2006 and final designs were submitted by NIAM in May' 2008.
- International collaboration was made with the **International Livestock Research Institute (ILRI)** for assisting the Dairy Development Directorate in developing the

traditional milk distribution system by conducting a comprehensive study on the dairy sector of Assam with special reference to producers, consumers, and milk agents and to identify and analyse the related issues.

- The project hired SMEC (**Snowy Mountain Engineering Corporation Pvt. Ltd**) from Australia as consultants under AACP to provided technical assistance for the road and bridge upgrading program as the Engineer. SMEC reviewed the designs, supervised the construction, monitored the quality and ensured that environmental aspects are adequately handled. During the AF period, the project hired LBGI (**The Louis Berger Group, Inc**) from USA as consultants to provided technical assistance for the road and bridge upgrading program as the Engineer.
- Project collaborated with **Amalgamated Plantations Private Limited (APPL)**: APPL, a subsidiary of TATA group, on the overlapping areas of interest & opportunities for synergies between APPL & AACP, for furthering the project development objectives, particularly through aggregation, assured buyback of agricultural products and supply of improved inputs for fisheries, dairy and horticulture crops/spices. The collaboration was initiated during in September 2010. The project provided the list of beneficiaries to APPL, belonging to areas of the State where APPL has agribusiness activities for collaboration, aggregation of products, technical guidance etc.
- Both during AACP and AF, the project hired nationally recruited independent consultants for concurrent **monitoring & evaluation** of the project processes, approaches, institutions and quantify short term output/outcome impacts. During AACP, M/s Consulting Engineering Services (India) Pvt. Ltd. and during AF, M/s Mott MacDonald's India. Apart from the quarterly subsequent monitoring reports, the M&E agencies also carried out comprehensive outcome focused impact evaluations of the project at three pre-defined milestones -- baseline, mid-term review and project completion. The operational task of planning and coordinating the M&E activities were handled by one senior officer of the PCU with full-time responsibility.
- During AACP, the project conducted one **environmental audit** of the project activities through M/s. AFRPRO (Action for Food Production), Assam.

(f) District wise Project activities during AACP & AF

- During AACP, the project activities were taken up in districts as per the matrix shown below. This is based on an extensive analysis basically covering the district area vis-à-vis the existing intensity of the particular activities.

Districts	Farm Advisory Services (ATMA)	Dairy Develop. (milk sheds)	Road Upgrading		Fishery Development (Beels, Tanks, Ponds)	Irrigation Develop.	Farm Mechanization
			AACP	ARIASP			
1. Kamrup	X	X		X	X	X	X
2. Nagaon	X	X		X	X	X	X
3. Jorhat	X	X	X		X	X	X
4. Barpeta	X	X	X		X	X	X
5. Sonitpur	X	X	X		X	X	X

Districts	Farm Advisory Services (ATMA)	Dairy Develop. (milk sheds)	Road Upgrading		Fishery Development (Beels, Tanks, Ponds)	Irrigation Develop.	Farm Mechanization
			AACP	ARIASP			
6. Hailakandi	X		X		X	X	X
7. Nalbari	X		X		X	X	X
8. Dhemaji	X				X	X	X
9. Dhubri	X	X	X		X	X	X
10. Dibrugarh	X				X	X	X
11. Karbi Anlong	X					X	X
12. Bongaigaon					X	X	X
13. Cachar		X		X	X	X	X
14. Darrang				X	X	X	X
15. Goalpara			X		X	X	X
16. Golaghat		(one pocket)			X	X	X
17. Karimganj			X		X	X	X
18. Kokrajhar					X	X	X
19. Lakhimpur				X	X	X	X
20. Morigaon		X	X		X	X	X
21. NC Hills						X	X
22. Sivasagar				X	X	X	X
23. Tinsukia					X	X	X

- However, during the AF period activity wise the following districts were selected based on the intensity and demand by farmers shown during the AACP period.

Impl. Depts.		Agriculture				Fisheries					AH & Vety			Dairy	PWD (R. Roads)		Forest
Sl	Districts	ATMA	Irrigation	Farm Mechanization	Market	Fishery Development					Livestock			Milk Marketing	Road Upgrading		Forestry
						Ponds	Tanks	Beels	Paddy cum Fish	Pig cum Fish	Pig	Goat	AI		AACP (Left out Pkgs.)	Mkt Roads	
1	Baksa	X	X	X	X												
2	Barpeta	X	X	X	X	X		X	X								X
3	Bongaigaon	X	X	X	X			X		X							X
4	Cachar	X				X		X									
5	Chirang	X															
6	Darrang	X	X	X	X		X	X		X							X
7	Dhemaji	X															
8	Dhubri	X	X	X	X											X	X
9	Dibrugarh	X															
10	Goalpara	X	X	X	X			X		X	X					X	X
11	Golaghat	X															
12	Hailakandi	X															
13	Jorhat	X	X	X	X												X
14	Kamrup	X	X	X	X	X		X		X	X		X	X		X	X
15	Karbi Anlong	X															
16	Karimganj	X				X		X								X	X
17	Kokrajhar	X															X
18	Lakhimpur	X				X	X	X	X	X							X
19	Morigaon	X	X	X	X	X	X	X	X	X		X	X			X	
20	N C Hills (Dima Hasao)	X															
21	Nagaon	X	X	X	X	X		X	X				X	X		X	X
22	Nalbari	X	X	X	X		X	X	X	X					X	X	
23	Sivasagar	X															
24	Sonitpur	X	X	X	X		X	X							X	X	
25	Tinsukia	X															X
26	Udalguri	X	X	X	X											X	

(g) Reviews

- The project has been reviewed from time to time by the GOA, GoI (DEA) and the World Bank. The World Bank reviewed the project almost every six monthly intervals through Implementation Supporting Missions to the State, and also through mini-Missions in between by the Task Team Leader. The Bank undertook the mid-term review (MTR) of AACP in 2008. The MTR mission of the Bank focused on implementation processes and recommended adjustments in the

scope/implementation arrangements to overcome the identified bottlenecks. Every Mission of the Bank assessed the quantitative and qualitative assessment of progress against project development objectives. The list of various Missions undertaken by the World Bank to review the project, along with Mission Members are at [Annex-21](#):

- Apart from review by the Bank, the project has been reviewed by the PGC, GB and SPCC from time to time. While SPCC reviewed the project almost every month, the GB reviewed the project twice every year and PGC once in every year. Furthermore, the project was also reviewed by the Hon'ble Chief Minister, Assam almost once in every year. The Government of India through the Tripartite Portfolio Review Meetings also reviewed the project twice every year.

8. Procurement

(a) Procurement Guidelines

- Goods & Works under the project were procured in accordance with the provisions in the "*Guidelines for Procurement under IBRD Loans and IDA Credits*" published by the Bank in May 2004 during AACP, and in accordance with the provisions of the January 2011 version of the same during the AF. Similarly, Consultants' Services were procured in accordance with the provisions in the "*Guidelines for the Use of Consultants by World Bank Borrowers and by the World Bank as Executing Agency*" published by the Bank in May 2004 and in accordance with the provisions of the January 2011 version of the same during the AF. The project followed the Standard Bidding Documents (SBD) /Request for Proposals (RFP) documents of the World Bank. All the procurements were done as per the Bank approved Procurement Plan.
- Further, the project adopted the e-procurement platform of the PWRD for procurement of NCB contracts for roads and the markets during AF. The e-procurement has made the bidding process more transparent and the bid evaluation time was considerably reduced.

(b) Procurement Capacity

- In addition to the guidance by the PCU, the project ensured procurement capacity building of the line Departments in a sustained manner through trainings at Administrative Staff College of India (ASCI), Hyderabad and at National Institute of Finance Management, New Delhi. The project created a fairly well trained pool of staff familiar with the World Bank's procurement procedures.

(c) Decentralization of procurement

Procurements are decentralized as per the arrangement given below:

- **Contracts below Rs. 13.5 Lakhs:** Contracts below Rs. 13.5 Lakhs (Approx. USD 30,000), the powers to decide on procurement matters including award of contracts

were vested with the respective head of the departments (HOD). Accordingly, Bid Evaluation Reports (BERs) / Abstract of Comparative Statement were not required to be sent to the PCU for approvals/concurrence. A general guideline relating to the procurement process for contracts under this threshold was circulated by the PCU. The Contracts were finalized at the HOD level committee comprising the following-

- Head of the Department – Chairperson
 - Nodal Officer of the Department – Member Secretary
 - Accounts officer of the Department at HO – Member
 - Bid Evaluating Officer – Member
 - One technical officer as decided by the Chairman.
 - One Procurement Specialist, Trained at ASCI, Hyderabad/NIFM Delhi, of the department as permanent invitee to the meetings to assist the committee in taking decisions and for reference to World Bank’s guidelines on procurement.
- **Contracts above Rs. 13.5 Lakhs:** All contracts above USD 30,000 (Rs. 13.5 lakhs), BERs were prepared at the HOD level and were forwarded to the PCU for concurrence/ No Objection. There are two Empowered Committees (EC) in the PCU, one for taking decisions on contracts above Rs.225.0 Lakhs (Approx. USD 500,000) and another for taking decisions on contracts below Rs.225.0 Lakhs Composition of the two committee are as below-
 - **Committee for contracts above Rs. 225.0 Lakhs:**
 - Agriculture Production Commissioner & Chairman, ARIAS Society : Chairperson
 - State Project Director , AACP : Member Secretary
 - Commissioner/ Secretary/ Joint Secretary of the concerned Administrative Department : Member
 - Head of the concerned Line Department : Member
 - Chief Financial Controller, PCU : Member
 - Civil Work Advisor, PCU : Member (For Civil Work contracts)
 - Procurement Engineer, PCU has been permanent invitee to the meetings to assist the committee in taking decisions and for reference relating to World Bank guidelines. *Moreover, Respective Coordinating Officer of the PCU looking after the concerned department will also assist the committee with records.*
 - As contracts above USD 500,000 were under prior review of the World Bank and BERs for such contracts were sent to the Bank for No-objection by the World Bank.
 - **Committee for contracts below Rs.225.0 Lakhs:**
 - State Project Director , AACP : Chairperson
 - Procurement Engineer, PCU : Member Secretary
 - Representative of the concerned Administrative Department (in Joint Secy./ Deputy Secy. level) : Member
 - Head of the concerned Department : Member
 - Nodal Officer, AACP, of the concerned Dept. : Member
 - Chief Financial Controller PCU : Member
 - Civil Work Advisor, PCU : Member (For Civil Work contracts)
 - Respective Coordinating Officer of the PCU looking after the concerned department has been permanent invitee to the meetings to assist the committee in taking decisions with records

- The above thresholds in Indian Rupees for decentralized procurement have been followed under the Project, irrespective of any subsequent changes made by the World Bank in the prior or post review threshold values.
- For example, even though the Shopping limit has been increased by the World Bank /DEA to US\$100,000 in April 2013 for the project, the decentralization thresholds were not changed.

(d) Methods of procurement followed & related prior/post review thresholds

- **Review threshold during the Original Credit:** Methods of procurement and related Prior Review threshold agreed with the World Bank for original credit (AACP) have been as shown below. The ARIAS Society for the purpose of determining the corresponding Rupee value has adopted the conversion rate of 1 US\$=Rs.50/- through the life of the project, irrespective of any subsequent exchange rate changes:

Goods: (conversion Rate 1US\$=Rs.50)
<ul style="list-style-type: none"> ▪ ICB Prior Review- Contract packages: > US\$ 500,000 (i.e. Rs. 225 lakhs). ▪ NCB Post Review - Contract packages: > US\$ 50,000 (i.e. Rs. 22.5 lakhs) and < US\$ 500,000 (i.e. above Rs. 225.0 lakhs), ▪ National Shopping Post Review: Contracts <US\$ 50,000 (i.e. Rs. 22.50 lakhs). ▪ Direct Contracting- Prior Review : Proprietary items such as software, spare parts, books, periodicals, seeds, saplings, piglets, ducklings, AI straw, breeding bulls, heifers, medicines, etc., of individual contracts not exceeding US\$ 20,000 (Rs.9.0 lakhs) ▪ Beneficiary/ Community Driven Procurement: Direct contracting/ National Shopping Post -Review: Irrigation Pumpsets, pipes, tractors, power tillers, inputs for fishery, The procedures for community driven procurement for goods and equipment followed are as follows: <ul style="list-style-type: none"> ▪ Direct contracting by farmers for fish production inputs (fish fingerlings and fish feed), out of the district level reference rate established by DACC; or, ▪ Direct Contracting from the manufactures for irrigation pump-sets, farm machinery, and associated equipment. For this purpose, the project sought expression of interest, called Floating of Enquiry (FOE) from a range of equipment manufactures to sell the equipments, and a Rate Bank is published consisting of manufacturers who meet the minimum laid down technical specifications. The Agro Service Groups (ASG) procured the equipment out of their choice of brand & model directly from the manufacturer’s dealers/ authorized agents at the predetermined price of the rate bank. The contribution from ASGs were 50% (for pumpsets), and 30% (for tractors & power tillers) and rest was matching grant provided by the project. ASGs were also free to select supply from other manufacturers, but this is subject to prior agreement from the PCU particularly in respect of technical specifications, quality and cost.

- **Community Involvement:** The Project ensured community involvement with powers of decentralized decision-making, resource control, implementation, and monitoring in sub-projects related to fisheries, dairy, agriculture, forestry, micro-watershed drainage programme etc. The objective of community driven development to promote security, opportunity, and empowerment by: (a) strengthening accountable,

inclusive community groups; (b) supporting broad-based participation by poor people in the strategies and decisions that affect them; and (c) facilitating access to information and linkages to the market were fully achieved.

Review thresholds for WORKS (conversion Rate 1US\$=Rs.50)
NCB Prior Review: Packages > US\$ 500,000 (i.e. Rs. 225 lakhs);
NCB: Post Review: Packages upto US\$ 500,000 (i.e. Rs. 225.00 lakhs);
Bidding Document- W2 for contracts above US\$100,000 i.e. above Rs.45 lakhs; W1 for contracts between than US100,000 i.e. Rs.45 lakhs to US\$ 30,000 i.e. Rs.13.5 lakhs, and W9 for contracts above US\$ 30,000 i.e. Rs.13.5 lakhs and below US100,000 i.e. Rs.45 lakhs
National Shopping: Post Review: Packages below US\$ 30,000 (i.e. below Rs. 13.50 lakhs); Bidding Document - W5 for contracts upto Rs.13.5 lakhs and W7 for contracts > Rs.13.5 lakhs.
Force Account: Few special cases like repairing of AI Centres, with prior concurrence of Bank
Beneficiary/ Community procurement: Post Review: Direct Contracting: For procurement of community based Civil Works (Bidding Document -W6) such as for fish ponds, STWs, MWDPs, minor Repair of buildings/roads by the community themselves
Road & Bridge upgradation Works: To the extent practicable these were grouped into bid packages estimated to cost US\$ 500,000 equivalent (i.e. about Rs. 225.0 Lakhs) or more each. All DPRs for individual contracts above Rs. 50.0 lakhs were sent to the Bank for technical clearance, irrespective of whether it is post or prior review.

Review thresholds for Consultants (conversion Rate 1US\$=Rs.50)
Methods of procurement: Quality and Cost Based Selection [QCBS]; Quality Based Selection [QBS]; Selection under a Fixed Budget [FBS]; Least Cost Selection [LCS]; Selection Based on Consultants Qualifications [CQS]; Single Source Selection [SSS]; Individual Consultant.
National Consultants: For contracts below US\$ 500,000 (Rs. 225.0 lakhs), the Short List comprised entirely national consultants
International Consultants: For contracts above US\$ 500,000 (Rs. 225 lakhs), the Short List comprised two from any Eligible country and one from developed country, as envisaged
Prior Review assignments- <ul style="list-style-type: none"> ▪ Contracts for Consulting Firms > US\$ 200,000 (i.e. about Rs. 90.0 lakhs) ▪ Contracts for Individual Consultants > US\$ 50,000 (i.e. about Rs. 22.5 lakhs), ▪ Amendments to contracts for Consulting Firms raising the contract value to US\$ 200,000 (i.e. about Rs. 90.0 lakhs) or above and amendments to contracts for employment of Individual Consultant raising contract value to US\$ 50,000 (i.e. about Rs. 22.5 lakhs) or above ▪ All single Source Consultancy assignment > US\$ 10,000 (Rs.4.5 lakhs). ▪ All Consultancy assignment not provided in the PAD or in procurement plan. ▪ TORs for all consultancy assignments estimated to cost above US\$ 20,000 (Rs. 9.0 lakhs). However, TORs for some of assignments of important nature were prior reviewed by Bank.
Post review assignments- <ul style="list-style-type: none"> ▪ Consultancy assignment with NGOs, which were procured through 'sole source' procedure, i.e. selecting one out of the three recommended by the DACC. ▪ Contracts for employment of Consulting Firms < US\$ 200,000 (i.e. about Rs. 90.0 lakhs) ▪ Contracts for employment of Individual Consultants < US\$ 50,000 (i.e. about Rs. 22.5 lakhs)

- **Review threshold during the AF period:** Methods of procurement and related Prior Review threshold during AF period remained the same as was during original credit, except as shown below: (For the propose of determining the Rupee value, ARIAS Society adopted the conversion rate of 1US\$=Rs.50/-)

Threshold for-	Prior Review Threshold
Goods	Contract packages > US \$ 1,000,000 (>Rs. 500,00,000)
Works	Contract packages > US \$ 5,000,000 (>Rs. 25,00,00,000)

Threshold for-	Prior Review Threshold
Direct Contracting	All contracts > US \$ 10,000 (>Rs. 5,00,000)
Force Account Works:	Works <US\$ 10,000 depending on need (<Rs. 5,00,000)

Procurement Method	Methods of Procurement vis-à-vis thresholds
Goods: ICB:	Contract packages > US\$ 5,00,000 (>Rs. 250,00,000)
Goods: NCB:	Contract packages > US\$ 50,000 and < US\$ 500,000 (>Rs. 25,00,000 and < Rs. 2,50,00,000)
Goods: National Shopping	Contract packages < US\$ 50,000 (<Rs.25,00,000)
Works: NCB::	Contract packages > US\$ 50,000; (>Rs. 25,00,000)
Works: National Shopping:	Contract packages < US\$ 50,000. (<Rs.25,00,000)

Selection of Consultants: Same as AACP, except as mentioned below

Selection of -	Prior Review Threshold
Consulting Firms	Contracts for employment of Consulting Firms > US \$ 500,000 (>Rs. 2,50,00,000)
Individual Consultants	Contracts for employment of Individual Consultants >US \$ 50,000 (>Rs. 25,00,000)
Single Source Consultants	All Single Source Consultancy assignments > US \$ 10,000 (>Rs. 5,00,000)

Short List: - National Consultants: for consultancy contracts below US\$ 500,000, the Short List comprised national consultants. (<Rs. 2,50,00,000)

Consultancy assignments with NGOs were procured through CQS procedure, in which qualification/ experience of atleast three NGOs would be considered.

- **Change in the Review threshold during the AF period:**

In August 2013, the Department of Economic Affairs (DEA), Ministry of Finance, Government of India had approved the World Bank's proposal to enhance procurement management thresholds as given below:

- Threshold for NCB revised to US\$ 3 Million (Goods) and US\$ 40 Million (Works);
- Threshold for Shopping increased to US\$ 100,000 (Goods and Works);
- Revised Thresholds for Prior Review by World Bank:
 - Works contracts of US\$15 million and above
 - Goods, IT and non-consultancy services US\$3.0 million and above
 - Consultancy services by firms US\$1.0 million and above
 - Consultancy services by individuals US\$0.30 million and above
 - Direct contracts for goods and works \$10,000 and above
 - Single source selection of consultants \$10,000 and above

Moreover, it was informed by DEA that the Bank will not prior review or issue no objection for following decisions related to post review contracts: (i) rebidding, (ii) extensions of bid validity periods and (iii) amendments to Goods/ Works/Cons contracts (unless the resulting contract amount exceeds agreed Prior Review Threshold). The amendments for Prior Review thresholds during the AF period helped in saving time in awarding the NCB contracts and also save in time in petty procurements through shopping procedure.

(e) Community Procurement of pumpsets

- The project initially made an effort for faster absorption of pumpsets through bulk procurement through the International Competitive Bidding (ICB) procedure of the World Bank, to expedite disbursement of the credit. Total three ICBs were done for procurement of 5HP Diesel Engine Driven Pump set - (i) one ICB for 10,000 Nos. pumpset for STWs and (ii) two ICBs for 13000 Nos. of pumpset for LLPs.

Community Procurement: The project initially made an effort for faster absorption of pumpsets, for expediting the disbursement of the credit. Of the total 1,02,507 pumpsets (for STW & LLP), total 23,000 pumpsets were procured through ICB. However, their uptake by farmers was low and also latter the quality of pumpsets became an issue. Considering the viewpoint of farmers' i.e. when they contribute 50% of the cost, their choice of brand & model of pumpset must be taken into consideration. Taking that view into account project devised an innovative solution that addresses the farmers' needs, which also follow a demand-driven principle. This model is based on 3 pillars:

- *Farmer groups are able to choose the pumpsets themselves-from a preselected list of products, drawn up through a Nation-wide competitive selection process, followed by an analysis of the technical specification and credentials of the manufacturers.*
- *Preselected suppliers commit to offer lower prices for the farmers with better competitive after-sales service, taking the potential size of the market opportunity into consideration.*
- *A physical asset-audit process to verify that pumps are delivered, installed, and used by the intended farmer groups.*

To assist the ASGs in ensuring that the pumpsets that they would procure met an acceptable technical standard and at reasonable prices, the project carried out the following exercise as a facilitation service to the community:

- The technical standards for the pumps were set by the GOA. Manufacturers and suppliers were then invited to submit - through an open competitive process — the prices of their models that met these standards.
- The Project published a 'Floating of Enquiry' (FOE) every year that sought the willingness of a range of manufacturers to sell the pumpsets to the farmers at predetermined competitive prices, against laid-down technical specifications and after-sales service. After evaluation, the shortlist of brands & models of approved manufactures, along with the names of their local outlets/ authorized dealers is published, which is called as the 'Rate Bank'.
- Farmers groups thereafter procure the pumps of their choice from this list at a time of their own choosing. They are free to procure the pumps either from the manufacturer's local outlets or from the authorized dealers.
- Farmers groups contributed 50 percent of the full cost of the pumpset. They pay their share in cash to the manufacturer's authorized dealer, less the pre-determined boring cost with materials. *(Farmers are also allowed to select pumps from other manufacturers, provided they receive prior concurrence from the Directorate of Agriculture, that the cost of the alternative pumps is not more than 10 percent higher than the average price of the shortlisted models).*
- The project paid the remaining 50% of the cost. The project's share is released to the supplier, once the bill was submitted, along with the necessary endorsements by the concerned agriculture engineer, the leader of the farmers' group and notified NGO.

This "Community Procurement" model has won an International award from the Global "Procurement Innovation Challenge Award" platform of the World Bank Institute and the award

was presented to the project in the 'Open contracting Global Event', held at Johannesburg, South Africa in October 2012.

The Ministry of Finance, GoI and the World Bank had jointly published this Community Procurement Model in a document titled "Innovations in Development" and the GoI forwarded this document to all the States for adoption as appropriate and relevant.

(f) Procurement Compliance for the conditions of NCB

The agreed procedures for National Competitive Bidding [NCB] as envisaged in the PAD of AACP were fully complied with, viz.

- Only the models bidding documents for NCB agreed with the GOI Task Force (and as amended for time to time), were used for bidding; and only single envelop system were used.
- Invitations to bid were advertised in at least one widely circulated national daily newspaper and also published in the website for e-procurement by PWRD for the roads contracts, more than 30 days prior to the deadline for the submission of bids;
- No special preference were accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprises from any other State;
- There was no negotiation of price with the bidders, even with the lowest evaluated bidder;
- No extension of bid validity were allowed without the prior concurrence of the World Bank for the cases of first request for extension, whenever it was longer than 60 days; and for all subsequent requests for extension irrespective of the period, whenever it was due to force majeure ground;
- No Re-biddings for NCBs were carried out without the prior concurrence of the Bank. No Bids were rejected on the ground that they were 'outside a pre-determined margin' or "bracket" prices;
- DGS&D's (Directorate General of Supplies & Disposals) rate contracts were not used as a substitute for NCB procedures. However, for some of the procurements falling under shopping limit were done as per the DGS&D's rate contract price;

The project also followed the following amendment to the NCB conditions approved by the DEA on 08 May 2013:

- Discontinuing ex-ante review of a number of transactions as follows:
 - Discontinue prior review of rebidding decisions with respect to post review contracts (presently required by NCB conditions for India).
 - Discontinue prior review of extensions of bid validity periods with respect to post review contracts (presently Required by NCB conditions for India)

- Discontinue prior review of amendments to Goods/ Works/Consultancy contracts that are subject to post review (unless the resulting contract amount exceeds agreed prior review threshold)
- Discontinue prior review of very small consulting contracts and Individual consultants contracts selected on sole source basis with the exception of critical assignments (to be identified in Procurement Plan)
- Changes in bidding conditions of NCB:

Current Condition	DEA approved Modification
(i) Invitations to bid shall be advertised in at least one widely circulated national daily newspaper, at least 30 days prior to the deadline for the submission of bids;	Invitations to bid shall be advertised in at least one widely circulated national daily newspaper or on a widely used website or electronic portal with free national and international access along with an abridged version of the said advertisement being published in a widely circulated national daily newspaper inter-alia giving the website/electronic portal details from which the details of the invitations to bid can be downloaded, at least 30 days prior to the deadline for the submission of bids;
(ii) Extension of bid validity shall not be allowed without the prior concurrence of the Bank (i) for the first request for extension if it is longer than 8 weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of <i>Force Majeure</i> and circumstances beyond the control of the Purchaser / Employer);	Extension of bid validity shall not be allowed with respect to Contracts subject to Bank Prior Review, without the prior concurrence of the Bank (i) for the first request for extension if it is longer than 4 weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of <i>Force Majeure</i> and circumstances beyond the control of the Purchaser/Employer);
(iii) Re-bidding shall not be carried out without the prior concurrence of the Bank. The system of rejecting bids outside a pre-determined margin or "bracket" of prices shall not be used in the project:	Re-bidding shall not be carried out with respect to contracts subject to Bank Prior review, without the prior concurrence of the Bank. The system of rejecting bids outside a pre-determined margin or "bracket" of prices shall not be used in any contract under the project;

(g) Procurement Review and Community Asset Verification

- All the procurements falling under the prior review threshold were prior reviewed by the World Bank. The World Bank also undertook review of procurements falling within the post-procurement review threshold on an annual basis. None of the said reviews revealed any Fraud & Corruption (F&C) case.
- The project also carried out community asset verification through a Chartered Accountancy consultancy firm on quarterly basis, as an additional audit assurance by way of sample verification of community assets/ CIGs.

9. Financial Management

- Successful implementation of ARIASP with sound Financial Management (FM) systems had built adequate capacity within the PCU to handle the FM aspects of

AACP efficiently. The project followed the Financial Management Manual (FMM) agreed with the World Bank, which ensured uniformity in accounting practices across all departments & accounting centers and instilled FM discipline for the project. The FMM consist of two parts viz. one the policies & FM arrangements; and the other in the form of a field guideline for use by the Accounting Centers.

(a) Staffing

- The accounts section in the PCU has been headed by a Chief Financial Controller (CFC) with overall responsibility for receipt & release of funds with approval of the State Project Director, and for preparation and submission of monthly/annual accounts, submission reimbursement claims to the World Bank for eligible expenditures through the GoI. The CFC has been supported by a Senior Financial Management Specialist, one Accounts Officer, one Senior Financial Consultant, two Junior Financial Consultants, one Cashier-cum-Tally Operator and 13 District Account Managers (DAMs), hired as district level finance consultants.
- DAMs were provided with laptops with customized TALLY who were responsible for (i) updating the monthly accounts from the manual cash book and ledgers being maintained by the accounting centers and send the reports to the PCU for consolidation on a monthly basis and (ii) also support/train the various community groups under fishery & forestry on financial management aspects.
- At field level, accountants of the district offices of the implementing line departments have been responsible for maintaining project accounts with the help of DAMs. In addition to the DAMs, the financial consultants of the PCU provide hand-holding/guidance to the accounting centres by supervising & giving training on double entry accounting, maintenance of accounts, etc.
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- DAMs were provided with laptops with customized TALLY who were responsible for (i) updating the monthly accounts from the manual cash book and ledgers being maintained by the accounting centers and send the reports to the PCU for consolidation on a monthly basis and (ii) also support/train the various community groups under fishery & forestry on financial management aspects.

- At field level, accountants of the district offices of the implementing line departments have been responsible for maintaining project accounts with the help of DAMs. In addition to the DAMs, the financial consultants of the PCU provide hand-holding/guidance to the accounting centres by supervising & giving training on double entry accounting, maintenance of accounts, etc.

(b) Capacity building on Financial Management

The project followed Financial Management principles which were substantially different from the existing FM procedures followed by the line departments of the GoA, e.g. project followed double entry cash book, accounts prepared through TALLY accounting software etc. Hence the project sustainably built capacity of the all the accounting staff in the PIU as well as of the Accounting Centers. Further, the project also trained the various community groups in maintenance of books of accounts.

(c) The Credit

- The following table below shows the Categories of items financed out of the proceeds of the project Credit in SDR¹² (Special Drawing Rights) from the World Bank during the AACP and the percentage of expenditures financed in each Category:

	Category	Credit Allocated (SDR Equivalent) Million	% of Expenditures Financed
(1)	Works	61.0	90%
(2)	Goods	5.50	100 % of foreign expenditures 100% of local expenditures (ex-factory cost) and 80% of local expenditures for other items procured locally
(3)	(a) Consultants' services (other than services provided by tax-exempt providers)	6.00	90%
	(b) Consultants' services Provided by tax-exempt providers	2.70	100%
(4)	Grants	12.80	90% of amounts disbursed by Assam for a Sub-project
(5)	Training	4.20	100%
(6)	Incremental Operating Costs	2.30	70% until March 31,2007; 60% until March 31, 2008; 50% until March 31, 2009; and 35% thereafter
(7)	Unallocated	10.5	
	TOTAL	SDR 105 million	

- The credit savings of SDR 16.053 Million (US\$ 25 million equivalent) from the AACP was taken to the AF period.

¹² The International Monetary Fund (IMF) is an organization of 188 countries, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world. Special drawing rights (XDR or SDR) are supplementary foreign exchange reserve assets defined and maintained by the International Monetary Fund (IMF). The XDR is not a currency per se. It instead represents a claim to currency held by IMF member countries for which they may be exchanged. The value of an XDR is defined by a weighted currency SDR basket consists of four major currencies: the U.S. dollar, the euro, the pound, and the Japanese yen. The value of the SDR in terms of the U.S. dollar is determined daily and posted on the IMF's website. It is calculated as the sum of specific amounts of the four basket currencies valued in U.S. dollars, on the basis of exchange rates quoted at noon each day in the London exchange market.

Category	Category Description	% of Expn. Financed by World Bank	Allocated (in SDR)	Allocated in US\$ (1 SDR = US \$1.561710)	Disbursed US\$ (as of Nov 18, 2011)	Undisbursed (US \$)	Expected Disbursement (Nov. 18, 2011 to Mar. 15, 2012)	Total Disbursement of AACP till 15-Mar.2012	Savings of AACP till 15Mar.2012 to be taken to Addl. Financing
A	B	C	D	E	F	G	H	I = (F + H)	J = (E - I)
1	Works	90%	67.59	105.56	75.61	29.95	12.95	88.56	17.00
2	Goods	80%	5.81	9.08	7.55	1.53	0.16	7.70	1.37
3 (a)	Consultants' services (other than services provided by tax-exempt providers)	90%	4.65	7.26	4.21	3.05	1.81	6.02	1.24
3 (b)	Consultants' services provided by tax-exempt providers	100%	4.23	6.60	3.80	2.80	1.40	5.19	1.40
4	Grants	90%	14.17	22.13	14.96	7.17	8.15	23.11	-0.97
5	Training	100%	6.72	10.50	5.24	5.25	0.38	5.62	4.88
6	Incremental Operating Cost*	60%	1.83	2.85	2.24	0.61	0.46	2.71	0.15
7	Unallocated		0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total		105.00	163.98	113.61	50.37	25.30	138.91	25.07
* Av. Disb. Of 60%; Exchange rate 1US\$= Rs.50 and 1 SDR = US \$1.561710;									

- During the AF period the number of disbursement Categories of the credit from the World Bank has also been rationalized. Disbursement under original credit was based on SOE and there were 7 disbursement categories with varying reimbursement percentages, which imposed considerable transaction cost on the project. Therefore, at the beginning of the AF period, it was decided to shift to quarterly report based disbursement (quarterly IUFRs) for both the original credit and also for the additional financing (w.e.f. April 1, 2012) and also consolidate the disbursement categories to two, with a common reimbursement percentage. The following table specifies the categories of Eligible Expenditures to be financed out of the World Bank credit and the percentage of expenditures to be financed by the Bank for each Category:

Category	Credit Allocated (Expressed in SDR Equivalent) Million	% of Expenditures Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consultants' services, training and operating costs	25.600	80%
(2) Grants	7.000	80% of the amounts disbursed by GoA under a Sub-project
TOTAL	32.600	

- However, the Credit of SDR 32.60 million during the AF was reduced to SDR 26.08 million by the DEA and the World Bank in December 2013, considering the additional amount in Indian Rupees that was available under the project due to the depreciation of Indian Rupee vs. US Dollar. The exchange at the time signing of AF (Jan/2012) was 1US\$=Rs.50 and in Dec.2013 it was 1US\$=Rs.60

(d) Project Allocations and Expenditure by components

Final Allocations and Actual Expenditure as on 28.02.2015 and Project/Committed Expenditure from 1.3.15 to 31.5.15 (Rs. Crore)

Project Cost By Component	AACP Period				AACP + AF Period				Total					
	Allocation at Appraisal (Govt+WB)	Allocation (MTR)	Allocation at Appraisal of AF (#1)	Expn. 31.12.11	Allocation at Appraisal of AF Jan 2012	Allocation post Dec.2013 (#-2)	Allocation post Jan.2015 (#-3)	Expn. till 28.2.15	Allocation at Appraisal	Allocation at MTR + Dec13 (AF)	Allocation (ACP+AF) Jan/15	Expn. till 28.02.15	Committed Expn. to be incurred w.e.f. 1.3.15 to 31.5.15	Total Expn. (Actual+Projected)
A	B	C	D	E	F	G	H	I	J=(B+F)	J=(C+F)	J=D+H	K(=E+I)	L	M(=K+L)
A. Investment Grant Scheme														
1) Irrigation	67.53	91.92	63.40	63.40	85.54	84.85	105.33	86.20	153.07	177.46	168.73	149.60	19.13	168.73
2) Farm Mechanization	18.22	22.01	16.61	16.61	16.20	21.00	24.07	19.82	34.42	38.21	40.68	36.43	4.25	40.68
3) Fish Production	38.07	42.74	40.06	40.06	36.08	36.08	36.08	27.44	74.15	78.82	76.14	67.50	5.49	72.99
Sub-Total	123.82	156.66	120.07	120.07	137.82	141.93	165.48	133.46	261.64	294.48	285.55	253.53	28.87	282.40
B. Agricultural Services and Market Chain Development :														
1) Agricultural Services	87.47	44.70	35.20	35.20	28.50	33.13	33.60	33.20	115.97	73.20	68.80	68.40	0.4	68.80
2) Marketing Extension	3.33	2.53	0.48	0.48	6.17	3.06	3.06	2.78	9.50	8.70	3.54	3.26	0.28	3.54
3) Livestock Upgrading	19.43	13.99	10.41	10.41	10.76	4.92	4.92	0.81	30.19	24.75	15.33	11.22	3.11	14.33
4) Fishery Upgrading	9.79	5.66	5.66	5.66	0	0	0	0	9.79	5.66	5.66	5.66	0	5.66
5) Milk Marketing	17.67	10.83	6.88	6.88	5.67	37.67	15.65	3.28	23.34	16.50	22.53	10.16	7.46	17.62
6) Forestry and Sericulture	15.69	53.70	30.07	30.07	7.40	7.40	7.40	5.85	23.09	61.10	37.47	35.92	0.9	36.82
7) Project Coordination Unit		31.81	30.17	30.17	26.93	22.06	22.06	10.76	26.93	58.74	52.23	40.93	11.3	52.23
Sub-Total	153.38	163.23	118.87	118.87	85.43	108.24	86.69	56.68	238.81	248.66	205.56	175.55	23.45	199.00
C Infrastructure Development :														
1) Road and Bridge upgrading	523.68	502.45	436.83	436.83	152.80	155.50	155.50	106.65	676.48	655.25	592.33	543.48	41.79	585.27
2) Market yard Development	28.54	35.83	26.15	26.15	92.70	91.80	89.80	63.64	121.24	128.53	115.95	89.79	26.16	115.95
Sub-Total	552.22	538.28	462.98	462.98	245.50	247.30	245.30	170.29	797.72	783.78	708.28	633.27	67.95	701.22
Total	829.42	858.17	701.92	701.92	468.75	497.47	497.47	360.43	1298.17	1326.92	1199.39	1062.35	120.27	1182.62
	1US\$= Rs. 46.35	1US\$= Rs. 49.72			1US\$= Rs.50	1US\$= Rs.61	1US\$= Rs.61		Claim Submitted to Bank			836.50		

#1 An amount of Rs. 156.25 crore (US\$ 25 million equivalent) was taken to the AF period

#2 Date of Cancellation of US\$ 10 million, Exchange rate change 1 US\$ = Rs.60/-

#3 Additional 10,000 STWs and 165 Tractors were taken up as agreed with the World Bank's August 2014 Mission

(e) Fund Flow

- Availability of funds on a timely basis has never been an issue for the project, due to a very high level of commitment to the project by the top administrators of the GoA. The line Departments of the project assess its fund requirement forward the proposal to the Planning & Development Department (P&D) and to the Finance Department (FD) of GoA for inclusion in the State Budget under EAP (Externally Aided Project). The line departments thereafter, based on the Annual Work Plan approved by the GB & PGC and also the budgetary provision made in the State Annual Budget for the project, moves the Finance Department for drawal of the fund through State Treasury and deposit the funds drawn to the ARIAS society/PCU, for parking in the commercial bank

account maintained by the PCU for the respective line department. This arrangement facilitated availability of funds with the project at any point of time.

- All the district level offices of the implementing line departments and ATMA Societies (in some cases at the state level Directorate) maintain accounts commercial banks, and to ensure efficient and economical transfer of funds, all accounting centers are required to maintain accounts with branches of one of two nominated banks having a widespread core-banking network in the state, as has been determined by the PCU. The accounting centers/Drawing & Disbursing Officers (DDOs) prepare proposals as per a prescribed format, for release of funds based the requirement for the activities sanctioned by the PCU (within the framework on the approved AWP & annual budget). The proposal with approval of the HOD, are submitted to the PCU. Once verified against the laid down criteria, funds for the activities are released by the PCU directly to the bank accounts of the accounting centers with notification to the relevant HOD. The uses of the funds so released are monitored through review of monthly financial accounts.

Sanction and fund release thresholds till March 2012	
The sanction & Fund Release threshold/powers to the line Depts other than for PCU:	
1.	<i>Sanction for activities not included in the approved AWP</i>
1.1	SPD with approval of APC: Upto Rs. 5.0 lakhs.
1.2	SPD with approval of APC/ GB: Above Rs. 5.0 lakhs.
2.	<i>Financial power for sanctions based on the approved AWP:</i>
2.1	SPD: Upto Rs. 8.0 lakhs.
2.2	SPD with approval of APC: Above Rs. 8.0 lakhs and below Rs. 50.0 lakhs.
2.3	SPD with approval of APC & SSC: Above Rs. 50.0 lakhs.
3.	<i>Fund Release:</i>
3.1	SPD: Upto Rs. 8.0 lakhs.
3.2	SPD with approval of APC: Above Rs. 8.0 lakhs.
4.	<i>Sanction and Expenditures of PCU's own expenditure:</i>
4.1	SPD: Upto Rs. 4.5 lakhs.
4.2	SPD with approval of APC: Above Rs. 4.5 lakhs and below Rs. 20.0 lakhs.
4.3	SPD with approval of APC/ SSC: Above Rs. 20.0 lakhs.

- During AF the above thresholds were changed for expediting the fund-flow to the implementing entities and the ARIAS Societies Rules of Business was modified with approval from the GoA:

Sanction and Fund Release thresholds after March 2012	
1.	<i>Sanction for activities not included in the approved AWP</i>
1.1	Upto Rs. 5.0 lakhs: By SPD with approval of APC
1.2	Above Rs. 5.0 lakhs: By SPD with approval of APC/ GB.
2.	<i>Financial power for sanctions based on the approved AWP:</i>
2.1	Upto Rs. 100.00 lakhs: By SPD.
2.2	Above Rs. 100.00 lakhs & below Rs. 250 lakhs: By SPD with approval of APC.
2.3	Above Rs. 250.00 lakhs: By SPD with approval of SSC.
Note: Sanctions above Rs.250.00 lakhs are placed before GB for appraisal	
3.	<i>Fund Release to Line Departments: Financial power:</i>
3.1	Upto Rs. 100.00 lakhs: By SPD.
3.2	Above Rs. 100.00 lakhs: By SPD with approval of APC

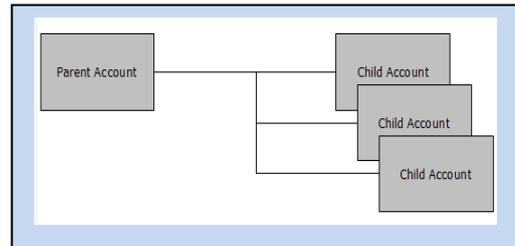
Sanction and Fund Release thresholds after March 2012

4.	<i>Sanction and Expenditures of PCU:</i>
4.1	Upto Rs. 20 (twenty) lakhs: By SPD.
4.2	Above Rs. 20 lakhs: By SPD with approval of APC.
Note: SPD has full power in respect of drawl of salaries and traveling expenses within the country for the establishment of PCU. For his/her own travel outside the state, SPD obtains approval of APC. For travel outside the country existing procedures of the GoA were followed.	

- Activities directly implemented by the PCU, like M&E, Financial Audit, formation of FPOs, etc. are engaged and managed by the PCU directly, and funds for the same are released based on the respective contract agreements with them.
- Funds for the community groups, particularly for CIG, CTG, BDC, MWDP groups, the DDOs release funds to the accounts of the community groups through net-banking. For these community groups, an advance amount is released for the start-up activities and the subsequent funds are released based on submission of agreed expenditure information.
- The Matching Grants for the STWs, LLPs, tractor, and power tillers are released to the commercial bank of the approved supplier by the line departments through net-banking, upon satisfactory compliance with laid down procedures.

(f) PARENT-CHILD ACCOUNTING SYSTEM

- The project has been ensuring timely funds flow through the commercial banking channels. However, PCU explored further improvement in banking arrangements to improve efficiency of fund flow system. Following agreement with the May 2012 World Bank Mission, the project adopted Parent-Child Bank Account Systems from June 2012 onwards, as an effort towards better fund flow management.
- Under this system the commercial bank accounts of the Accounting Centers are treated as Child Accounts and the respected commercial Bank account of the line departments, maintained by the PCU, is treated as the Parent Account. Each Accounting Centre has opened zero balance bank account (Current Account) with a convenient branch of the same bank, where the parent account is opened by PCU for respective line Departments.
- PCU signed MOUs with three commercial Banks with maximum coverage in the districts viz. Union Bank of India, United Bank of India and UCO Bank (State Bank of India was not considered as they were unwilling to provide the demanding service required under the system). Department wise Parent-Child Bank Accounts are as follows: Union Bank of India (PWD and Forest Dept.); United Bank of India (Agriculture and Fisheries) and UCO Bank (Dairy and A.H. & Veterinary).



- Under this system, cash does not flow out of the Bank accounts maintained by the PCU, as soon as funds are released for the approved activities. Rather, PCU fixes limit for the Accounting Centre (Child Account) depending on the fund release proposal submitted by the accounting centre and the limit is intimated to the concerned commercial banks, as well as to the Accounting Centre. Any payments made from child-account within the limit are swept from the Parent Account (PCU) at the end of every day. The Accounting Centre disburses fund to the extent of available limit issued by PCU, and no payment beyond the limit issued by the PCU is honoured by the respective commercial bank.
- With the adoption of the parent-child account system, issuance of payment through cheques to the beneficiary groups/contractors/suppliers have been stopped and all payments to the beneficiary groups/contractors/suppliers etc. are made electronically (RTGS/NEFT) by the Accounting Centres. It is ensured that the beneficiary groups/contractors/suppliers open bank account with the branches having electronic fund transfer facility. To facilitate electronic payments/ transfer of funds, a payment advice letter is send to the respective commercial bank by the DDOs with a cheque, and with details like – name of the beneficiary group/supplier/ contractor, Name of the Bank with branch, Full A/c No. , IFSC Code of the Bank branch, amount to be transferred, Mobile No. of the beneficiary group/contractor/supplier.
- After receiving of payment advice letter, the commercial Bank transfer the fund to beneficiary groups / Contractor etc. through RTGS/NEFT & also send SMS alert to the PCU, DDOs and also to the beneficiary groups /contractor etc. PCU has the viewing right of the transactions of the bank accounts of all the accounting centers. Similarly, Nodal Officers and DDO of the respective line departments have also been authorized to view the transactions of the respective child-account.
- Book keeping in parent-child account system: In Parent A/c - In the Cash Book Fund Limit amount is booked and the Bank Reconciliation is done on a monthly basis (to know the difference between Fund Limit issued by Parent A/c & Fund Limit Drawn by Child A/c). In Child A/c - Transaction amount is booked in receipt & the payment side of cash book of all ACs and the Bank Reconciliation is done on a monthly basis. The commercial Banks submit monthly MIS report of Parent-Child A/c to the PCU.
- The parent-child accounting system has brought efficiency to the financial management system and the benefits include – **(i)** better funds management, **(ii)** efficient accounting and oversight; **(iii)** transparency through e-payments and SMS alerts to beneficiaries including suppliers/contractors; **(iv)** improved efficiency in transferring of funds from 1-2 months to a few days and **(v)** reduced number of trips the project beneficiaries/suppliers/contractors had to make to the Accounting Centers/DDOs.

(g) Maintenance of Books of Accounts

- All accounting Centres (ACs) record and report project information in Books of Account which are maintained manually. On the basis of manual records the 'District Accounts Manager' (DAM) enters the transactions in the accounting software (TALLY). The ACs report expenditure/ other information in form of 'Monthly Accounts' to the PCU on pre-specified formats with intimation the respective Nodal Officer. The DAMs provide the entire data for the month electronically to the PCU, as well as monthly accounts as per format for consolidation at the PCU.
- The project accounts are maintained on the double entry system of accounting and follow the cash basis of accounting. However, certain receivables and payables, which are specifically mentioned with reasons in the Notes on Accounts, are accounted for on an accrual basis. The Project Accounts reflect the total expenditure incurred by the Project and all receipts, payments, and expenditure, including beneficiary contributions (both receipts & payments) are recorded in gross amounts, irrespective of the extent to which these expenses may be reimbursable by the World Bank. Only the capital items procured for Project administrative purposes (including machinery, equipment, furniture, building, software, etc) are recorded as an asset. However, no depreciation are charged on these assets.
- Funds received from GoA are treated as receipts of Grants by the project. Release of funds to the ACs are also considered as transfers of Grant, which are recorded as an expenditure only upon release of expenses by the ACs, for payment against goods supplied or services rendered.
- The project accounts are prepared in Tally accounting software, and the Chart of Accounts (activity list) with accounting code enabled data capturing and classification in a systematic manner for each of the project activities.

(h) Audit of the Accounts

- Audits of the Accounts of the ARIAS Society are conducted by a Chartered Accountancy (CA) firm. The audit covers all the accounting centers and the auditors review the transactions on prior approved sample basis. The annual project financial statements audited by the CA have been submitted timely to the World Bank and by & large within 6 months of the closure of a financial year. In addition, the project is also audited by the Accountant General (AG) of Assam, as this is a statutory requirement of the Gol/GoA.
- The external Auditors Scope was enhanced for physical verification of community assets to include sample physical verification of assets procured/ provided to community groups (STW/LLP/CIG/Tractor/Power Tiller etc). This ensured additional fiduciary assurance not only on the existence of the asset, but also certain additional aspects such as continued use of such assets, but also its maintenance, and diversion of

the assets for other use etc. The reports reflect that the diversion was very insignificant.

(i) Disbursement

- Disbursements from the World Bank during AACP were made in the traditional system (replenishment and reimbursement with full documentation and against statement of expenditure). Disbursement under the AACP has been based on SOE and there were 7 disbursement categories with varying reimbursement percentage. The project submits withdrawal applications to the CAA&A (Controller of Aid Accounts & Audit) in the Department of Economic Affairs of the GoI, for onward submission to the World Bank for disbursement to the State exchequer.
- However, during the AF based on the satisfactory financial management of the project including successfully demonstrated regular, timely and adequate Financial Management Reports, the disbursement procedure have been converted by the World Bank to the report-based disbursements w.e.f. April 2012, i.e. Interim Un-Audited Financial Report (IUFR) based system which require submission of quarterly IUFRs bas for both AACP & AF and also consolidate the disbursement categories to two with a common reimbursement percentage. The authorized allocation of the Special Account for AACP is US\$25 million.
- The ARIAS Society compiles the financial information from all the Accounting Centers and prepares the reimbursement claims/IUFR on a quarterly basis and sends the same to the Controller of Aid, Accounts & Audit (CAAA) (GoI) for onward submission to the World Bank. Based on the recent change introduced by the DEA, prior review of IUFRs by the World Bank has been dropped and IUFRs are being sent to the CAAA.
- **Overall Disbursement position in SDR as on 15.03.2015:**
 - Original Credit (IDA Cr 4013 IN) = SDR 105.00 Million
 - Current Addl. Financing Credit (IDA Cr 5062 IN)* = SDR 26.09 Million
 - **Total Credit = SDR 131.09 Million**
 - Disbursement (Source: Client connection) ** = SDR 111.86 Million (86%)
 - Undisbursed = SDR 19.23 Million

* SDR 6.517 million was cancelled in December 2013 as excess funds were available due exchange rate variations.

** Includes SDR 2.46 million disbursed into the designated account.

(j) Year wise budgetary allocation, fund released by GoA and PCU and expenditure

Impl. Depts.	Agriculture	PCU	AAU	Fishery	AH. Vety	Dairy	PWD	Forest	Sericulture	WAMUL	Total
2004-05											
Budget	24.00	3.00	11.00	0.50	50.00	0.30	0.00	0.00	88.80		
Received from GoA	13.44	3.32	0.20	2.65	0.00	0.50	0.00	0.30	0.00	0.00	20.41
Released by PCU	0.03	0.68	0.02	0.06	0.22	0.00	0.27	0.02	0.00	0.00	1.30
Expenditure	0.00	0.62	0.02	0.04	0.01	0.00	0.08	0.00	0.00	0.00	0.77
2005-06											
Budget	64.47	7.40	7.17	15.80	9.18	7.18	106.35	4.63	0.25	0.00	222.43
Received from GoA	24.71	6.66	1.57	15.76	5.85	7.04	23.67	4.63	0.15	0.00	90.04
Released by PCU	1.58	2.72	0.02	0.20	0.62	0.27	0.50	0.32	0.00	0.00	6.23
Expenditure	0.67	2.61	0.00	0.05	0.53	0.22	0.55	0.14	0.00	0.00	4.77

Impl. Depts.	Agriculture	PCU	AAU	Fishery	AH. Vety	Dairy	PWD	Forest	Sericulture	WAMUL	Total
2006-07											
Budget	36.98	4.45	7.00	11.39	3.70	3.78	132.82	4.63	0.37	0.00	205.12
Received from GoA	12.98	1.56	2.46	6.06	0.00	0.00	63.40	3.78	0.05	0.00	90.29
Released by PCU	10.15	3.47	0.60	12.61	2.21	1.82	17.15	4.13	0.08	0.00	52.21
Expenditure	4.90	3.32	0.33	3.28	0.80	0.88	12.77	1.22	0.01	0.00	27.51
2007-08											
Budget	84.91	7.14	6.41	17.45	6.44	6.40	240.00	6.83	0.77	0.00	376.35
Received from GoA	23.30	1.95	1.75	8.73	6.44	0.00	122.78	5.10	0.76	0.00	170.81
Released by PCU	33.18	2.81	1.07	3.78	1.63	0.95	66.31	1.07	0.05	0.00	110.85
Expenditure	19.12	2.60	0.82	9.74	1.74	1.13	56.01	2.76	0.12	0.00	94.05
2008-09											
Budget	34.16	7.10	3.11	10.37	2.15	2.03	221.50	3.80	0.00	0.00	284.22
Received from GoA	32.76	6.80	2.98	10.37	0.00	0.00	121.50	0.00	0.00	0.00	174.41
Released by PCU	22.03	2.58	0.55	15.51	1.07	0.80	125.17	2.33	0.05	0.00	170.09
Expenditure	22.36	2.70	0.47	8.51	1.04	0.70	138.02	1.65	0.05	0.00	175.51
2009-10											
Budget	90.03	10.18	0.93	4.44	1.71	3.10	216.30	23.00	0.00	0.00	349.69
Received from GoA	90.03	10.17	0.93	4.44	0.00	0.00	100.00	22.99	0.00	0.00	228.56
Released by PCU	38.94	4.69	0.30	6.95	1.34	0.53	117.18	2.40	0.00	0.00	172.32
Expenditure	29.76	4.51	0.44	11.16	1.46	1.02	92.08	1.90	0.00	0.00	142.34
2010-11											
Budget	37.89	8.50	0.50	4.41	1.71	3.29	76.30	13.60	0.00	0.00	146.20
Received from GoA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Released by PCU	35.05	4.57	0.83	4.16	2.42	0.81	48.69	13.61	0.00	0.00	110.13
Expenditure	42.53	4.45	0.75	5.99	2.02	0.68	39.54	3.80	0.00	0.00	99.76
2011-12											
Budget	0.00	0.00	0.00	0.00	1.71	3.46	50.00	3.31	0.00	0.00	58.48
Received from GoA	0.00	0.00	0.00	0.00	0.00	0.00	23.65	0.00	0.00	0.00	23.65
Released by PCU	28.24	5.76	0.25	1.28	0.97	1.50	30.07	7.41	0.00	0.00	75.49
Expenditure	33.62	5.22	0.34	4.14	1.18	1.22	49.12	15.56	0.00	0.00	110.41
2012-13											
Budget	109.21	0.00	0.00	16.35	4.10	0.80	103.63	3.98	0.00	0.00	238.07
Received from GoA	82.57	9.42	0.00	14.13	0.00	0.39	47.18	0.00	0.00	0.00	153.69
Released by PCU	27.26	5.47	0.06	12.86	0.90	0.62	25.80	1.84	0.00	0.00	74.80
Expenditure	35.61	5.23	0.06	10.80	1.47	1.18	39.02	4.84	0.00	0.00	98.20
2013-14											
Budget	110.88	0.00	0.00	9.73	3.01	2.02	44.00	0.08	0.00	0.00	169.72
Received from GoA	49.96	11.64	0.00	10.81	3.01	2.02	39.89	0.08	0.00	0.00	117.41
Released by PCU	58.44	6.01	0.00	14.22	0.57	0.53	66.30	4.43	0.00	0.00	150.50
Expenditure	49.04	5.93	0.00	13.57	0.03	0.49	36.80	2.86	0.00	0.00	108.71
2014-15											
Budget	45.35	0.00	0.00	1.41	2.83	0.55	59.43	0.47	0.00	28.00	138.04
Received from GoA	45.35	0.00	0.00	1.41	0.00	0.00	59.43	0.00	0.00	0.00	106.19
Released by PCU	61.32	3.22	0.00	1.78	1.75	1.45	99.02	0.25	0.00	1.14	169.91
Expenditure	72.75	4.66	0.00	5.21	0.94	1.11	113.88	1.39	0.00	0.39	200.33
Total											
Budget	637.88	44.77	25.12	94.35	47.54	33.11	1300.33	64.63	1.39	28.00	2277.12
Received from GoA	375.10	51.52	9.89	74.36	15.30	9.95	601.50	36.88	0.96	0.00	1175.46
Released by PCU	316.22	41.96	3.71	73.40	13.69	9.28	596.46	37.80	0.18	1.14	1093.83
Expenditure	310.37	41.83	3.25	72.48	11.22	8.63	577.88	36.13	0.18	0.39	1062.35

While the project by & large has never faced any fund crunch, the release by the GoA against the budgetary provision has always been based on the absorption of funds/expenditure made by the project, so as to avoid parking of too much of funds with the PCU of ARIAS society.

10. Social Safeguard Management

- a) A significant feature of the project design is to ensure that the vulnerable groups in farming and rural communities, specially the small, marginal and landless farmers, have access to the benefits provided under project, such as in irrigation; farm mechanization; micro-watershed drainage; dairy; poultry; duckery; goatery; piggery; fish production in

beels, individual ponds, community tanks; afforestation through the communities living on forest fringes and forest-based livelihood support.

- b) The Social Management Unit (SMU), within the PCU has been tasked to handle the Social Mobilization and Capacity building of the community/farmer groups. The SMU is headed by one Social Development Specialist supported by two Assistant Social Development Specialists (ASDS) and four nos. of Zonal Social Development Coordinators (ZSDC). The SMU has been working for empowering the small, marginal and landless farmers and the marginalized women, for greater inclusion, cohesion, and accountability. The project undertook intensive social mobilization activities, and to oversee the social safeguard aspects for the different activities, like participation, inclusiveness, gender sensitivity, equity, transparency and sustainability.
- c) The community mobilization process commenced with dissemination of information on all aspects of the project by conducting awareness & sensitization camps at district/block/village level through the NGOs (Non-Governmental Organization) hired under the project and also through brochures & leaflets in local language, using print and electronic media¹³. The objective beneficiary screening criteria for the community oriented programs enabled the respective line departments to identify and select the targeted groups. The social mobilization and participatory framework adopted for the project had facilitated smooth roll out of the group-based activities. While, the communities/groups were given technical support by the respective line departments and the project NGOs facilitated in social safeguard, planning, implementing, handholding and monitoring. The decentralized fund flow arrangements enabled the community groups to involve actively with the procurement of civil works, equipment and inputs.
- d) The district level NGOs are selected by the District AACP Coordination Committee (DACC) headed by the respective Deputy Commissioners. During original credit, till March 2011 the following NGOs served the project. However, based on the performance some of the NGOs are replaced with other NGOs as recommended by the DACC.

Sl.	District	NGO
1	Kamrup	Centre for Rural Development
2	Darrang	Sipajhar Diamond Club & Community Centre
3	Barpeta	Club Rhino
4	Bongaigaon	Discovery Club

¹³ *Electronic media: Project Information dissemination was carried out through electronic media and 20 seconds video quickie was telecasted in between Assamese News of Door Darshan for 10 alternate days in the January 2007. Through Mobile Theatres: Mobile theatre groups are considered as the most popular form of entertainment in the rural Assam for their outreach, acceptability, impact and affordability. Project arranged through dance-drama in three most popular theatre groups to disseminate the project information.*

Further, NGOs prepared a number of IEC materials like posters, booklets, charts in local languages especially for the Agriculture, Fishery and Forest sectors, which were used for the awareness-cum-motivation camps organized on need based basis.

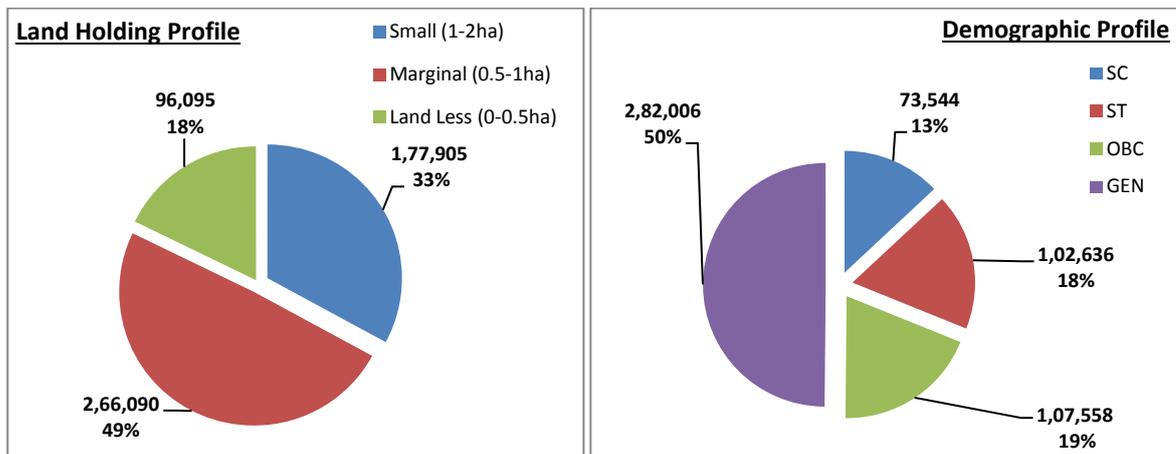
Sl.	District	NGO
5	Kokrajhar	Discovery Club
6	Goalpara	Ajagar Social Circle
7	Morigaon	Society for Research, Development & Communication
8	Nagaon	Gramya Unnayan Santha
9	Golaghat	North East Affected Area Development Society
10	Jorhat	North East Affected Area Development Society
11	Sivasagar	Krishak Nyas, Phulpani Chiga
12	Lakhimpur	Khorapathar Sanmilita Yuvak Samaj
13	Sonitpur	Centre for Development Action & Appropriate Technology
14	Cachar	Manihar Khal T.E. Youth Club
15	Karimganj	Green India foundation
16	Dibrugarh	North East Affected Area Development Society (NEADS)
17	Tinsukia	North East Affected Area Development Society (NEADS)
18	Dhemaji	Sarbu Gram Seva Sangha,
19	Chirang	Discovery Club
20	Nalbari	Pancharatna Gramya Vikash Kendra; Pancharatna (Amended Name)
21	Baksa	Discovery Club
22	Hailakandi	Club Synthesis
23	Dhubri	North East Zone Welfare Society

- During the AF period the following NGOs served the project:

Sl.	District	Name of the NGO
1	Kamrup	Centre for Rural Development/ North East Zone Welfare Development Society (w.e.f. 16th August, 2013)
2	Morigaon	Society for Research, Development & Communication
3	Nagaon	Gramya Unnayan Santha
4	Jorhat + Tinsukia	North East Affected Area Development Society
5	Sonitpur	Centre for Development Action & Appropriate Technology
6	Lakhimpur	Khorapathar Sanmilita Yuvak Samaj
7	Darrang + Udalguri	Sipajhar Diamond Club & Community Centre,
8	Nalbari + Baska	Pancharatna
9	Barpeta	Club Rhino
10	Goalpara	Ajagar Social Circle
11	Bongaigaon + Dhubri + Kokrajhar	Azad Club & Library
12	Karimganj + Cachar	Green India foundation

- e) The main activities of the NGOs have been - information dissemination, social survey, community mobilization and motivation, group formation & capacity building, ensure sustainability of community groups, liaise and coordinate with district officials, etc. Identified Training of Trainers (TOTs) from the NGOs / PIU & PCU staff were imparted exposure-cum-training at MYRADA, Hosur/Bangalore and Centre for People's Forestry, Hyderabad on PRA, Micro-plan, local Institution Building and Community Forest Management. The project also organized massive capacity building program for all the NGO coordinators during 2005 on Social Mobilization, covering topics like PRA, Livelihood Enhancement Action Plan, Poverty Concept, Rural Producer Organizations and use of games/songs etc.

- f) The NGOs submit their Quarterly Performance Report, showing achievement against milestones, and also the reason for non-achievement to the DACC, with the request for release of payments, who in-turn recommend release of fund to the PCU, after necessary verifications.
- g) Various parameters of social development like social profile of sample beneficiary groups, group dynamics, group functioning, group operations as well as gaps, constrains and feasibility factors for sustainable development of the groups are taken care of by the NGOs. The social profile of the groups covering aspects like inclusiveness, economic composition of the groups and inclusiveness of female members in the groups were assessed. Group dynamics is also evaluated through group meetings, amount of savings, record keeping etc.
- h) AACP mobilized 565,745 beneficiaries under 123,436 groups across the agriculture, fishery, dairy, forestry, and livestock sector. The composition of SCs in the project components like STW, LLP, Power Tiller, Tractor, Beel, CIG, CTG, DCS is 13%, which is above the State average of population pattern of Schedule caste i.e. 7%. Similarly, the Scheduled Tribes beneficiaries of the project in STW, LLP, Power Tiller, Tractor, CIG and CTG and JFMCs activities is 18%, which is higher than the state average of 12.5%. The percentage of females amongst the beneficiaries is 15%. The Land holding profile and the demographic profile of the project beneficiaries are shown in the charts below:



- i) Appropriate modifications and amendments to the existing legislative framework are underway to enable traditional fisher-folk communities to access common open water bodies to increase their income and to provide them secured tenure to these resources. A review of Fisheries Rules and Regulations and laws applicable to the sector has been carried out, and GOA proposes to amend the existing legal framework in line with the review recommendations
- j) The rural road program under the project was implemented in accordance with the Resettlement & Rehabilitation (R&R) Policy of the GoA, which lays down the principles, procedures and mitigation measures associated with road construction and upgrading.

The road upgrading program was carried out on the land within the legal right of way. A few (10 nos.) project affected persons (PAPs), who were within the legal right of the roads and voluntarily relinquished, were provided assistance under the project through the goatery and other programs.

11. Environmental Safeguard Management

- a) The project has been implemented as per the Environmental Management Framework (EMF) prepared to address all the issues identified by the Environmental Assessment (EA) at appraisal. No major environmental effects were anticipated in most of the sub-projects of the project. However, some of the identified environmental issues relate to ground water depletion; presence of hazardous elements like Arsenic, Fluoride, Iron & Hydro-carbon in the groundwater extracted through the STWs; possible destruction of beel wetlands and habitats; genetic and species erosion including loss of local fish species; waste generation including of bio-medical and chemical wastes; and adverse environment impacts during rural roads construction. These issues were addressed as per the agreed EMF for the project.
- b) The environment related aspects of the project has monitored and coordinated by the Environmental Management Unit (EMU) of the PCU headed by one Environmental Specialist (from the Indian Forest Service cadre) and supported by with two Environmental Consultants. All vulnerable activities of the project were scrutinized from Environmental angle and appropriate mitigating measures were taken as per the EMF wherever found necessary. No single intervention was undertaken inside National Parks, declared forests and Sanctuaries. Interventions in the wetlands (Beels) were implemented after addressing the Biodiversity issues. None of the interventions were implemented in community owned grazing land, sacred groves etc.
- c) The 60,000 STWs installed during AACP period were based on a study *“Safe yield of Groundwater and Level of Iron, Arsenic, Fluoride and Hydrocarbon in Assam”* by North Eastern Regional Institute of Water and Land Management (NERIWALM) conducted in 2004. STW installation was restricted initially in 36 development Blocks of 12 Districts sensitive for presence of Arsenic above the permissible limit for drinking/potable water i.e., 0.05 mg/l. Further, 12 development Blocks of 8 districts were found to sensitive for the presence of Fluoride above permissible limit of 1.5 mg/l. The arsenic and fluoride content in groundwater has been monitored on six-monthly basis during original credit by Gauhati University. Based on the recommendation of Gauhati University Study, 18 Blocks out of the 36 Blocks for Arsenic sensitivity and 5 Blocks out of 12 Blocks for Fluoride sensitivity were allowed for STW installation.
- d) For the AF period, the *“Safe yield of Groundwater and Level of Iron, Arsenic, Fluoride and Hydrocarbon in Assam”* study of 2011 was revisited through NERIWALM as advised by the World Bank, to determine the ground water potential in 7 districts and thereafter the program of 30,000 STWs were taken up. Water samples from each STW have been

continued to be analyzed in the chemistry laboratories of the Gauhati University and also in the B. Barooah College (during AF) for Arsenic and in random manner, 5% STWs water sample were tested for the presence Fluoride, Iron and Hydrocarbon.

- e) The project envisaged collection of water samples from total 76,188 STWs out of the total 100,000 STWs, as only 20% samples were to be collected from the safe Blocks of the districts. The project has collected & tested 77,745 nos. water samples out 100,000 installed STWs. Based on the test results, currently installations of STWs in 25 blocks have been stopped. Further, the identified STWs containing hazardous elements, above permissible limit, are painted in red and farmers are advised and cautioned not to use the water for drinking/potable purpose.
- f) Based on the Survey “Biodiversity Issues Associated with Wetlands of Assam” and “Biodiversity Assessment of Beels” safeguard measures towards conservation of the biodiversity was ensured.
- g) Road side plantation has been created for 327 Km out of the total 836 Km road upgraded so far, i.e. 40% plantation covered.
- h) A study on impact of exotic carps to natural environment was conducted. This study detailed the impacts of introduction of silver and grass carp on the natural environment and at the same time develop packages for production of alternate fish species to replace common carp in freshwater aquaculture.
- i) Further another study of the Peri-urban Dairy farms for improving quality of milk and Environment was carried out to develop a code of practice for the peri-urban dairy farms to improve the milk production and quality thereof, hygienic conditions and surrounding environment, along with guidelines on design requirements, construction, and operational aspects for peri-urban dairies.
- j) An independent Environmental Audit of the implementation of the EMF and the R&R Policy was carried out in 2010 on 15% sample basis through M/s Action for Food Production (AFPRO). Another, Internal Environment Audit for the year 2013-14 on 5% field based verification for 6 project districts is in process.

12. Recognition and Rewards

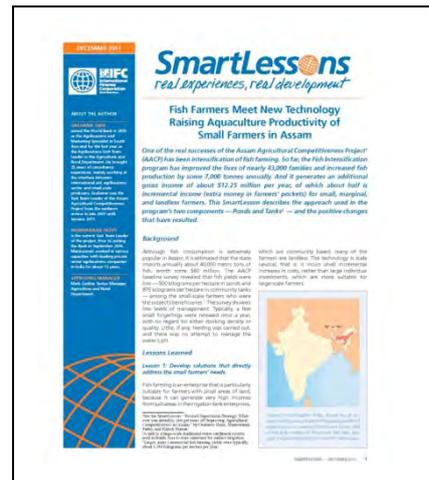
The projects successes and innovations have been widely recognized both by the World Bank and the Government of India.

- (a) **World Bank’s Newsletter of March 2011:** AACP’s performance has been rated consistently as satisfactory by the World Bank since last 3 years 2004

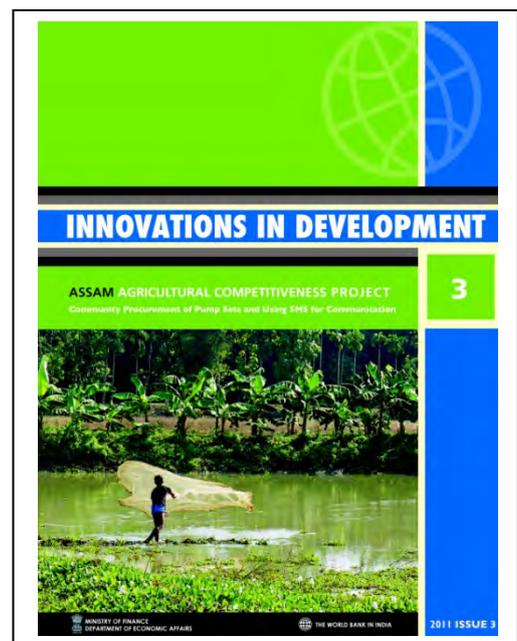


and the project's achievements was show-cased by the World Bank in their Newsletter of March 2011 and topic "Tapping the vast agricultural potential of Assam for a new Green Revolution " became very popular. AACP addressed a complex challenge in a holistic way. With Assam's huge agricultural potential, the AACP can be a precursor for ushering in the next 'Green Revolution'.

(b) IFC reward for AACP for Raising the Aquaculture Productivity of Small Farmers in Assam: One of the real successes of the AACP has been intensification of fish farming. AACP's achievement under Fishery Sector was also published by the IFC (International Finance Corporation, a member of the World Bank Group). The December 2011 edition of the 'SmartLesson' describes the approach used in the Fishery Development program's two components viz. Ponds and Tanks. AACP has won 1st prize from the IFC for the achievement under Fishery Sector under the 'Global Smart Solutions competition'.



(c) **Recognition to the pioneering "Community Procurement" model innovated by AACP :** The innovative farmer friendly "Community Procurement" model pioneered by AACP for irrigation, mechanization and fisheries component, gives authority of procurement decisions to the farmer groups. The World Bank and the Government of India (GoI) recognized this model for irrigation and mechanization as one of the 'good practices' and they jointly published this achievement in a document captioned "Innovation in Development". The GoI circulated this document to all the States of India for adoption as applicable. The document is available in the websites of the World Bank, GoI and ARIAS Society.



(d) **International Reward to the Community Procurement model innovated by AACP:** AACP got an award from World Bank for its Innovative Community Procurement Model in a Global competition. The Procurement



Innovation Challenge platform called for Case Stories from across the world. The 50 accepted Case Stories from the world relating to innovations in procurement were peer reviewed by 17 experts from different countries. AACP has been recognized as one of the top five winners of the case stories and was invited to present the case story in an International event. AACP presented the Case History in Oct.2012 in the 1st Global Open Contracting event held at Johannesburg, South Africa.

(e) **Publication of the “Community Procurement” model by IFC:** Similarly, the achievement under Irrigation component of AACP through the innovative Community Procurement was published by the IFC in the January 2012 edition of the “Smart Lessons” and the topic “Improving Lives through Irrigation How introducing community procurement of pumps raised productivity in Assam” very popular.



Irrigation was the anchor intervention of the AACP from which the majority of benefits flowed. The SmartLesson captured the success story, how an apparent failure was transformed.

13. Status of Credit conditions and covenants of the project

a) The various covenants agreed with the World Bank as provided in the PAD for AACP and in the Project Paper for AF and also in the corresponding legal document, and its status is as given below:

Covenants to ensure that:	Implementation Status
AACP:	
(i) the project is implemented in accordance with the provisions Operations Manual (OM), ensuring participants selection criteria that target vulnerable groups are effectively enforced;	Complied with. The project has been implemented in accordance with the provisions Operations Manuals (OM) agreed with the World Bank.
(ii) the project is implemented in a way that all issues identified in the Environmental Management Framework (EMF), Environmental Management Plans (EMP) and Environmental Codes of Practice (ECP) are adequately addressed; and an independent environmental audit is conducted biennially;	Complied with. The project has been implemented after adequately addressing all the issues identified in the EMF, adhering to the EMP and ECP; One independent environmental audit was conducted and the recommendations were complied with. Internal environmental audit through in-house consultants have been a continuous process throughout the implementation phase of the project.

Covenants to ensure that:	Implementation Status
(iii) within 30 days of Effectiveness, a qualified independent agency is appointed to conduct project monitoring and evaluation (M&E) - and that project baseline surveys are completed within six months of project Effectiveness;	Complied with. Qualified independent agencies (one Original project and another for the AF period) were appointed to conduct project M&E - and the project baseline surveys were completed. The Baseline report for AACP was received on December 2006, due to the delay in the process of hiring the consultants.
(iv) within 30 days of Effectiveness, a qualified firm is appointed by Public Works Department (PWD) of the Government of Assam (GOA) as the supervising consultants for road and bridge upgrading activities;	Complied with. A qualified firm (M/s Louis Berger Group Inc., USA) was appointed as the supervising consultants on 23 rd Oct. 2006 for road and bridge upgrading activities for AACP. The original credit became effective on 24 th Feb.2005. The consultant hiring process was delayed due to the time taken in preparation of the DPRs for the road works and also due the delay in the procurement process for hiring the consultants. However, the consultants were in place before the construction works commenced on the ground.
(v) roads and bridges upgrading activities are implemented in such a manner as to ensure compliance with GOA's Resettlement and Rehabilitation (R&R) Policy;	Complied with. All the roads and bridges upgrading activities were implemented ensuring compliance to the R&R Policy of GOA.
(vi) adequate funding is provided each year by GOA for maintenance of rural roads in project districts;	Complied with. Adequate funding has been provided each year by GOA for maintenance of rural roads in the project districts. ¹⁴
(vii) phased cost recovery for artificial insemination (AI) services provided by Animal Husbandry and Veterinary Department (AHVD) is achieved: 50% cost recovery by March 2006; 75% by March 2007; 100% by Sept 2008; and,	Partially complied with. The Govt. of Assam vide Notification No.VPV.240/ 2004/4 dated 28 th Sept. 2014 fixed 100% Cost recovery for the Frozen Semen Straw required for AI services w.e.f. FY 2007-08, copy at Annex-8.B .

¹⁴ The status of allocation for Annual Road Maintenance Fund (ARMF) during the period 2004-2011, as envisaged in the Minutes of negotiation with the World Bank for AACP, vis-à-vis as actual expenditure made by the GoA (PWRD) is shown below:

Financial Year	As envisaged in minutes of negotiation (Rs. Crore)		Expenditure (Rs. Crore)	
	Total ARMF for the State	Total ARMF for 09 Project Districts	Total ARMF for the State	Total ARMF for the 09 Project Districts
2004-05	60.00	20.00	54.16	20.00
2005-06	65.00	21.50	79.75	20.15
2006-07	70.00	23.00	89.81	33.35
2007-08	75.00	24.50	158.04	59.22
2008-09	80.00	26.00	129.23	48.42
2009-10	85.00	27.50	163.92	61.42
20010-11	90.00	30.00	234.39	87.83
Total	525.00	172.50	909.30	330.39

Note: Actual expenditure on Road Maintenance during the rest of the years of the project: 2011-12 (Rs.237.84Cr); 2012-13 (Rs.138.80 Cr) and during 2013-14 (Rs.192.77 Cr)

Covenants to ensure that:	Implementation Status
(viii) By December 31, 2005, a business plan for the Assam Livestock Development Agency (ALDA) is formally agreed - <i>inter alia</i> phasing out Government financial support by Dec'2008.	Complied with. A business plan for the ALDA was prepared by a consultant in 2006 and was accepted by the GoA. Following implementation of the Business Plan, ALDA became functional and sustainable, and therefore project support for ALDA discontinued after March 2010 based on the decision taken during the WB Mission of August 31st to September 7th, 2009. ALDA however, continued to get assistance from Government of India under National Cattle & Buffalo Breeding programme, in addition to its own resources generated. ALDA being a Nodal Agency of the State for Livestock development, it continues get resources from the Gol, apart from the AI sources.
(Viii. A) (PAD-Pg. 30): Full cost recovery on sales of locally produced and procured semen and liquid nitrogen would be achieved by the third year of the project	Complied with. The Govt. of Assam vide Notification No. VPV.240/ 2004/4 dated 28 th Sept. 2014 fixed 100% Cost recovery for the Frozen Semen Straw required for AI services w.e.f. FY 2007-08
Additional Financing:	
Withdrawal shall only be made for payments made under Category (1) once the World Bank has received satisfactory evidence, that Assam has duly made all Resettlement Payments due under the Original Project in accordance with the provisions of the relevant social mitigation and/or resettlement plan prepared under the Resettlement and Rehabilitation Policy.	Complied with.

- b) Further, as part of reforms, under the aegis of the project, the Assam Fish Seed Act was adopted in 2005 and the Assam Fish Seed Rules was enacted in 2010. Moreover, the Assam Fishery Rule, 1953 was also amended in 2010 as per recommendation of the World Bank. Further amendments to the Assam Fishery Rule, 1953 is on anvil, so as to empower the beel users to manage the natural water bodies for their sustainable livelihood generation.
- c) Handing over of the management of WAMUL to NDDB: Considering the importance of the WAMUL in creating market for milk producers as well as provisioning of quality milk to the consumers, the World Bank and the State Government mutually agreed to hand over its management to the National Dairy Development Board (NDDB) for reviving its operations. Accordingly, a tripartite agreement, between the State Government, NDDB and WAMUL, was signed on April 2008 and accordingly, NDDB took over the management of the WAMUL. Details may be seen at para 4.2.4 of this report.
- d) The project has been implemented fully in compliance to the World Bank's policies on Environmental Assessment (OP/BP/GP 4.01), Natural Habitats (OP/BP 4.04), Pest

Management (OP 4.09), Involuntary Resettlement (OP/BP 4.12), Indigenous Peoples (OD 4.20, being revised as OP 4.10) and Forests (OP/BP 4.36) as envisaged in the PAD.

14. Achievements against Project Development Objective:

a) AACP was designed initially for five years (2005-2010), which was subsequently extended upto December 2011 and latter till 15th March 2015 along with the additional financing. The PCU has the operational responsibility for planning and coordinating the project monitoring & evaluation (M&E) activities. The project M&E contain three distinct but interrelated aspects:

- **First**, implementing departments regularly monitor and report on the project's physical and financial targets & achievements (inputs and outputs) to the PCU.
- **Second**, independent M&E agencies were engaged as consultants for both AACP and AF. During AACP, M/s Consulting Engineering Services (India) Pvt. Ltd, New Delhi (CES) was engaged as the independent M&E consultants (in November 2005) and during the AF, M/s Mott MacDonald, UP, has been engaged (in December 2012) as the independent M&E consultant, for baseline survey (for livestock component only) and for Six Monthly Subsequent Monitoring (SMSM) and evaluation of the project activities, implementation process, performance, and measure project's achievement against the output/outcome indicators.

The SMSM reports *inter alia* include- **(a)** up-to-date physical progress compared to end-project targets; **(b)** updated performance against the pre-determined output/outcome indicators compared to end-project targets; **(c)** successes and problems encountered during the reporting period with suggested remedial actions, and **(d)** socio-economic and environmental impacts of the project.

- **Third**, comprehensive impact evaluations at project completion. While, M/s CES has carried out the all the assigned tasks and submitted the Impact Evaluation Report (ISR) for AACP in September 2012, M/s Mott MacDonald has submitted the 2nd SMSM report for the AF and the Sustainability Report (in lieu of 3rd SMSM), and two more reports, viz. 4th SMSM and the Impact Assessment Report.

b) Design: At appraisal, key performance indicators were defined for each objective and intermediate output indicators were specified for each of the project's sub-components. The PAD defines M&E through a third party as consultants, to provide Inception Report (methodology, approach etc.), Base line survey (including Livestock for AF), and Six-Monthly Subsequent Monitoring Report (SMSM). During AF, the assignment included 3 SMSM reports, one sustainability analysis and the final Impact Assessment Report.

c) During the World Bank Mission of March 2010, it was agreed that the M&E approach needs substantial improvements in terms of methodology and accuracy of the data for some of the project components and accordingly, certain changes were introduced in the sampling methodology, outcome indicators and Field Questionnaires for SMSM:

- Outcome Indicators are replaced;
- A more coordinated sampling methodology for selection of beneficiary & control samples have been retrofitted for each batch of project beneficiaries.
- Sampling frames for each batch of beneficiary joining the project in that year is followed and fresh samples of beneficiary household (treatment group) are drawn for the SMSM studies.
- A control set similar in characteristics to the treatment groups are selected from the adjoining areas and the size of the control group is equal to the treatment group to allow for attrition;
- Field Questionnaires for SMSM survey revised.

d) Significant Impacts of AACP

- The PCU and the implementing line departments have always been giving high priority to the M&E reports and ensured that the observations & feedback are used effectively to modify implementation arrangements, as & when necessary. The project has been successful in pioneering key policy changes, better utilization of ground water potential, crop diversification, and better rural connectivity. The Impact Assessment Report of AACP by the independent M&E Consultants has revealed that – the project has increased productivity of agriculture, livestock, and fisheries sectors together with improved income of farmers.
- **Achievement against the Key Performance Indicators of AACP as per the Impact Assessment Report (September 2012) of the Original Credit by the independent M&E consultant:**

Sl.	Activities	Unit	Key Performance Indicators (Outcome) of AACP								Impact assessment 2012	
			Base Line	Mid Term	End of Project Target	Six Monthly Subsequent Monitoring (SMSM)						
						1 st July 08	2 nd Feb 09	3 rd Feb 10	4 th Oct 10	5 th Jun 11		
1	Cropping intensity	%	128	138	195 %	141	144	173	-	183	186	
	Crop Productivity				% increase							
	a. Sali Paddy	kg/ha	1567		150 %	2562	2585	2654	-	3050	3089	
	b. Boro Paddy	kg/ha	NR		151 %	4344	5435	5613	5696	-	5937	
	c. Mustard	kg/ha	623		40 %	616	625	630	804	811	846	
	d. Cabbage	kg/ha	7020		50 %	7178	7687	8634	10137	10495	10330	
	e. Cauliflower	kg/ha	5590		15 %	7702	7474	8168	10487	10460	10112	
	Percentage of gross cropped area utilized											
	a. Cereals	%	83.20		80	85.47	81.36	84.8	assessed annually	78.4	78.41	
	b. Oil Seed	%	4.90		3	7.14	6.17	5.10		3.4	3.42	
	c. Vegetable	%	5.80		15	7.05	12.47	10.10		18.2	18.17	
	Percentage marketed surplus to production											
	a. Sali Paddy	%	18		45	42	51	50	-	51	52	
	b. Boro Paddy	%	NR		45	47	53	55	42		55	
c. Mustard	%	17		50	21	32	36	48	61	62		
d. Vegetable	%	28		92	50	60	82	94	89	91		
2	Drainage (MWDP)	%			75	36	54	80		96	98	
3	Farm Mechanisation											
	a. Tractor											

Key Performance Indicators (Outcome) of AACP											
Sl.	Activities	Unit	Base Line	Mid Term	End of Project Target	Six Monthly Subsequent Monitoring (SMSM)					Impact assessment 2012
						1 st July 08	2 nd Feb 09	3 rd Feb 10	4 th Oct 10	5 th Jun 11	
	No of Tractors	Nos	13		-	62	70	70	70	70	70
	Av usage per Tractor per year	hr/year	456		760	514	518	531	763	450 (6 months)	914
	a. Power Tiller										
	No of Power Tiller	Nos	36		-	111	133	135	135	134	135
	Av usage per Power Tiller per year	hr/year	380		500	384	395	435	484	280 (6 months)	513
4	Fish Productivity				% increase						
	a. Pond	kg/ha	485		200%	3143	2991	3094	3163	3004	3278
	b. Tank	kg/ha	875		200%	2221	2428	2292	2257	2544	2462
	c. Beels	kg/ha	480		100%	911	1041	973	997	1027	1008
5	Milk Production				% increase						
	Av. Milk productivity of crossbred cows	(l/unit/day)	5.45		125%	2.5	3.21	2.75	5.46	5.66	6.32
	Av. Milk productivity of local cows	(l/unit/day)	1.04		30 %				1.28	1.30	1.35
	% of local cows							48	45	45	44
	% of cross bred cows							52	55	55	56
6	Joint Forest Management Committee (% of households whose income increased by 20% after project intervention)										
	a. Kalabakra	%									40
	b. Nahargaon	%									25
	c. Amguri	%									65
	d. Nazirating	%									30
	e. Kathaltoli	%									30
	f. Golajjuli	%									30
	(Average survival rate after two years of creation)										
	a. Kalabakra	%									70
	b. Nahargaon	%									62
	c. Amguri	%									80
	d. Nazirating	%									95
	e. Kathaltoli	%									72
	f. Golajjuli	%									70
	(Survival of teak and timber species attaining a height of 2 m after 2 years of creation)										
	a. Kalabakra	%									50
	b. Nahargaon	%									35
	c. Amguri	%									60
	d. Nazirating	%									70
	e. Kathaltoli	%									40
	f. Golajjuli	%									65
	(Survival of firewood plantations attaining a height of 4 m after 2 years of creation)										
	a. Kalabakra	%									50
	b. Nahargaon	%									50
	c. Amguri	%									2
	e. Kathaltoli	%									45
	f. Golajjuli	%									20
7	Improved Rural Infrastructure										
	Rural Roads:										
	Increase in traffic density on completed roads	%			200						402
	Villages connected with improved rural roads	No			1350						1053
	Population connected with improved rural roads	00			1600						155203
	Rural Markets:										
	Increase in market fee collection	%			35						35
	Increase in trading volume	%			30						31
	Increase in no of traders	%			50						50

- Achievement against the Key Performance Indicators as per the Impact Assessment Report (March 2015) of the AF Credit by the independent M&E consultant:

Key Performance Indicators (Outcome)										
SI No	Activities	Unit of Measurement	Baseline Original Project Start (2006)	Progress To Date (July 2011)*	Cumulative Target Values 2015 (by March)	Monitoring			Impact Assessment	Comments
						2012	2013	2014	2015	
						6@	7	8	9	
1@	2@	3@	4@	5@	6@	7	8	9		
Project Development Objective (PDO) :To increase productivity and market access of targeted farmers and community groups										
1	Increase in Crop Productivity									
	(i) Sali Paddy	t/ha	1.5		-	3	4.42	4.6	4.4	Measured as t/ha of crop yield in the new STW irrigated command area
	(ii) Boro Paddy	t/ha	1.5	5.7	5	5.9	4.16	4.95	5.5	
	(iii) Mustard	t/ha	0.6	0.8	0.8	0.846	***	1.04	1.1	
	(iv) Cabbage	t/ha	7	10.5	8.5	10.3	7.8	11	10.6	
	(v) Cauliflower	t/ha	5.6	10.5	7	10.1	7.88	10.07	9.8	
2	Increase in Fish Productivity									
	(i) Ponds	t/ha	0.485	3	2.75	3.2	3.6	3.2	3.5	Fish productivity measured as t/ha of WSA from new CIGs for ponds, new CTGs for tanks and new Beels
	(ii) Tanks	t/ha	0.85	2.5	2.25	2.4	2	2.2	2.3	
	(iii) Beels	t/ha	0.48	1	0.75	1	****	1.5	1.6	
3	Increase in cropping intensity	%	130	180	195	186	151	200	200	Measured as % of gross cropped area to the net area in new STW command area
4	Increase in crop diversification									Measured as a proportion of gross cropped area in new STW command area
	(i) Area under cereals	%	83	78	80	78.4	76	76	65	
	(ii) Area under high value crops	%	17	22	20	21.6	24	24	35	
5	Increase in marketed surplus									
	a. Sali Paddy	%	18	47	-	52	40	53.7	48.6	Measured as a percent of production sold by the farmers.
	b. Boro Paddy	%	18	47	45	55	55	38.2	26.1	
	c. Mustard	%	17	61	45	62	***	24.4	64.5	
	d. Vegetable	%	28	89	65	91	90	94.9	99.5	
6	Beneficiaries @									
	Project beneficiaries (new)	Number	Not recorded	300000	410000	347068	437953	492772	565745+	Cumulative
	Of which female beneficiaries (new)	Number	Not recorded	60000	82000	70242	78832	78844	83744+	Cumulative
Intermediate Result 1: Investment Grant Scheme										
1	STWs installed and operated @	Number	100	41877	90000	60000	66324	90000	100000+	Cumulative
2	Area irrigated by STWs - Revised	Ha.	-	104692	225000	150000	165810	225000	250000+	Cumulative
3	Drained area brought under cultivation - (new) @	Ha.	-	15000	35000	15915	25473	31706	31706+	Cumulative

Key Performance Indicators (Outcome)										
SI No	Activities	Unit of Measurement	Baseline Original Project Start (2006)	Progress To Date (July 2011)*	Cumulative Target Values 2015 (by March)	Monitoring			Impact Assessment	Comments
						2012	2013	2014	2015	
						1@	2@	3@	4@	
4	Increase in crop productivity in drained lands under cultivation - (new)	t/ha.	-	1	2					
	(i) Sali Paddy	t/ha	-	-	-		****	4.41	4.41	
	(iii) Mustard	t/ha	-	-	-		****	1.13	1.13	
	(iv) Cabbage	t/ha	-	-	-		****	10.9	10.9	
	(v) Cauliflower	t/ha	-	-	-		****	9.8	9.8	
5	ASGs operating at financially sustainable levels	%	-	70	85	-	91	47	83	Measured as a % of ASGs operating above breakeven hours per year point levels of 750
6	Fishery groups reporting increased fish productivity - (new)									By at least 200% CIGs and CTGs and for at least 100% for beels over the baseline
	CIGs	%	-	80	85	-	100	100	100	
	CTGs	%	-	70	80	-	100	92	100	
	Beels	%	-	60	70	-	****	100	100	
Intermediate Result 2: Agricultural Services and Market Chain Development										
7	Farmers participating in ATMA demonstrations adopt at least 50% of the technologies demonstrated – (New)	%	0	15	50					Measured as % of ATMA farmers adopting at least 50% of the technologies to which they are exposed
	AACP	%	0	15	50	-	40	47	50	
	CSS	%	0	15	50	-	41.8	38	46	
8	Number of MPIs Working (collecting 20 or more litres of milk per ^^	Number	0	-	-		61	61	219+@	Measured as number of MPIs collecting at least 20 litres of milk per day one year after formation ^^
Intermediate Result 3: Infrastructure Development										
9	Villages connected with improved rural roads	Number	189	-	1350	1053	**	1423+	1423+	Done at end of project assessment.
10	Increase in traffic density on completed roads (market linkage) by 200%	%	96	-	285	402	**	351^^^	320^^^^	Done at end of project assessment.
11	Increase in trading volume of improved markets by 30%	Tons	393	-	510	-	**	652	652	Done at end of project assessment.
* For new indicators introduced as part of the AF phase, the progress to date column is used to reflect the baseline value.										
@ Data/inputs from the AACP-AF project paper										
** Covered during final (3 rd) Monitoring.										

Key Performance Indicators (Outcome)										
SI No	Activities	Unit of Measurement	Baseline Original Project Start (2006)	Progress To Date (July 2011)*	Cumulative Target Values 2015 (by March)	Monitoring			Impact Assessment	Comments
						2012	2013	2014	2015	
	1@	2@	3@	4@	5@	6@	7	8	9	
*** Additional group was covered in subsequent monitoring										
**** Was covered during follow-on monitoring but data not received, hence covered during final (3 rd) Monitoring										
^^ As directed by WB Mission TL during meeting at PCU on 17 th Feb 2015, benchmark provided by PCU for MPIs as the WB project paper had indicator for DCSs only										
^^^As per market linkage road										
+ Complete project data (AACP and AACP-AF phases)										

15. Evaluation of performance of Borrower, Implementing Agencies and the World Bank

(a) Evaluation of borrower's own performance during preparation of the operation, with special emphasis on key lessons learnt

- **Government Performance:** The State Government demonstrated its commitment to the project and suggested reforms in the agriculture & allied sector as envisaged were agreed during the project preparation process. During the preparation phase a full-time project preparation team worked closely with the World Bank team and consultants. During implementation the government has always been supportive of the project activities and its endeavours. Various Aide Memoire of the World Bank implementation support and review mission indicate that the State Government has always been very supportive to the project throughout its implementation.

(b) Implementing Agencies Performance

- Implementing agency staff from the departments of Agriculture, Animal Husbandry & Veterinary, Fisheries, Public Works, Dairy and Forestry including Assam Agriculture University showed a high degree of enthusiasm and commitment to implementing the project and their financial management and safeguard implementation performance was satisfactory. A few agencies experienced procurement challenges, due to the turn-over of the trained procurement staff. However, PCU handled and trained the new staff in Bank procurement rules and procedures. There has not been a single case of mis-procurement or any F&C cases and the financial management was sound. The Project Coordination Unit was sufficiently staffed, with fiduciary staff specialized in procurement, financial management and M&E. The project has also contributed to mainstream some of the best practices that were emerging from the project e.g. Community Procurement into the operations of various schemes managed by government departments. PCU played the key role in identifying the early success of the STW program, and was instrumental in proposing substantially larger targets for this successful activity.
- The project has undoubtedly made a substantial impact on raising agricultural production and household incomes primarily through the shallow tube wells (STWs).

The increase in agricultural production due to STWs had a marked impact on household and state level self-sufficiency in paddy, and has increased employment opportunities for landless wage labourers. In addition, the project has a positive impact on raising rural incomes through **(i)** improving access to markets through rural road improvements; **(ii)** increasing diversification into vegetables and oilseeds through extension activities; **(iii)** increasing milk production through artificial insemination; **(iv)** training targeted to interest groups benefiting particularly women under ATMA and **(v)** improving fish production from farmers' ponds and community tanks; and beel fisheries development.

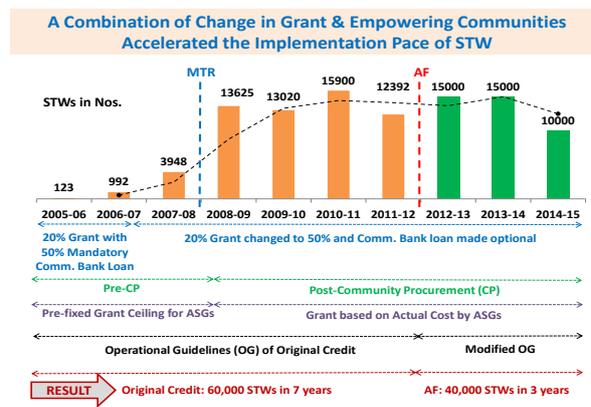
- The project M&E data has indicated that (a) high yields achieved in paddy, vegetables and fish is sustained (b) marketable surplus are in increasing trend (c) cropping intensity are continuing to increase in the years after the installation of STWs and timely sowing of crops through effective utilization of Tractors and Power Tillers. The operational hours for tractors and power tillers is increasing year on year. The project has directly mobilized over 4.97 lakh beneficiaries in over 1.09 lakh beneficiary groups across the agriculture, fishery, dairy, forestry, and livestock sector. The beneficiary mobilization process has allowed significant participation of small and marginal farmers and landless.
- Overall the performance of all the implementing line departments/ agencies has been satisfactory.

(c) Lessons Learnt

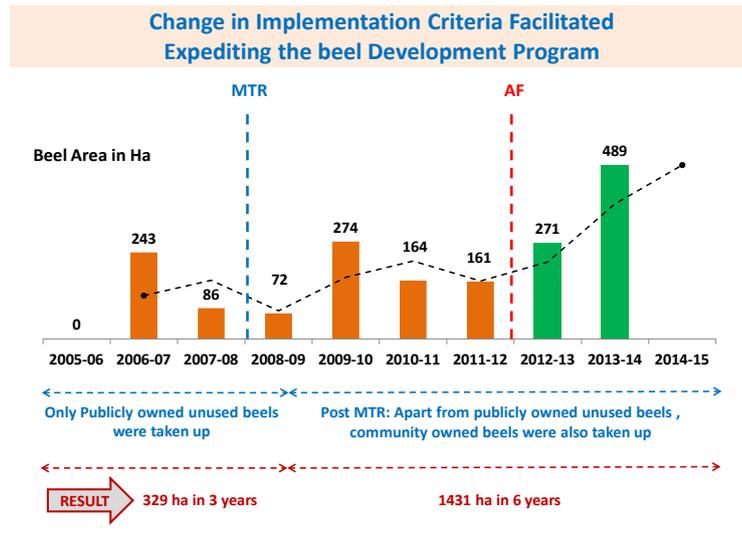
- World Bank is a major source of technical knowledge, and expertise with experience of global footprint in the best management practices across the globe. The Bank has accumulated developmental expertise and has the capacity to understand development issues, and produce and disseminate policy-relevant advisory support to make developmental process more efficient. World Bank is a worldwide knowledge pool through its world-class experts for learning, innovation in poverty reduction and also for strategic advices. Close monitoring, supervision, and guidance by the Bank ensure that the project funds are used only for the purposes it is meant, without regard to non-economic influences, ensure economy, efficiency and transparency in implementation of projects, focusing results & outcome of investments.
- At first glance, it appears that the project is very complex, since it has a large number of components & sub-components, but in reality, the project has addressed the diverse and complex problems that are faced by the farmers in Assam. The project was designed realistically by the World Bank to address the complexity and diversity of the activities that the farmers and rural communities in Assam are involved in. This integrated and comprehensive approach not only addressed the immediate problems of agriculture but it also strengthened the capacity and creates

opportunities to increase the benefits from the interactions and synergies at the farm, community and state levels. Obviously, it is difficult to implement such a project, but ARIAS Society demonstrated that this is doable. Project implementation has been geographically diverse, as it covers almost all of the districts in Assam, but since the actual implementation has been mainstreamed to the GoA's line Departments, it promoted smooth implementation along with capacity building and ensuring sustainability as well.

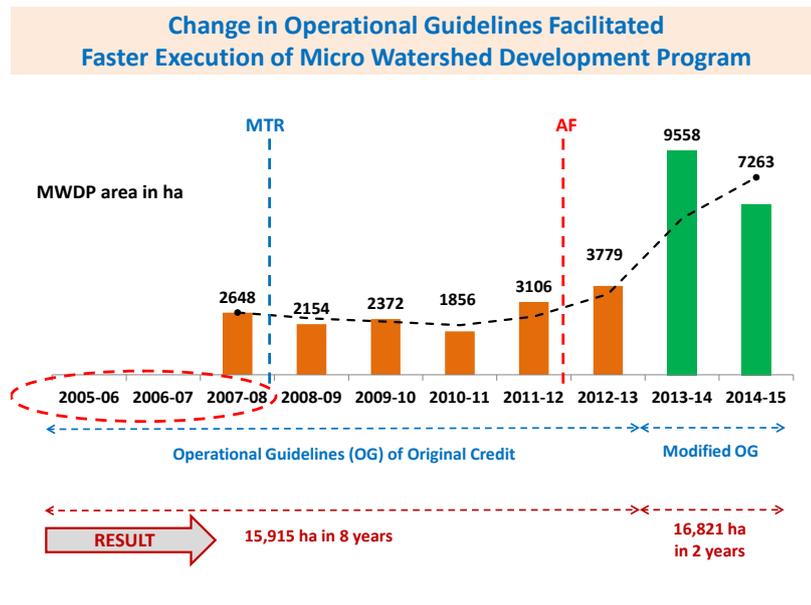
- Equally important, however, is the contribution of the project to create, strengthen and sustain agricultural institutions (ARIAS Society) at the level of state, districts (ATMA) and Blocks (BTT), and villages (FAC) as well as the capacity of farmers groups and communities. Since the project is demand-driven, beneficiaries of the project and the institutional contribution ensured sustainability of project interventions, as well taking care of governance & accountability. Another important contribution of the project has been the suo-moto mainstreaming of the successful project activities in to the government departments, which has been great success of the project in terms of both capacity building and sustainability.
- Projects designed to modernize agricultural support services with several components and multiple implementing agencies should be monitoring & coordinating by an apex single entity (like ARIAS Society), for easier supervision, monitor, control, and for greater operational synergies.
- A clear objective strategy and transparent criteria for selection of intended project beneficiaries facilitates smooth implementing of project activities, without any controversies or biasness.
- If design issues of a project is taken care of at a very early stage, projects can deliver in a much faster ways, which is evident from the following:
 - i) a combination of change in grant & empowering communities accelerated the implementation pace of STWs and the project could achieve a mammoth 40,000 STWs was achieved in just 3 years as against 60,000 STWs in the initial 7 years;



- ii) while the project could complete 329 ha of beel fisheries in initial 3 years, 1431 ha was achieved in 6 years due to a change in the implementation criteria of the beel development program;

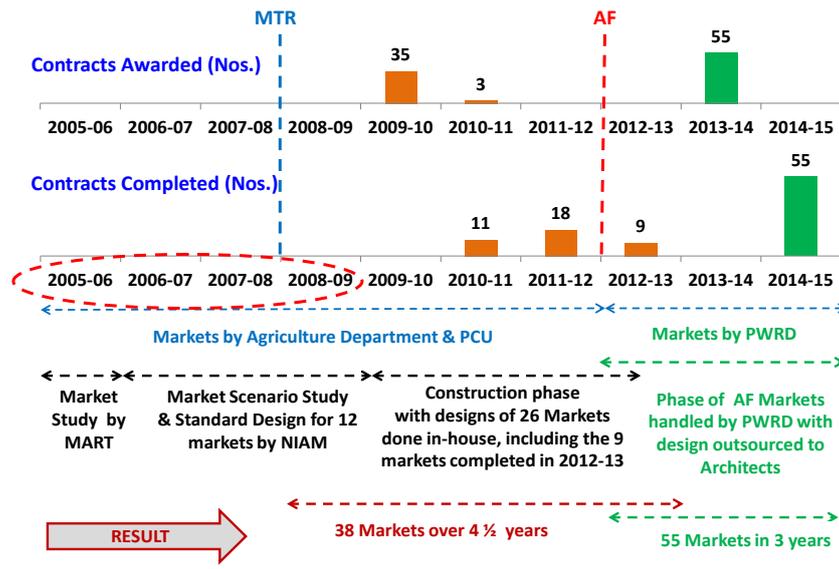


- iii) the project completed 15915 ha of Micro Watershed Development Program [MWDP] in the initial 8 years, but during the AF period total 16,821 ha was achieved in just 3 years due to changes in the operational guidelines for MWDP;



- iv) similarly, changes in the implementation approach speeded up the market infrastructure development program resulting in construction of 55 Markets in 3 years, as against 38 Markets over 4 ½ years.

Change in Implementation Agency Speeded up the Market Infrastructure Development Program



- Deliverables of a project needs to be forecasted with a realistic implementation schedule, with sufficient time for start-up activities and the expected time for community mobilization.
- Successful project interventions normally are mainstreamed by the line departments in their own programs.
- Projects with several components and multiple implementing agencies should be closely monitored & coordinated by an apex single entity (like ARIAS Society), for easier supervision, monitor, fiduciary control, environmental & social safeguards and for greater operational synergies.
- A clear objective strategy and transparent beneficiary selection criteria, for selection of intended project beneficiaries facilitate smooth implementing of project activities, without any controversies or biasness.
- Monitoring and Evaluation is an important tool for measuring project performance against given indicators, and M&E reports gives a satisfaction to the implementing staff that they are indeed doing good for the disadvantaged farmers, and thereby boost their morale to do more.
- NGOs are essential partners when community mobilization is required, hence fostering and capacity building of the NGOs is essential to enhance the benefit of their involvement.
- A well knit rural road network can change the economy of an area and its impact on the agricultural economy can be very effective in terms of providing easy and faster access during to the markets, availability of quality inputs and increase in diversification to more high value crops

- Good project management and financial management are crucial for facilitating successful implementation of a project. Towards this, the dedicated and efficient PCU of ARIAS Society has demonstrated how this aspect can improve the project performance dramatically.
- Fish production is a potentially good source of income for marginal farmers and the landless, but well targeted and appropriate market-linked extension and follow-up training is essential to nurture the participants and enhance sustainability of the groups.
- Without adequate attention to animal nutrition & health, and also to milk marketing, upgrading of cattle will bring only limited benefits to the livestock producers.
- Surpluses have occurred in some areas because of project activities (e.g. paddy, vegetables, fish). Project design should include provision for storage, including cold storage in PPP mode for perishables and processing activities.
- Contract period for rural road packages needs to be fixed considering the limited working seasons in the State, taking into account the time of start of a contract.
- The Qualification Criteria needs to be more stringent to eliminate non-serious and incapable contractors. The clause 29.5 of the SBD of World Bank states - "If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the Employer may require that the amount of the performance security set forth in Clause 34 be increased at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract" shall be fully enforced, i.e. if a bidder quotes unreasonably lower bid price his performance security should be enhanced to the extent he would not run away and leave the work half done.
- Further, bidders quoting unreasonably lower bid price shall be handled pursuant to clause 34.3 viz. "Failure of the successful bidder to comply with the requirements of sub-clause 34.1 shall constitute a breach of contract, cause for annulment of the award, forfeiture of the bid security, and any such other remedy the Employer may take under the contract, and the Employer may resort to awarding the contract to the next ranked bidder".
- Establishment of Farmers' Producers Organisation is the way forward in boosting agriculture production and bringing efficiency in agricultural marketing.

(d) World Bank's performance

- The Bank did exceedingly well in taking up this project which was of high priority for the State government and responded to the emerging needs of the sector. Preparation and appraisal missions were adequately staffed with a good mix of technical specialists and fiduciary aspects were well prepared. Project design was complex with six agencies involved, yet identification of the adequate risks by the Bank and the recommended mitigation measures have resulted in smooth implementation of the project.
- Each of the project components and sub components addressed the real problems faced by the farmers. For example, investment grant schemes deal with minor irrigation, farm mechanization and aquaculture. Minor irrigation and farm mechanization are critical to enhance farm productivity by facilitating yield increase, diversification and intensification. Agricultural services and market chain development deal with provision of services and market chain development for fisheries, forestry, dairy and livestock. Farmers in Assam generally diversify their agriculture portfolio by dealing with crops, livestock, fisheries and forestry, where possible and feasible. Such a strategy helps lower the production and market risks. Finally, rural infrastructure development, including rural access roads, bridges and rural markets, has the highest payoffs not only by linking farmers with markets (input and output) but also by facilitating easy and all weather access to schools, colleges and hospitals by the rural population.
- The project preparation team of AF assumed that Farmers' Producers Organization would be a better way to empower the farmers in aggregation and marketing their produce for better remunerative price. During project preparation a thorough analysis of former's needs and the required enabling environment to facilitate in providing the needs were assessed and included in the project design. During the AF, the Bank analyzed the factors that would incentivize the farmers to mitigate higher production costs and solar powered STWs have been piloted. The envisaged mandatory sampling of water samples for detection of arsenic and Fluorides levels for installation of STWs prevented the potential hazard from this intervention.
- Nevertheless, there were shortcomings in the design of M&E initially, which was rectified subsequently by the Bank. Frequent turnover of the M&E expert from the Bank with their changed priorities created confusion. Initially M&E reports did not accurately reflect the project's achievements and beneficiary progress, but the same was rectified with active support from the TTLs. During this process a constant flow of communication between the Bank and PCU was maintained that helped in rectifying the short comings in the M&E of the project through the independent consultants.
- The Bank initially focused too much on monitoring the physical, financial, disbursement and institutional aspects and not enough on whether the project's objectives were being met or if the project was having the desired impact on its

stated beneficiaries - in particular small and medium scale producers. The Bank however, took appropriate action when initial progress was lethargic and unsatisfactory.

- The World Bank has always been supportive and flexible towards the project, e.g. STW has made a very significant and positive impact on increasing the area under irrigation, equitable distribution of resources, increase in productivity and production of rice, crop diversification, and substantial increase in rural income at all levels and the Bank, considering the same, agreed to allocate project savings for additional 10,000 STWs proposed under the AF.
- The supervision missions were generally regular and carried out by the World Bank almost at regular five/six-month intervals, with in between short missions by the TTLs immensely helped in resolving many implementation hindrances. The quality of supervision advice was generally sound and outstanding. The Bank team has always ensured that the supervision missions are well staffed by sufficient expertise, and this strength has offset several shortcomings faced by the project, due to the excellent support and guidance provided by the mission members. The Bank supervision teams also assisted the project to improve performance under various component activities. Without the assistance of the supervision it is unlikely that implementation performance of the project would have improved.

16. Sustainability of project interventions

- a) The project conducted analysis of the sustainability of individual activities through the M&E consultants of AF. The concept of “sustainability” adopted is that of the project’s ability to maintain its operations, services and benefits during its projected lifetime. The study assessed the sustainability of implementation of various components under the project and has covered the sample beneficiaries who have received benefits under the project at least 3 years back (i.e. under the AACP phase). The sustainability analysis is based on following parameters:

Component	Highly Sustainable			Sustainable			Un-sustainability		
	Continued operation	Economic sustainability	Community participation	Continued operation	Economic sustainability	Community participation	Continued operation	Economic sustainability	Community participation
Fisheries	X	Fish productivity level at least 25 % higher than the projected minimum level	Group is formally registered & its members strongly believe that group will continue to function in next 3 to 5 years.	X	Fish productivity level is no less than 15% lower and no more than 25% higher of the projected minimum level	The group is formally registered	X	Fish productivity level is 15% or more lower than the projected minimum level	The group is not registered
STWs	STW is in operation, and does not have an immediate need for major repair work or replacement.	More than two crop seasons during a calendar year (January to December)	STW group is involved in more than one joint economic activity (pooled input purchases, joint marketing etc.) or its members strongly believe that group will continue to function in next 3	STW is operation, and does not have an immediate need for major repair work or replacement.	On an average about two crop seasons during a calendar year (January to December)	The STW group members believe that it is likely that the group will continue to function in the next 3 to 5 years.	STW has an immediate need for major repair work or replacement.	On average less than two crop seasons during a calendar year (January to December)	The STW group members do not believe that it is likely that the group will continue to function in the next 3 to 5 years.

Component	Highly Sustainable			Sustainable			Un-sustainability		
	Continued operation	Economic sustainability	Community participation	Continued operation	Economic sustainability	Community participation	Continued operation	Economic sustainability	Community participation
Tractor	The tractor is in operation and does not have an immediate need for major repair or replacement	The tractor is 1000 or more hours in operation during a calendar year	The tractor group is involved in more than one joint economic activity (pooled input purchases, joint marketing and etc.)	The tractor does not have an immediate need for major repair or replacement	The tractor is in operation between 750 and 1000 hours during a calendar year	One joint economic activity (pooled input purchases, joint marketing and etc.)	The tractor has an immediate need for major repair or replacement	The tractor is in operation less than 750 hours during a calendar year	The tractor group does not have any joint economic activities (pooled input purchases, joint marketing and etc.)
Milk producers	X	Common daily pour more than 125 liters per day (for DCS) ; 42 liters per day or more (for MPI)	The group members strongly believe that the group will continue to function in the next 3 to 5 years.	X	Common daily pour is between 90-125 liters per day (for DCS); between 31 to 41 liters per day (for MPI)	Group believe that it is likely that the group will continue to function in the next 3 to 5 years.	X	Common daily pour is less than 90 liters per day (for DCS) and less than 30 liters per day (for MPI)	Group do not believe that it is likely that the group will continue to function in the next 3 to 5 years.
Micro watershed	X	The output levels are at least 25% higher than those achieved immediately after the sub-project completion.	The group members contribute cash or labour to the drainage maintenance work	X	The output levels are no less than 15% lower and no more than 25% higher after the sub-project completion.	Group believe that they will contribute cash or labour to the drainage maintenance work in next 3 to 5 years	X	The output levels are 15% or more lower than immediately after the sub-project completion.	Group do not believe that they will contribute cash or labour to drainage maintenance work in next 3 to 5 years
Forestry	X	The group is involved in more than one economic activity	The group members strongly believe that the group will continue to function in the next 3 to 5 years.	X	The group is involved in one economic activity	The group members believe it is likely that it will continue to function in next 3 to 5 years.	X	The group is not involved in a single economic activity	The group members do not believe it is likely that it will continue to function in next 3 to 5 years.
ATMA	X	Obtained yield level increase is more than 40 % of that demonstrated.	X	X	Obtained yield level increase is between 25 to 40 percent of that demonstrated	X	X	Obtained yield level increase is below 25 percent of that demonstrated.	X

- b) **Mechanization:** Analysis shows that of the total 69 tractors groups, 58% of the groups are highly sustainable (using tractor for more than 1000 hours in a year); 36% of the groups are sustainable (using tractor for more than 750 hours to 1000 hours in a year); and 6% unsustainable (using tractor for less than 750 hours in a year). The average business generated each group by renting their tractors for activities like tilling, transportation etc. was Rs.215,693 (of which Rs.112,072 was through tilling and Rs.103,621 was through transportation) and their net income was Rs.168,605 (after deducting the expenditure of fuel and lubricants). Gross cropped area of the contacted farmers was 503 ha while the net cropped area was 299.6 ha i.e. 168% cropping intensity.
- c) **Fishery Development:** The average productivity by CIGs (in Ponds) is 3.33 ton/ha. All CIGs contacted had an increase of more than 25% in the production from projected minimum level (as per PAD of AACP) hence, they can be considered as highly sustainable as shown below:

Component	Unit of Measurement	Baseline Original Project Start -2006	Sustainable Monitoring (2014)	Sustainability Levels
Economic sustainability: Increase in Fish Productivity				
(i) Ponds	t/ha	0.49	3.33 (244% increase from Project Minimum Level (PML) wherein PML is 200% of Baseline i.e. 0.97t/ha.)	Highly sustainable
(ii) Tanks	t/ha	0.85	2.6 (53% increase from PML wherein PML is 200% of Baseline i.e. 1.7t/ha.)	Highly sustainable
(iii) Beels	t/ha	0.48	1.13 (136% increase from PML wherein PML is 100% of Baseline i.e. 0.48t/ha.)	Highly sustainable
Community participation				
(i) Ponds	%		Groups registered with State Fishery Department (100%) and all members believe that group will continue to function	Highly sustainable
(ii) Tanks	%		Groups registered with State Fishery Department (100%) and all members believe that group will continue to function	Highly sustainable
(ii) Beels	%		Groups registered with Fishery Department (100%) and all members believe that group will continue to function	Highly sustainable

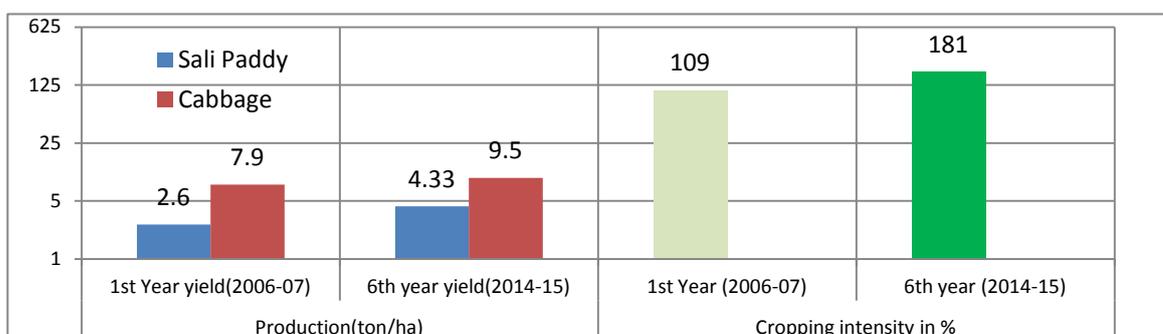
- d) **Dairy Development:** Performance 20 DCS and 19 MPIs were measured. Out of the 20 DCS contacted, 19 were found having milk pour of more than 125 litres/day thus, i.e. 95 % of DCS are highly sustainable. On other hand, of the 19 MPIs contacted, 13 are highly sustainable (68.4%), 5 are sustainable (26.3%) while one of them is unsustainable (5.3%):

Component	Unit of Measurement	Sustainability Monitoring (2014)	Sustainability Level
Milk producer groups (MPIs)**			
Economic sustainability: daily pour is more than 42 lts/day	%	68.4	Highly sustainable
Common daily pour is between 31 to 41 litres per day		26.3	Sustainable
Common daily pour is less than 30 litres per day		5.3	Unsustainable
Milk producer groups (DCSs)			
Economic sustainability Common dailypour is more than 125 litres per day	%	95	Highly sustainable
Common daily pour is less than 90 litres per day	%	5	Unsustainable
Community participation (MPIs and DCSs) The group members strongly believe that the group will continue to function in the next 3 to 5 years.	%	Group registered with Dairy Dept. (100%) and 100% members believe that groups will continue to function	Highly sustainable

- e) **Micro-watershed drainage program (MWDP):** Activities assisted flood plain communities to restore natural drainage lines and reduce annual water logging and crop loss. Crop production shows that the overall production of Sali paddy is 4.33 ton/ha and that of mustard is 0.90 ton/ha. For vegetable, productivity of cabbage is 9.5 ton/ha and that of cauliflower 8.20 ton/ha. The cultivation of Sali paddy and Mustard in the drained area are highly sustainable with 66.53 % and 36 % increase in yield respectively, immediately after the completion of the MWDP program. The sustainability indicators on three major parameters are as follows:

Component	Unit of Measurement	1st year yield data (reported by beneficiaries)	Sustainability Monitoring (2014)	Sustainability Levels
Micro watershed				
Economic sustainability:				
Sali Paddy	t/ha	2.6	4.33 (66.53% increase in yield immediately after the sub- project completion)	Highly sustainable
Mustard	t/ha	0.66	0.90 (36% increase in yield immediately after the sub- project	Highly sustainable

Component	Unit of Measurement	1st year yield data (reported by beneficiaries)	Sustainability Monitoring (2014)	Sustainability Levels
			completion)	
Cabbage	t/ha	7.9	9.50 (20.3% increase in yield immediately after the sub- project completion)	Sustainable
Cauliflower	t/ha	7.9	8.20 (4% increase in yield immediately after the sub- project completion)	Unsustainable
Cropping Intensity	%	109	181 (66% increase immediately after the completion)	Highly sustainable
Community participation The group members contribute cash or labour for the drainage maintenance work	%		Community informed having contributed for labour	Highly sustainable



17. Success Stories

- a) **Leveraging and Convergence brought paradigm change:** BARIJANI is village under Sualkuchi Dev. Block of Kamrup (Rural) district, with a population of around 2009. The village has around 485 farm families.

Adjacent to the village is a farm field of about 600 ha, with total 226 Shallow Tube Wells (STWs) installed, of which 122 STWs (54%) were provided under World Bank financed ARIASP & AACP. The cumulative command area of the installed STWs in the field is about 452 ha, of which 244 ha (54%) was created under the World Bank projects. ARIASP took the pioneering initiative by providing the first batch of 66 STWs in the year 1999-2000 in the field.

The farmers owning the field could not do Boro (summer) Paddy cultivation before introduction of STWs. The ARIASP pioneered to change the life of the poor families and initially motivated some of the farmers; In the year 1999-2000, the first batch of 7 STWs were installed from the project. Seeing the returns, more farmers-groups owning the farm field came forward and in the year 2000-2001 another 75 STWs were provided by ARIASP. Subsequently, considering the huge benefit and demand, GoA leveraged the program with NABARD funding and provided another 64 STWs. Latter more pumpsets were provided under AACP and also by GoA under RKVY.

Before the STWs, farmers owning the field were doing Sali (Winter) Paddy (400 ha); Bou Paddy (133 ha Bigha); After having the STWs farmers are doing 200 ha of Sali Paddy, 400 ha of Boro Paddy and another 267 ha of Mustard. Villagers migrated to Boro Paddy, as Sali Paddy is a chance-crop, which often gets damaged due to floods. Cropping intensity, in the field increased from 92% to 144% as a result of STWs.

Under the World Bank projects, 03 Tractor were provided to the farmer groups of the village. This coupled with 04 other tractors and 03 Power Tillers provided from other Government programs, facilitated timely tillage. Some other tractors, provided through other schemes of GoA, is also available in the area, which are also used by the farmers on hire basis for the ploughing.

Before the STWs, the production of paddy from the farm field was 1280 tons (Sali paddy 960 ton and Bou paddy 320 ton); and after the introduction of STWs production of paddy jumped to 3900 tons (Sali 900 ton and Boro Paddy 3000 ton) with another 80 tons of mustard.

The intervention of STW, coupled with other programs of GoA dove-tailed in the farm-field, changed the life of the small & marginal farmers of the village. The community tank within the farm field, which was adopted by the farmers seeing a nearby demonstration on a community tank by the AACP, is another example of adoption.

b) **Citronella Intercropping in PPP Mode for Income Generation of JFMC**

Citronella Intercropping PPP Mode of Income Generation Activity - A Case Study

Citronella oil is also a plant-based insect repellent, obtained from the leaves and stems of different species of Cymbopogon/lemongrass. Project facilitated intercropping of Citronella grass, within the plantations created under AACP, for utilizing the interspaces between the planted seedlings, to create additional benefits to the JFMCs. Under Parbatjhora Forest Division, four JFMC namely Kharkhari, Panijani and Khoraghat raised 25 ha each of citronella plantation in the interspaces of the plantations, as intercropping during the year 2013. The JFMCs signed an agreement with a private partner, Aroma India Private Limited, Guwahati for providing quality seedling, technical guidance of plantation, harvest, and oil extraction technique, and also a buy back agreement of citronella grass or oil. JFMCs set up a Distillation Unit within the Parbatjhora Division at Khoraghat JFMC in May 2014. While the Distillation Unit was provided by the private partner, the works relating to shed, water facility and the electricity connection were executed by JFMCs with the own contributions. The citronella leaf is transported from two JFMCs viz., Panijani and Kharkhari as they are located away from the Distillation Unit. On an average, every 45 days one cutting is done which gives 4.3 Quintal /ha leaf and on an average 3 kg oil is extracted from the same. For every kg of oil, Rs.800 is provided by the private partner.



c) **Spearheading the next green revolution**

The Project has helped farmers tap groundwater, adopt high-yielding varieties of seeds, upgrade farm technology, and diversify into high-value crops. Yields, incomes and marketable surpluses have risen substantially. The state has become self-sufficient in rice for the first time in decades and the output of milk and fish has increased.



d) **A small step reaped overwhelming benefits – Goatery program of ATMA**

**Dreams are meant to be fulfilled
only the path towards it has to be discovered**

Sometimes little effort brings volumes. Rearing of domestic animals is an important element associated with rural population. This sector needed a small but effective support to become a part of the overall development process in the State.

The goatery demonstration program of ATMA has been a huge success, due to the technical inputs and support provided. The first Goataery upgradation program under the ATMA was implemented by the Jorhat-ATMA at Bogar-gaon village under the Titabar sub-division.

Bogar-gaon is a small village having about 615 households and of the same about 200 household rears indigenous goats. During the year 2006-2007, thirteen numbers of Beetle Bucks, costing each for an amount of Rs.4050/- were provided to the farmers of the village. One such Beetle Buck was provided to Shri Bijit Tamuli, 36 years old man, from the village in March 2007, who has now become an icon of goatery scheme in the State.

Shri Tamuli has earned Rs.18,450/- by way of providing Insemination service through the Beetle Buck provided to him. Till March 2011, Shri Tamuli's Buck provided service to 615 local goats of the village and as a result, total 918 up-graded kids were born. Of the same, 104 kids were sold @ Rs.2000/- each, resulting in incremental income of Rs. 2 lakhs to the farmers of the Bogargoan village.

The rest 814 grown-up cross breed goats were sold, each weighing 12 Kg, which is 4 kg more than the local breed. This resulted in an incremental income of Rs.6,51,000/- to the farmers. Thus the scheme resulted in earning of about Rs. 9 lakhs over a period of three years, from a mere investment of Rs.4,050 only.

This small but creditable step proved a boon in the Goatery sector of Assam and subsequently this model of goatery demonstration was replicated throughout the State through the ATMA program



e) Collective Fishing changed their lifestyle

AACP Kalong Kapili Group

Armed with abundant zeal, a few enterprising young men have made tremendous headway in transforming the economy of an area within a short span of time. Eight educated youths of Bagibari village under Dimoria Development Block of Kamrup (M) District, who were unemployed till a few years ago, now support their families by composite fish farming and have empowered many others to augment their income through pisciculture activities.

People of that area have for long suffered from limited economic opportunities. The settlement called Bogibari contains a number of low-lying areas, some of which have ponds where the owners were raising fish by traditional methods. Realizing their potential, the eight youths approached the local Fishery Extension Officer and after getting necessary advice they applied to the District Fishery Officer, became a beneficiary group under Farmers Pond development program by the name of 'AACP Kalong Kapili Group'.

They started to modify their ponds, comprising a total water area of 1.75 ha, into deeper water bodies during financial year the FY 2006-07, and started pisciculture along the scientific lines established by the project. The group was given field oriented training and continuous hand holding by the Fisheries Department on technical inputs during the support year. The intervention yielded overwhelming results in enhancing fish production and productivity – to 4.2 ton/ha/year from a mere average yield of 0.8 ton/ha/year. After the one-off support year, the group has been able to sustain the same level of yield on their own.

The eight intrepid youth are now recognized as a pioneer of 'Blue Revolution' in the area. This youth group, having formed a NGO in the name of Kalong Kapili" and registered themselves under the Societies Registration Act to have a legal identity of their association.

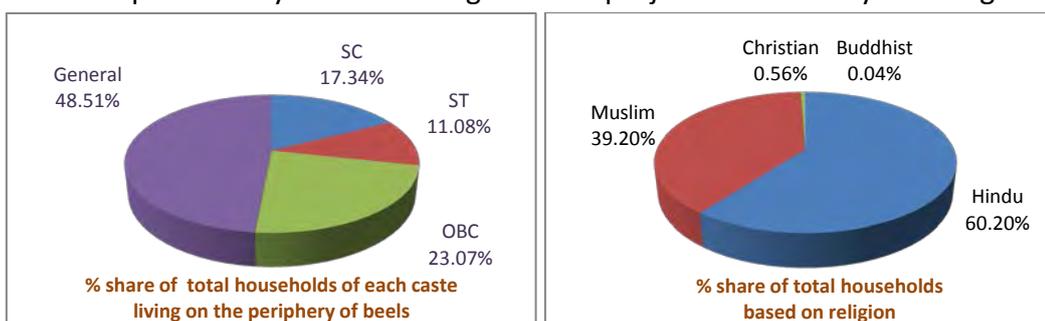
The biggest challenge to the local people was to secure loans, as the commercial Banks were reluctant to believe that such a low lying area could be developed to produce such high level of production. By closely observing the success story of the eight youths, the Sonapur Branch of Assam Gramin Vikash Bank, came forward to sponsor fishery schemes in the area covering a total water area of about 50 ha. This was a crucial and significant step for other farmers of the area, enabled them to invest in the pisciculture activities. The interesting aspect is the involvement of women (20 %) in the pisciculture activities, who have come forward to tap greater economic opportunities compared to their male counterparts. Today, the fish farmers of this locality feel more self-assured and are motivated to embrace newer methods of fish farming.

With the confidence bred by success, the members of Kalong Kapili successfully implemented four innovative project including 'replacement of bottom dweller fish by fresh water prawn' with the financial support of NABARD with significant replication.



18. Some of the Studies undertaken

- (a) **Biodiversity assessment of Beel fisheries: Beel fisheries in Assam are rich in fish biodiversity resource.** The publicly owned beels which are presently not in use for generations and mostly thickly infested with weeds and lying unutilized were taken up for development under the project. However, biodiversity status was needed to be studied to know their grading before taking up development interventions. Accordingly, the Institute of Advanced Studies in Science & Technology, Assam was engaged under the project on consultancy basis. The Consultant studied the beel fisheries in different districts with observation that the beels fall under Grade III category of biodiversity status. This indicated clearance from biodiversity point of view for taking up development interventions.
- (b) **Establishment of population of Exotic carps with special reference to Common carp, Grass carp and Silver carp in the natural water bodies of Assam:** Another study was undertaken on with consultancy services by Central Inland Fisheries Research Institute (CIFRI), ICAR, Kolkata. CIFRI studied 45 beel fisheries in Assam in different seasons and came out with the findings that these three exotic carps have not established in any of the open water bodies in Assam even though these are regularly stocked for enhancement of fish production. The beel fisheries developed under the project were however not stocked with the exotic carps so far.
- (c) **Demographic survey of the Beel Fisheries (Oxbow lakes) in the State of Assam:** Beels are considered as the granaries of fish in the State, as it is the most important and widely available potential source of fish. Being a common property resource, beels are required to be developed through community based management practices with adoption of modern pisciculture methods and technologies. Development, conservation, and sustainable management of the beels, maintaining the bio-diversity aspects, need direct involvement of the communities and fish farmers living around the beels and for which, understanding their demographic profile is utmost essential. Considering this vital requirement, AACCP has taken up a Study to understand the demographic pattern of the communities dwelling upto 2.0 km from the periphery of almost all the beels in the State having water are of above 5 ha. Total 1098 beels covering an area of 30,944 ha and 2,84,021 households were surveyed within a period of three months, through 222 enumerators provided by NGOs working with the project within a very limited given time.



The findings of this Study together with software based data-base will facilitate the State Government in understanding the demographic pattern of the communities residing on the periphery of the beels, and to adopt appropriate Policy initiatives for developing the beel fisheries sector and in formulating schemes for increasing the fish production & productivity in the State and thereby provide alternate livelihood support to the communities.

- (d) Study of the peri-urban dairy farms for improving quality of milk & environment:** International Livestock Research Institute (ILRI) for assisting the Dairy Development Directorate in developing the traditional milk distribution system by conducting a comprehensive study on the dairy sector of Assam with special reference to producers, consumers, and milk agents and to identify and analyse the related issues. The objective of the study was to identify some major Dairy farms in the peri-urban areas of Assam with milk production and marketing potential of the Dairy products & to conduct a detail study of present milk production system of the peri urban localities of Assam with reference to the system of clean milk production, hygienic measures followed by milk producers, practices followed in milking of Animals, cleaning of milk vessels, condition of the barn, personal hygiene of the milker, location of the dairy farms with respect to the provisions, feed storage and other solid & liquid waste disposal system followed. The findings of this study have helped the project in promoting clean milk production and the Dairy Development department has used the findings to set priorities of their own programs.
- (e) Comprehensive Market study of Agriculture & Horticulture Sector and agricultural commodities of Assam:** AACP collaborated with the National Institute of Agricultural Marketing (NIAM), Jaipur, a reputed National level Institute of the Government of India, for a consultancy assignment relating to conducting a comprehensive Market study of Agriculture & Horticulture Sector and agricultural commodities of Assam. The contract was signed with NIAM on 12th December 2006. The objective of the Study was to identify the major production centres in the State, conduct a survey on important agriculture & horticulture crops, livestock, fish and milk in Assam to build up a pool of market knowledge, the production resources in the state and on markets, product flow channels, demand and the requirement and prospects for the individual products, To collect information on important agri-businesses, traders and relevant trader associations, and to prepare market intelligence document. The report submitted NIAM has been has paved the way for a project being considered by the GoA with funding from NABARD to develop the infrastructure of all the rural markets in Assam
- (f) List of some other studies undertaken**
- Review of Existing Forest Acts, Rules, Regulation and Policy Development to strengthen Community Natural Resources Management in Assam.
 - Energy Study with Special Reference to Wood Balance Situation in Assam

- Study on Livestock and Grazing in forest and forest fringe areas in Assam
- Study on Formulation of a Marketing Framework, Training and Extension Support to JFMCs on Marketing of Non Timber Forest Products
- Study on the Status & Evaluation of Peoples' Nurseries Created By JFMCs under AACP
- study on variations in group formations rates across JFMCs under NaRMIL
- Study on the safe yield of ground water in the State (2004)
- Revisit the Study on the safe yield of ground water in the State (2011)
- Biodiversity Issues Associated with Wetlands of Assam
- Study to assessed the sustainability of the various components implemented under AACP
- Study on the Effect of Increasing pattern of Uses of Fertilizers, Pesticides and other Chemicals in Farmers Field of Agriculture in Darrang, Barpeta, Nagaon and Kamrup Districts of Assam (2004)
- Revisit Study on the Effect of Increasing pattern of Uses of Fertilizers, Pesticides and other Chemicals in Farmers Field of Agriculture in Darrang, Barpeta, Nagaon and Kamrup Districts of Assam (2014)

19. Annexures

19.1 Brief Profile of Assam

Sl.	District	Geog. Area (Sq Km)	Total population (No.)	Density of population per Sq. Km	Decadal population growth	Civil Sub-division (No.)	CD Block (No.)	Panchayat (No.)	Village (No.)	Gross Cropped Area	Net Cropped Area	Cultivable waste Land	Fallow land
1	Baksa	200750	953773	475	11.17%	2	5	-	690	137955	66085	420	3
2	Barpeta	267733	1693190	632	21.40%	2	12	129	835	264732	159311	1290	1305
3	Bongaigaon	172529	732639	425	19.58%	2	6	65	563	104698	67635	3900	9221
4	Cachar	378600	1736319	459	20.17%	2	15	163	1040	160728	115386	2037	12922
5	Chirang	197480	481818	244	11.26%	1	1	-	508	89679	46767	1133	121
6	Darrang	185058	908090	491	19.51%	1	5	76	561	154137	103833	3879	17763
7	Dhemaji	323700	688077	213	20.30%	2	5	65	1319	120243	67506	17064	8882
8	Dhubri	166410	1948632	1171	24.40%	3	14	168	1091	172980	134349	3872	16023
9	Dibrugarh	338100	1327748	393	12.04%	1	7	93	1348	161031	139498	7126	3276
10	Dima Hasao	488800	213529	44	13.53%	2	5	-	695	56483	28171	-	-
11	Goalpara	182400	1008959	553	22.74%	1	8	81	829	131800	80753	675	559
12	Golaghat	350200	1058674	302	11.88%	3	8	102	1125	184885	119046	5801	4555
13	Hailakandi	132700	659260	497	21.44%	1	5	62	331	73246	50294	275	558
14	Jorhat	285100	1091295	383	9.21%	3	8	110	848	177377	120240	6686	12273
15	Kamrup (Metro)	348377	1260419	362	18.95%	1	2	14	216	181015	177254	3225	1132
16	Kamrup (Rural)	62718	1517202	2419	15.67%	2	15	146	1068	48561	43317	251	867
17	Karbi Anglong	1043400	965280	93	18.69%	3	11	-	2921	202564	126399	-	-
18	Karimganj	180900	1217002	673	20.74%	1	7	96	936	103474	76035	2100	72
19	Kokrajhar	316544	886999	280	5.19%	3	5	-	1068	179533	86556	2065	2243
20	Lakhimpur	227700	1040644	457	17.06%	2	9	81	1184	206501	100169	2030	3780
21	Morigaon	155100	957853	618	23.39%	1	5	85	632	126417	92011	960	8363
22	Nagaon	397300	2826006	711	22.09%	3	18	239	1412	289212	235626	3523	4383
23	Nalbari	100957	769919	763	11.74%	1	7	65	456	113916	67730	1107	3401
24	Sivsagar	266800	1150253	431	9.37%	3	9	118	875	146734	136822	1820	7641
25	Sonitpur	528058	1925975	365	15.67%	3	14	158	1876	265397	165141	227	5833
26	Tinsukia	379000	1316948	347	14.51%	3	7	86	1168	146916	104714	1586	2876
27	Udalguri	167394	832769	497	9.76%	2	6	-	800	159311	99949	3579	112
Assam :		7843808	31169272	397	16.93%	56	219	2202	26395	4159525	2810597	76631	128164

Source: Statistical Hand Book, Assam, 2011

19.2 Annex-1: Target & Achievement of STW, LLP, Tractors & Power Tillers

Tr: Target; Ach: Achievement; Quantity in Nos.; % of Total																						
Sl.	District	STW							LLP			Tractor						Power Tiller				
		AACP		AF		Total			Tr	Ach	%	Tr	Ach	%	AACP		Tr	Ach	%	AACP		
		Tr	Ach	Tr	Ach	Tr	Ach	%							Tr	Ach				Tr	Ach	Tr
1	Baksa	900	900	1370	1370	2270	2270	2.3%	38	38	0.2%	15	15	26	26	41	41	2%	9	9	0.8%	
2	Barpeta	4932	4932	3131	3131	8063	8063	8.1%	486	486	3%	62	62	90	90	152	152	7%	40	40	3.7%	
3	Bongaigaon	5435	5435	3088	3088	8523	8523	8.5%	397	397	3%	34	34	70	70	104	104	5%	11	11	1.0%	
4	Cachar	0	0			0	0	0.0%	1147	1147	8%	12	12	0	0	12	12	1%	45	45	4.2%	
5	Chirang	1637	1637			1637	1637	1.6%	34	34	0%	29	29	0	0	29	29	1%	16	16	1.5%	
6	Darrang	2993	2993	1850	1850	4843	4843	4.8%	270	270	2%	60	60	53	53	113	113	5%	42	42	3.9%	
7	Dhemaji	406	406			406	406	0.4%	838	838	6%	29	29			29	29	1%	12	12	1.1%	
8	Dhubri	8685	8685	5200	5200	13885	13885	13.9%	1719	1719	11%	84	84	87	87	171	171	8%	82	82	7.6%	
9	Dibrugarh	949	949			949	949	0.9%	330	330	2%	31	31			31	31	1%	56	56	5.2%	
10	Goalpara	8144	8144	3630	3630	11774	11774	11.8%	358	358	2%	72	72	70	70	142	142	7%	92	92	8.5%	
11	Golaghat	682	682			682	682	0.7%	880	880	6%	22	22			22	22	1%	40	40	3.7%	
12	Hailakandi	10	10			10	10	0.0%	1021	1021	7%	5	5			5	5	0%	58	58	5.4%	
13	Jorhat	541	541	605	605	1146	1146	1.1%	510	510	3%	85	85	50	50	135	135	6%	80	80	7.4%	
14	Kamrup	5856	5856	3575	3575	9431	9431	9.4%	1008	1008	7%	104	104	174	174	278	278	13%	6	6	0.6%	
15	K-Anglong	596	596			596	596	0.6%	1404	1404	9%	8	8			8	8	0%	61	61	5.6%	
16	Karimganj	0	0			0	0	0.0%	1060	1060	7%	12	12			12	12	1%	93	93	8.6%	
17	Kokrajhar	1270	1270			1270	1270	1.3%	375	375	2%	40	40			40	40	2%	8	8	0.7%	
18	Lakhimpur	1428	1428			1428	1428	1.4%	439	439	3%	92	92			92	92	4%	10	10	0.9%	
19	Morigaon	2132	2132	2248	2248	4380	4380	4.4%	118	118	1%	32	32	65	65	97	97	5%	33	33	3.0%	
20	N.C. Hills	0	0			0	0	0.0%	565	565	4%	0	0			0	0	0%	0	0	0.0%	
21	Nagaon	7139	7139	9438	9438	16577	16577	16.6%	449	449	3%	80	80	244	244	324	324	15%	124	124	11.4%	
22	Nalbari	2028	2028	1380	1380	3408	3408	3.4%	201	201	1%	41	41	64	64	105	105	5%	21	21	1.9%	
23	Sivasagar	399	399			399	399	0.4%	327	327	2%	14	14			14	14	1%	64	64	5.9%	
24	Sonitpur	2352	2352	3845	3845	6197	6197	6.2%	609	609	4%	46	46	44	44	90	90	4%	11	11	1.0%	
25	Tinsukia	805	805			805	805	0.8%	537	537	4%	52	52			52	52	2%	27	27	2.5%	
26	Udalguri	681	681	640	640	1321	1321	1.3%	100	100	1%	23	23	28	28	51	51	2%	43	43	4.0%	
		60000	60000	40000	40000	100000	100000	100%	15220	15220	100%	1084	1084	1065	1065	2149	2149	100%	1084	1084	100%	

19.3 Annex-2: District wise details of Micro Watershed Drainage Programme

SL	District	Block	Village	Name of MWDP	Nos. of beneficiary	Effected area (Ha)	Year	Total Cost (Rs)
Under AACP For the year of 2004-05 to 2011-12								
1	Barpeta	Basali	Barbatabari, Barnalikuchi	Sarengpuria	250	291	2005-06	283226
2	Bongaigaon	Boitamari	Pachagaon	Pachagaon	134	194	2006-07	134220
3	Cachar	Narsinapur	Jibangram	Jibangram	73	237	2007-08	320993
4	Cachar	Banskandi	Nagabasti, Ujantarapur	Tarapur	167	399	2005-06	499502
5	Cachar	Narsinapur	Kazidhar Pt-I, II, III	Gajalikhali	106	660	2005-06	762972
6	Cachar	Borkhola	Borbond, Boundarybasti	Borbond	167	372	2007-08	502024
7	Cachar	Palonghat	Ganganagar	Ganganagar	146	365	2006-07	535856
8	Cachar	Sonai	Tillagram, Dakhin Mohanpur	Tillagram	105	515	2005-06	319912
9	Darrang	Odalguri	Bogariguri	Lusigaon	100	290	2006-07	354934
10	Darrang	Pachim Mangaldoi	Pachim Mangaldoi	Kundar Duva	310	496	2006-07	339471
11	Darrang	Sipajhar	Hatimora, Nagaon Dogiapara	Nagaon Dogiapara	275	273	2007-08	351810
12	Darrang	Sipajhar	Hatimora, Niz Sipajhar	Bothajan	305	488	2007-08	681590
13	Darrang	Sipajhar	Gakhirkhowa para	Larukhudajan	420	445	2006-07	569713
14	Dhubri	Mahamaya	Ghasbari, Patamari	Ghasbari	216	350	2005-06	490829
15	Dhubri	Chaparsalkona	Kumarpara, Gaurangtari	Gaurangtari	180	230	2005-06	159276
16	Dhubri	Mankachar	Araigaon	Aratgaon	75	485	2005-06	669401
17	Dhubri	Agomoni	Jhaskhal-I, II, Ramraikoti	Jhaskhal	210	380	2005-06	529300
18	Dibrugarh	Joypur	Dayang, Gojpuria	Dayang Sessabeel	152	165	2005-06	257450
19	Goalpara	Kuchdhowa	Moiskhuli	Moiskhuli	77	130	2006-07	163800
20	Hailakandi	Lala	Purbakiterbond, Monacherra	Rouyarkhal	345	320	2005-06	281670
21	Hailakandi	Lala	Tantoo, Bangalpor	Landtoo Dakhin Jusnabad	255	300	2005-06	420611
22	Jorhat	Titabor	Kakotikuri	Kalajan	167	298	2006-07	410188
23	Jorhat	Chiaahikhola	Barkhat, Balichapari	Nonijan	221	426	2007-08	594430
24	Kamrup	Hajo	Tetalia	Humkhuria jan	238	224	2006-07	317062
25	Karimganj	Ramkrishna Nagar	Kalirpur, Chararpar	Khalibeel	132	286	2006-07	255400
26	Karimganj	Patharkandi	South Keuti, North Keuti	Nafatulla	420	410	2007-08	570032
27	Karimganj	North Karimganj	Chandsrikona, Dewpur	Sahalali	210	438	2007-08	306940
28	Kokrajhar	Titaguri	Katrigasha	Katriggasha-2	200	367	2007-08	455196
29	Lakhimpur	Narayanpur	No-1 Rongoti	Rongotijan	168	370	2007-08	454371
30	Morigaon	Kapili	Kahibari	Morakolong	98	100	2006-07	114934
31	Nagaon	Diulpukhuri	Milikbasti, Amtola	Milik Basti	240	300	2006-07	382916
32	Nagaon	Jujjan	Pachim Salmarjan	Pachim Solmarijan	200	250	2006-07	394590
33	Nagaon	Batadrava	Santijan	Santijan	954	572	2005-06	586316
34	Nalbari	Ghagrapara	Thanpatkuchi	Singimari	345	546	2007-08	666784
35	Sivsagar	Kheluwa	Chengalibari, Nimaigarkukh	Namajian	440	554	2007-08	638315
36	Sivsagar	Kheluwa	Knowarpur, Nagamahahal	Nakhanajan	462	515	2007-08	650830
37	Sonitpur	Barsola	Barsola, Bomasimla	Boprsola Belsiri	580	458	2007-08	262884
38	Tinsukia	Sadiya	Hasakkadambari, Navajyoti	Pachim Nala	135	235	2005-06	305200
39	Tinsukia	Margherita	Panbari, Durgabari, Barbil	Panbari Nala	325	470	2005-06	335866
40	Udalguri	Khairabari	Arengapara	Arengpara	201	235	2007-08	406523
41	Udalguri	Khairabari	Betagaon, Rangagaon	Kharupetia Nichilamari	876	415	2007-08	559868
42	Udalguri	Khairabari	Pisilapara, Singimari, Chimlibari	Pichilapara	404	526	2007-08	709766
43	Udalguri	Khairabari	Chnialpara	Chenialpara	229	535	2007-08	704617
Total					11313	15915		1,87,11,588
Under AACP -AF								
1	Baska	Goreswar	Madekata Dhepargaon	Madekatakan	535	333	2013-14	1990580
2	Bongaigaon	Manikpur	Dangaigaon	Dangaigaon	320	241.5	2013-14	1085000
3	Bongaigaon	Boitamari	Kayethpara	Sandukpara	257	248.5	2013-14	554250
4	Bongaigaon	Boitamari	Betbari, Balabari	Birinabari	316	300	2013-14	1405800
5	Cachar	Binnakandi	Binnakandi Pt-II	Indranallah	116	300	2013-14	1436000
6	Cachar	Lakhipur	Kalabil Nagapunjee	Kalabilnallah	114	350	2013-14	1417700
7	Darrang	Dalgaon	2 no. Kacharivitatop	2 no. Kacharivitatop	146	245	2013-14	1469200
8	Darrang	Kalaigaon	Golandi Habi	Golandi Habi	220	500	2013-14	2931500
9	Darrang	Pub Mangaldai	Kamarpara	Kamarpara	390	250	2013-14	1253780
10	Dhubri	Mahamaya	Rangamati	Rangamati	288	201	2013-14	1004250
11	Dhubri	Mahamaya	Tamakubari	Tamakubari	144	205	2013-14	836700
12	Dhubri	Barsingjorua	Chalakura	Chalakura	126	203	2013-14	718860
				Poyestichar				

SL	District	Block	Village	Name of MWDP	Nos. of beneficiary	Effectuated area (Ha)	Year	Total Cost (Rs)
13	Dhubri	Jamadarhat	Sarkarpara	Sakarpara	94	208	2013-14	1083900
14	Dhubri	Agomoni	Bauserkuti	Chandordong	112	200	2013-14	850940
15	Dhubri	Devitola	Alomganj Pt-v	Alomganj Pt-v	170	210	2013-14	698950
16	Dhubri	Barsingjorua	Salmara Pt-vi	Salmara Pt-vi	107	216.2	2013-14	812580
17	Goalpara	Jaleswar	Suparivita	Suparivita	160	237	2013-14	1394600
18	Goalpara	Jaleswar	Katarihara	Katarihara	140	206.66	2013-14	1234000
19	Goalpara	Jaleswar	Baisha	Baisha	220	220	2013-14	942100
20	Goalpara	Rongjuli	Sildubi, Nowapara	Ghogamari	143	215.8	2013-14	1099160
21	Goalpara	Jaleswar	Holdibari	Haldibari	208	242	2013-14	1132750
22	Goalpara	Kharmuza	Markula	Markula	122	215	2013-14	1220470
23	Goalpara	Kharmuza	Pakhaitary	Pakhaitary	126	238	2013-14	1121000
24	Goalpara	Jaleswar	Shialkanda	Shialkanda	260	367	2013-14	1962880
25	Goalpara	Lakhipur	Aolatoli	Aolatoli	140	232	2013-14	1240870
26	Goalpara	Lakhipur	Nikaripara	Nikaripara	97	210	2013-14	881150
27	Goalpara	Lakhipur	Pub-Simulbari	Pub-Simulbari	198	410	2013-14	1753500
28	Goalpara	Krishnai	Guria Kasaripara	Guria pakhriguri	250	332.8	2013-14	1858900
29	Goalpara	Jaleswar	Bherbhery	Bherbhery	145	215	2013-14	1032470
30	Jorhat	North West Jorhat	Saruhuj	Radhikajan	176	297.53	2013-14	984900
31	Jorhat	North West Jorhat	Neolgaon	Gorgoajan	121	200	2013-14	922280
32	Jorhat	Titabor	Sadial Gaon	Chengalijan	131	230	2013-14	1157738
33	Jorhat	East Jorhat	Halowapathar	Nagakulajan	220	299	2013-14	1566300
34	Jorhat	Kaliapani	Uttar Dulia	Koimari- Bogorijan	256	273	2013-14	1446700
35	Jorhat	East Jorhat	Deogharia	Deoghariajan	175	232	2013-14	1083300
36	Jorhat	North West Jorhat	Ghendhali	Gendhelijan	196	230	2013-14	1035280
37	Kamrup	Rangia	Lachi Bishnupur	Krishak-bandhu Bardoljan	220	300	2013-14	1620000
38	Kamrup	Bezera	Salmari	Dhekerajan	308	500	2013-14	2204380
39	Kamrup	Hajo	Monahkuchi	Katurajan	280	500	2013-14	2631000
40	Kamrup	Rangia	Gopalpur	Bandhuajan	160	265	2013-14	1563700
41	Kamrup	Dimoria	Ulani, Dharbam, Rabingaon	Kukurakhowajan	143	500	2013-14	2619200
42	Kamrup	Bezera	Athaboi	Dangajan	437	300	2013-14	1928240
43	Kamrup	Rangia	Kekohati, Goriakoth	Jalajan	182	300	2013-14	1667300
44	Nagaon	Barhampur	Uriagrant, Tubkai	Tubukijan	263	490	2013-14	2406000
45	Nagaon	Batadrava	Sologuri, Rajabari	Rahutijan	365	500	2013-14	2105690
46	Nalbari	Borkhetri	Darangipara, Khalihapara	Bejkuchijan	328	600	2013-14	3598800
47	Nalbari	Borigog	Barjabrihati, 2No Dhanara	Ghograjan	199	400	2013-14	1914750
48	Sonitpur	Balipara	Pakbeel, Sarupatgaon, Adabari	Pakbil Jorasor	123	394	2013-14	1917400
49	Sonitpur	Pub Choiduar	Kamdewal, Pokpara Borigaon	Dakhin Kalabari Phatehajan	115	598	2013-14	3448850
50	Sonitpur	Naduar	Sarubhogia, Santipur	Mahmora Pathar Nalakatajan	428	602	2013-14	2022350
51	Sonitpur	Choiduar	Garudhuwa Dubi	Garudhuwa Dubi	405	228	2013-14	1238550
				Total	10895	15791		7,75,06,548

19.4 Annex-3: Summary of Fishery Activities from 2004-05 to 2014-15

Year	Investment	Physical	Physical	Cost	Physical achievement Rearing tanks under beels (Ha)	Productivity (tone/ha)	Nos. of District	Nos. of Groups	Nos. of Farmers
		target(Ha)	Achievement (Ha)	(Rs. Lakhs)					
2004-05	Common interest Group(CIG)	240	240	241.45		3.33	24	167	2150
	Community Tank Group(CTG)	0	0	0		0	0	0	0
	Integrated Fish Farming(IFF)	30	30	51.92			19	67	143
	Beel Development	0	0	0		0	0	0	0
2005-06	Common interest Group(CIG)	327	326.5	328.44		3.25	23	260	3321
	Community Tank Group(CTG)	77	77.39	74.03		1.63	18	112	4673
	Integrated Fish Farming(IFF)	53	53	90.99			22	112	270
	Beel Development	0	0	0			0	0	0
2006-07	Common interest Group(CIG)	337	337	331.9		3.23	19	226	3130
	Community Tank Group(CTG)	102	101.79	96.29		1.63	17	95	2543
	Integrated Fish Farming(IFF)	28	27	48.26			15	50	140
	Beel Development	243	243.47	95.66	6.78	1	9	12	2543
2007-08	Common interest Group(CIG)	391	391	410.31		3.42	19	289	4026
	Community Tank Group(CTG)	144	144	149.99		2	12	132	4022
	Integrated Fish Farming(IFF)	44	44	94.68			16	67	230
	Beel Development	86	86	50.25	2.7	0.97	5	8	1529
2008-09	Common interest Group(CIG)	772	772	813.16		3.12	17	357	5176
	Community Tank Group(CTG)	138	138	145.47		2.5	11	116	3093
	Integrated Fish Farming(IFF)	85	85	179.29			15	80	516
	Beel Development	72	72	38.99	2.13	0.99	4	7	998
2009-10	Common interest Group(CIG)	197	197	208.2		3.27	23	139	2505
	Community Tank Group(CTG)	0	0	0			0	0	0
	Integrated Fish Farming(IFF)	0	0	0			0	0	0
	Beel Development	274	274	124.87	6.05	1	3	13	2785
2010-11	Common interest Group(CIG)	0	0	0	0	0	0	0	0
	Community Tank Group(CTG)	0	0	0	0	0	0	0	0
	Integrated Fish Farming(IFF)	0	0	0	0	0	0	0	0
	Beel Development	165	164	439.38		1.1	4	9	1869
2011-12	Common interest Group(CIG)	0	0	0	0	0	0	0	0
	Community Tank Group(CTG)	0	0	0	0	0	0	0	0
	Integrated Fish Farming(IFF)	0	0	0	0	0	0	0	0
	Beel Development	160.77	160.69	302.82		1.2	4	5	3476
2012-13	Common interest Group(CIG)	525	514	659.89		3.6	7	291	4443
	Community Tank Group(CTG)	200	175	234.35		2.2	5	144	2760
	Integrated Fish Farming(IFF)	110	104	258.78			9	86	660
	Beel Development	300	271	6.88	3.49	1.5	7	14	3582
2013-14	Common interest Group(CIG)	275	286.5	355.74		3.5	7	150	2430
	Community Tank Group(CTG)	100	125	47.85		2.2	3	30	2091
	Integrated Fish Farming(IFF)	200	198	379.98			6	89	1044
	Beel Development	400	489	532.73		1.57	9	35	7017
Total:	Common interest Group(CIG)	3064	3064	3349.09				1879	27181
	Community Tank Group(CTG)	761	761.18	747.98				629	19182
	Integrated Fish Farming(IFF)	540	540	1103.9				551	3003
	Beel Development	1700	1760.16	1591.58				103	22432
	Mini Hatchery			47.21					19
	Grand Total	6065	6125.34	6839.76				3162	72184

N.B. All field activities are completed before 2014-15.

19.1 Annex -4: Summary of the Fishery Activities under the project

Sl	District	Cumulative CIGs (FP + IFF)				Cumulative CTGs			Cumulative BDCs			Hatchery (Pvt.)	
		Groups (No)	Members of FP (No)	Members of IFF (No)	Water Area (Ha)	Groups (No)	Members (No)	Water Area(Ha)	Groups (No)	Members (No)	Water Area(Ha)	Hatchery (No)	Members (No)
1	Barpeta	115	2018	108	272.69	21	1070	26.5	5	3106	62.8	1	1
2	Baksa	7	131	29	69.52	0	0	0	1	365	9	0	0
3	Bongaigaon	47	668	216	135.35	7	798	8.79	2	240	15.8	1	1
4	Cachar	129	2178	36	273.76	8	120	12.5	3	137	104.7	1	1
5	Chirang	8	105	58	90.8	7	602	7.22	0	166	24	0	0
6	Darrang	115	1705	378	136.29	106	1749	109	1	452	5.2	1	1
7	Dhemaji	75	1038	77	93.91	7	271	12.35	4	1027	32	1	1
8	Dhubri	45	652	78	96.02	8	276	11.15	12	1665	203.4	1	1
9	Dibrugarh	31	343	8	26.22	1	15	1.58	1	211	16	0	0
10	Goalpara	66	930	373	123.02	30	796	20.27	3	76	16	1	1
11	Golaghat	60	828	44	95.4	9	107	43.85	11	2951	368.8	1	1
12	Hailakandi	50	815	45	85.24	3	60	5.8	0	0	0	0	0
13	Jorhat	99	1236	55	108.74	22	714	17.55	7	762	99.58	1	1
14	Kamrup	136	2111	302	309.52	44	501	44.77	10	820	134.47	2	2

Sl	District	Cumulative CIGs (FP + IFF)				Cumulative CTGs			Cumulative BDCs			Hatchery (Pvt.)	
		Groups (No)	Members of FP (No)	Members of IFF (No)	Water Area (Ha)	Groups (No)	Members (No)	Water Area(Ha)	Groups (No)	Members (No)	Water Area(Ha)	Hatchery (No)	Members (No)
15	Karimganj	143	2128	39	248.92	20	942	31.27	3	136	36.5	1	1
16	Kokrajhar	60	818	66	219.3	27	1188	31.65	1	487	8.76	0	0
17	Lakhimpur	177	2513	322	333.95	109	2166	111	10	2194	204.17	1	1
18	Morigaon	92	1498	168	222.95	32	910	58	12	4553	144.58	1	1
19	Nagaon	147	1946	200	176.34	30	4856	19.38	7	650	51.45	1	1
20	Nalbari	28	364	249	205.56	42	699	70	7	1816	184.95	1	1
21	Sivsagar	84	885	6	66.06	5	30	4	2	413	33	1	1
22	Sonitpur	54	639	30	76.04	76	927	109	1	205	5	1	1
23	Tinsukia	53	800	72	68.35	5	192	0	0	0	0	1	1
24	Udalguri	58	832	44	70.3	10	193	5.55	0	0	0	0	0
Total		1879	27181	3003	3604.25	629	19182	761.18	103	22432	1760.16	19	19

N.B. All field activities are completed before 2014-15

19.2 Annex-5: ATMA wise cumulative Physical progress from 2006 – 2014-15

Quantity in Nos.

ATMA	Trainings	Demonstration laid out	Field days	Exposure visits/ Market study visits
Kamrup	1462	4813	384	112
Nagaon	3223	7108	1618	226
Sonitpur	2492	3782	1007	107
Jorhat	917	4140	355	375
Barpeta	1762	3951	290	107
Hailakandi	831	1148	150	33
Nalbari	682	2769	262	139
Dhemaji	550	1336	397	35
Dibrugarh	830	2550	322	128
Dhubri	1189	4558	1281	166
Karbi- Anglong	1212	4969	563	31
Baksa	204	633	100	0
Total	15354	41757	6729	1459

19.3 Annex-6: ATMA wise additional production & income accrued by farmers

District	Nos. of Demos	Area (Ha)	Farmers involved	Additional production (MT)	Additional income (Rs. in Lakhs)
Kamrup	3522	1350.46	7239	4469.10	499.68
Nagaon	7608	3530.32	12257	7644.98	755.85
Sonitpur	2830	1547.48	6244	7168.16	651.29
Jorhat	3702	1375.11	9973	4193.33	600.87
Barpeta	2259	988.20	4733	2959.12	300.00
Hailakandi	835	391.20	1738	790.96	74.67
Dhemaji	832	235.70	1096	657.51	70.11
Nalbari	2143	633.29	2929	1797.99	154.03
Dibrugarh	1012	670.89	2081	1736.85	167.22
Dhubri	3743	2550.35	6510	3563.40	444.42
Karbi Anglong	4881	2479.52	6041	4121.66	347.50
Baksa	467	196.10	581	492.32	72.82
Total	33834	15948.62	61422	39595.37	4138.44

19.4 Annex-6A: Adoption of Demonstrations and additional production & income

District	Adoption of demonstrated technologies		Additional production (MT)
	Nos. of Farmers	Area in ha.	
Kamrup	2982	982.60	2162.60
Nagaon	468377	128013.54	102609.58
Sonitpur	23835	6596.45	18402.29
Jorhat	34795	6808.30	8554.97
Barpeta	7465	2163.67	7718.96
Hailakandi	8759	1562.10	3984.64
Dhemaji	6363	1529.86	2719.25
Nalbari	6873	1465.10	4473.84
Dibrugarh	2722	1057.33	2597.79
Dhubri	16646	4561.70	7392.13
Karbi Anglong	10703	4093.95	8266.79
Baksa	616	253.00	313.53
Total	590136	159087.60	169196.35

19.5 Annex-6.B: Status of Training Conducted by the SAMETI

Since inception in June, 2011 SAMETI, Assam conducted 42 Off-Campus & 45 nos. On Campus training programmes, total nos. of 3480 extension functionaries participated in the training programme. These include Project Director/ Deputy Project Director, Block Technology Team (BTT) - Convenor/Member, Block Technology Manager (BTM), Subject Matter Specialist (SMS) in Agriculture, Veterinary and Fishery sectors in District / Development Block area.

a) Year wise training conducted by SAMETI since inception (2012-13)

Year	Training Conducted		Total	Participants	
	Off Campus	On Campus		Target	Attended
2012-13	28	5	33	1600	1436
2013-14	14	18	32	1568	1484
2014-15	0	22	22	638	560
Total	42	45	86	3806	3480

b) Programme conducted during 2012-13:

- **Off-Campus Training**

#	Title of the Courses	Participants	
		Target	Attended
1	Orientation program on Extension Reforms & Preparation of Block Action Plan(BAP)	600	580
2	Implementation of BAP	600	500
	Total	1200	1080

- **On Campus Training**

#	Title of the Course	Participants	
		Target	Attended
1	Preparation of Block Action Plan and Maintenance of Accounts	120	108
2	Promotion of Farmers' Organization such as Community Interest Group/Farmers interest Group/Women Interest Group	80	76
3	Human Resource Management for Extension Functionaries	80	68
4	Interface between Extension Education Institute, Jorhat & SAMETI's of NE Region	80	76
5	Public-Private Partnership in Agricultural Extension	40	28
	Total	400	356

c) Programme conducted during 2013-14

- **Off Campus**

#	Title of the Training	Participants	
		Target	Attended
1	Revisiting of Strategic Research Extension Plan (SREP)	770	770

- **On Campus**

#	Title of the Training	Participants	
		Target	Attended
1	Training Planning & Training Module Development. (Collaborative with MANAGE)	40	28
2	Scope of Public Private Partnership in Agricultural Extension.	40	36
3	Farm Based Enterprises for empowerment of Farm Women & unemployed women youth.	40	34
4	Basic Accountancy and Financial Management.	120	108
5	Promotion of Farmers Organization such as CIG/FIG/WIG.(Collaborative with EEI)	40	34
6	Production of Quality Planting Material of Horticultural crops & Improved Practices for Homestead (Bari) Gardening.	40	34
7	Information & Communication Technology (ICT) Application in Extension Reforms. (Collaborative with MANAGE)	40	43
8	Training to level-1 officers of Kisan Call Centre.	8	8
9	Linking Farmers to Market(Collaborative with MANAGE)	40	40
10	Scientific Rearing of Goats & Pigs	40	40
11	Scope of Commercial Floriculture Development in Assam	40	40
12	Self management through personal Profiling(Jointly with MANAGE)	30	30
13	Use of Alternate Source of Phosphorous instead of DAP	40	34

#	Title of the Training	Participants	
		Target	Attended
14	Advanced training on Integrated fish farming	40	27
15	Soil Health Management for better crop productivity	40	27
16	Mitigation of Drought through crop diversification.	40	30
17	Post Harvest Technology and value addition of Horticulture crops.	40	29
18	Low Cost naturally ventilated poly house techniques for off season vegetable cultivation.	40	29
19	Low cost rural model fish hatchery establishment and management	40	34
	Total	798	714

d) **Programme conducted during 2014-15**

#	Subject	Total Participants	Male	Female
1	Success Story writing (Collaborative with MANAGE)	29	24	5
2	Gender sensitization & mainstreaming gender in Agriculture & allied sectors(Collaborative with MANAGE)	24	15	9
3	Farm based enterprises for empowerment of farm women & unemployed women youth	28	19	9
4	Prospect of Spice cultivation, value addition & marketing	25	17	8
5	Advances in Scientific rearing of poultry	28	18	10
6	Low cost naturally ventilated poly house technique for better plant material	28	23	5
7	Methods & tools for effectiveness of training programme (Collaborative with EEI)	31	26	5
8	Orientation Programme for newly appointed BTM/SMS(Workshop)	24	9	15
9	Technique for budding, grafting and layering of Horticultural crop	25	18	7
10	Soil health management for better crop productivity	25	20	5
11	Post harvesting technology, value addition & marketing of Horticultural crops	23	20	3
12	Training to Level-1 expert of Kisan call centre	7	6	1
13	Low cost feed production technology for poultry & fish	28	22	6
14	Advances in INM & IPM for crop protection & productivity	27	24	3
15	Seed production technology & certification for rice/mustard/pulse	24	22	2
16	Integrated disease management of flowers & vegetables	25	20	5
17	Mitigating drought through crop diversification	24	9	15
18	Advances in integrated fishery development programme	26	17	9
19	Advances in scientific rearing of pigs, goats and rabbit	26	19	7
20	Advances in pulse & oil seed production technology	25	16	9
21	Formation & Promotion of Farmers Organization (Collaborative with EEI)	32	20	12
22	Advance Training programme on Nursery Management	26	13	13
	Total	560	397	163

19.6 Annex-7: Report on the Adaptive Research conducted by AAU

a) Under Adoptive Research the AAU identified Krishi Vigyan Kendras (KVKs) and Regional Agricultural Research Stations (RARSs) (named as Field Centre under AACP) in 11(eleven) ATMA districts of the state and started PRA exercise in collaboration with the line departments to find out research needs from the grass-root level. After the PRA exercises, all line departments, i.e., Agriculture, veterinary, Fisheries, Dairy Development, and AAU jointly formulated the District Agricultural Development Strategy (DADS) for 11 ATMAs. Accordingly, the AAU had implemented seven research projects/studies as given below

1. Demonstration and refinement of bio-fertilizer and improved compost based integrated nutrient management in rice-based cropping system
2. Botanicals and parasitoids for management of rice pests
3. Evaluation of seed storage practices of paddy, wheat and pulses under upper and central Brahmaputra valley zones of Assam
4. Effect of processed low cost diets utilizing agricultural/forest by-products and crop residues on growth, milk production, and nutrient utilization in cattle.
5. Utilization of homestead ponds for culture of small fish species
6. Use of information technology for dissemination of agricultural technologies
7. Impact analysis of technology intervention under AACP

b) Project 1: Demonstration and refinement of bio-fertilizer and improved compost based integrated nutrient management in rice-based cropping systems

Objectives

1. To demonstrate bio-fertilizer- based INM in rice system and adjust the dose of improved compost for different agro-climatic zones.
2. To demonstrate improved compost production technique involving available raw materials (rice straw, weed biomass, *Azolla* etc.) along with CDM, SSB and Nitrogen fixing bacteria
3. To develop suitable bio-fertilizer as component of INM for toria and wheat and subsequent demonstration of INM package in rice-toria and rice-wheat sequence
4. To optimize the bio-fertilizer, organic manure and mineral fertilizer component of the INM for rice toria and rice-wheat system.

Salient findings

1. 34 nos. of efficient strains of nitrogen fixing microorganisms were isolated from the rhizosphere of different crops. Among them 9 isolates were *Azospirillum*, 12 isolates were *Azotobacter*, 13 isolated were *Rhizobium*. Besides, 31 phosphate solubilizing microorganisms, 3 silicate solubilizing and 4 cellulose degrading microorganisms were isolated.
2. With the most potential isolates, biofertilizer formulations were developed.
3. Following in-station and on-farm experimentation with the biofertilizer formulations, Biofertilizer Based Integrated Nutrient Management (BINM) Package for rice based cropping system has been standardized and recommended to the farmers for large scale adoption. Besides its benefits in terms of soil health, long term yield sustainability, environment friendliness etc. this package reduces the cost of cultivation by more than 30 per cent with productivity at par with application of recommended fertilizer dose in the form of inorganic fertilizers.
4. Trainings and demonstrations were organized for developing awareness among the farmers about the benefits of BINM and organic farming. A total of 400 farmers have been trained on various aspects of organic farming and numbers of demonstrations were organized with positive impact on the participating and neighbouring farmers.
5. The methods for homestead cultivation of *Azolla* have been standardized and popularized among the farming community of North East through trainings and demonstrations. Techniques for aerobic composting have also been standardized and popularized.

Follow-up action

1. Arrangement has been made in the University for large-scale production of biofertilizers and other organic fertilizers including *Azolla*, enriched compost, vermin-compost etc.
2. Private partners have been roped in for production of the biofertilizers in commercial scale in PPP mode.
3. The BINM based package of practice and organic fertilizers are being promoted by the extension network of the university (mainly KVKs) as well as by the Department of Agriculture. As a result of such efforts, biofertilizers and organic fertilizers are being increasingly utilized by the farmers for crop production with multiple benefits – reduction in cost of cultivation, improvement of soil health, reduced health and environment hazards, enhanced fertilizer use efficiency etc.

c) Project 2: Botanicals and parasitoids for management of rice pests

Objective

1. To determine an effective dose of *Chromolaena odorata* for rice pests management and to assess its compatibility with *B. bassiana* and parasitoids.
2. To develop techniques for mass rearing of *Trichogramma* sp. and *B. hispae*
3. To develop an effective management strategy for the pests of rice in rice-rice ecosystem.

Salient findings

1. Bioassay of the extracts from *Chromolaena odorata* was conducted on the tea mosquito bug, *Helopeltis theivora*, a sensitive insect for determining bioactivity of botanicals (Hazarika *et al.* 2007). Comparison of data collected with rice leaf folder, *Cnaphalocrosis medinalis* and *H. theivora* showed that the methanol extract @ 1.0% concentration recorded the highest mortality (53.33±6.67%) of *C. medinalis* at 3 days after treatment (DAT) as against 46.67±6.67% in *H. theivora*.
2. The solvent extracts of *C. odorata* were toxic to the parasitoid of rice yellow stem borer, *Trichogramma japonicum* at 24 hours after treatment (HAT) in the order of petroleum ether extract (28.33±1.67%) < acetone extract (30.00±0.01%) < water extract (40.00±2.89%) < methanol extract (43.33±3.33%) < chloroform extract (65.00±2.89%).
3. Compatibility test of *C. odorata* with *B. bassiana* was carried out in the laboratory. The data so obtained confirmed that all the solvent extracts except the chloroform were compatible with the entomogenous fungus. Water extract proved to be highly compatible with 22.17±1.17 mm radial growth of AAU strain of *B. bassiana* and chloroform being the least with 0.833±0.83 mm at 21 days after treatment.
4. Dry leaf powder of *C. odorata* alone or in combination with *Beauveria bassiana* was tested for the bioactivity against the rice weevil, *Sitophilus oryzae*, an important storage pest of rice and *C. odorata* leaf was found to be having antifeedent properties against the pest. *B. bassiana* in combination with the *C. odorata* was best in controlling the pest recording 100.00±0.00% mortality at 20 DAT. This Technology has been further tested in the laboratory for protecting rice in storage. This also confirmed the efficacy of the technology for recommendation and promotion.

Follow-up action

1. The botanical derived from *Chromolaena odorata* are being tested against other important insects of rice such as hispa.
2. Bioformulation based on *Beauveria bassiana* has been developed.
3. The bioformulation is being produced in the University and also in PPP mode in large scale and is being promoted among the farmers.

d) Project 3: Evaluation of seed storage practices of paddy, wheat and pulses under upper and central Brahmaputra valley zones of Assam

Objective

1. To demonstrate the suitability of improved storage structures for safe storage of paddy, wheat and pulses for different agro climatic zones of Assam.
2. To evaluate periodically the seed health status of freshly harvested and stored seeds of targeted farmers including seeds stored in the laboratory.

Salient findings

1. Metallic bin was found to be the best among several storage structures for storing the seeds of paddy, wheat, green gram, black gram, and rajmah followed by HDPE and polylined jute bags.

2. Germination percentage of the seeds of all the crops stored in bins was above Indian Minimum Seed Certification Standard (IMSCS) during storage, followed by that in HDPE and PLJ bags.
3. The quality of the stored seeds of paddy, green gram, black gram, and rajmah was maintained with the treatment of Malathion 5% dust @ 2.5 g/kg and Carbendazim @ 2 g/kg of seeds before storage.
4. Based on the results, it was concluded that paddy, green gram, black gram, and rajmah seeds treated with 5% Malathion dust @ 2.5 g/kg and Carbendazim @ 2g/kg provided effective management of storage insect pests and storage pathogens with germination percentage above IMSCS level when stored in metallic bin.
5. Wheat seed treated with Dimethoate 30 EC @ 2 ml/lit (5 ml/kg) followed by shade drying and then treated with Carbendazim @ 2 g/kg provided effective management of storage insect pests and storage pathogens with germination percentage above IMSCS level when stored in metallic bin.
6. Six storage pathogens e.g., *Aspergillus* sp., *Penicillium* sp., *Drechslera* sp., *Rhizoctonia* sp., *Rhizopus* sp., and *Fusarium* sp. were found to be associated with paddy, wheat, and pulses. In paddy, *Aspergillus* sp., *Penicillium* sp., and *Drechslera* sp. were identified while in wheat, *Aspergillus* sp., and *Penicillium* sp. and in pulses, *Aspergillus* sp., *Penicillium* sp., and *Rhizoctonia* sp. were identified.
7. Four storage insect pests e.g., Angoumois grain moth (*Sitotroga cerealella*), rice weevil (*Sitophilus oryzae*), maize weevil (*Sitophilus zeamays*), pulse bruchid (*Callosobruchus chinensis*) were found to be associated with paddy, wheat and pulses. In rice, Angoumois grain moth (*Sitotroga cerealella*) and rice weevil (*Sitophilus oryzae*) were identified while in wheat, rice weevil (*Sitophilus oryzae*); maize weevil (*Sitophilus zeamays*) and in black gram and green gram, pulse bruchid (*Callosobruchus chinensis*) were identified.
8. No storage insect pest was found to be associated with rajmah seeds.

Follow-up action

1. The seed bins are being promoted among the farmers under different projects, particularly, the ICAR Seed Project – seed production in agricultural crops’.
 2. Research programmes are in operation in continuation with the results obtained in the study conducted under AACCP.
- e) Project 4: Effect of processed low cost diets utilizing agricultural/forest by-products and crop residues on growth, milk production and nutrient utilization in cattle

Objective

1. Formulation of feed formula using different locally available unconventional fodder crop residues and agro-industrial and forest by-products.
 2. Preparation of complete feed in mash, pellet and expanded extruder cooking and analysis for chemical composition and tannic acid content.
 3. Feeding of different complete feeds viz. mash, pellet and expanded extrusion cooking to bull calves to study growth rate, feed intake and digestibility of different organic nutrients.
 4. Feeding of complete feed to milch animal of 2nd and 3rd lactation to study the feed intake and milk production.
 5. Economics of production.
- To demonstrate the identified complete low cost feed formula at the farmer’s level (on farm trial).

Salient findings

1. Processed Ajar seed (*Lagerstroemia flos reginae*) and Factory Tea Waste (*Camellia assamica*) can safely be used up to 25 percent in growing bull calves with economic advantage.
2. Complete feed containing Ajar seed could be incorporated up to 20 kg per 100 kg of ration after pelleting without any deleterious effect in milch animals.

f) Project 5: Utilization of homestead ponds for culture of small fish species

Objective

1. To develop breeding technology for three indigenous small fishes viz. *Amblypharyngodon mola* (Mowa), *Notopterus* (Kanduli) and *Mystus vittatus* (Singora)
2. To develop culture technology for these three species under semi-intensive system in homestead ponds.

Salient findings

1. In a survey conducted in 158 natural water bodies, *A mola* was available in optimum quantity in 66 water bodies, *N. notopterus* in 60 and *M. vittatus* in 83 natural water bodies.
2. Gut content analysis revealed green algae as the major component (70%) of the gut in *Amblypharyngodon mola* (Mowa) indicating herbivorous nature of the species. *Notopterus* (Kandui) was found to be carnivorous with bivalves, insects and shrimps as the major component in its gut content and *Mystus vittatus* (Singora) were found to be omnivorous in nature with high percentage of bivalves insects & detritus in their gut content.
3. In regard to breeding biology, all the three species attained gonadal maturation under pond conditions with semi intensive management practices. *Amblypharyngodon mola* (Mowa) and *Notopterus* (Kanduli) breed naturally under pond condition. *A. mola* found to breed thrice in a year during April-May, June-July and September-October whereas *N. notopterus* breed once in a year during May-June. Induced breeding of *Mystus vittatus* (Singora) was successfully carried out by using ovaprim injection @ 3 ml per kg body weight for female & @ 1 ml per kg body weight for male.
4. Mono culture trial of the three species revealed that out of the three species *N. notopterus* is most suitable for small pond condition. The population of *A. mola* grows faster than the other two species, as it is a prolific breeder, breeding three times in a year under small pond condition. However, the rate of survival and total production was observed to be low. Highest productivity was observed in case *N. notopterus* (6480 kg/ha) and lowest was observed in case of *M.vittatus* (550 kg/ha).

Follow-up action

1. Based on the information generated from the studies, recommendations have been formulated and are being promoted among the fish farmers
2. Follow-up research programmes are also being implemented in continuation of the research results.

g) Project 6: Use of information technology for dissemination of agricultural technologies

Objective

1. To launch a farmer friendly website containing agricultural technologies in local language where farmers from all corners of the state can have access to their required technologies by surfing the new website.
2. To connect all outstations of the university through wide area network (WAN) and operate a technology dissemination service and distance education setup through their WAN.

3. To develop different models for technology dissemination to all farming community and other agricultural related entrepreneurs through various campuses, research stations and KVKs of the university using internet.
4. To constantly update of technologies for the benefit of the farmers, entrepreneurs, stakeholders, scientists, teachers & extension functionaries.

Salient findings

1. Information Technology was taken as a tool to disseminate its important agricultural technologies amongst the farming community of Assam in particular by Assam Agricultural University (AAU). For this a website “*briddhi*” has developed exclusively on vernacular language *i.e.* Assamese language for the benefit of the farming community of Assam as well as other stakeholders. This project was supported by World Bank under Assam Agriculture Competitive Project (AACP) and was implemented under the Directorate of Extension Education, Assam Agricultural University, Jorhat, Assam. As such, this website was launched on 10th. May, 2010 by Sjt. Tarun Gogoi, Hon’ble Chief Minister of Assam and since then it is online for the use of farmers as well as other stakeholders of Assam. This website includes information on all the branches of agriculture and allied sciences *viz.*, agriculture, animal husbandry, home science, fisheries and sericulture. Published materials like leaflets, bulletins, photo packaging of technologies, package of practices of various seasonal crops, plantation crops, flowers grown in Assam, video films on different agricultural technologies, training manuals, detailed information of Krishi Vigyan Kendras (KVKs) of Assam and its activities, FAQ which includes question and answer session ask by the farmers on actual field problem faced by them, special package of practices on tea cultivation, monthly farm newsletter of AAU “ Ghare Pathare”, weather forecast facilities have been included in the website. Besides these, a search engine has also been developed and included to search various contents of the website in Assamese for person having less knowledge on information technology about browsing of contents on website. Over and above, a link has been given to view websites of national as well as internationally famous agricultural institutions for the benefit of the farming community.
 2. The website is available at URL <http://www.briddhi.aau.ac.in>
- h) Project 7: Impact analysis of technology intervention under AACP

Objective

1. To study the impact on the change in agrarian situations of the farmers
2. To study the dissemination pattern of technology in the farmers field
3. To identify the factors inducing and affecting technology adoption

Salient findings

1. The INM technology was highly productive maintaining soil fertility, suitable to land situation, remunerative, although it was found to be costlier for the farmers who were adequately informed about the cultivation & technology package through training, demonstration, and supervision of the concerned scientists.
2. Varietal Evaluation Trial indicated Jaymati as the best variety in all the villages being highly productive, fine grained, good nutrient quality, long panicle, more tillering ability, filled grain and vigorous growth ability in comparison to local Boro paddy varieties. Farmers of Borbilla & Sila villages were found to have inadequate knowledge about Varietal Evaluation Technology while farmers belonging to Bajegaon had adequate knowledge about this technology.
3. KVK, Sonitpur located at Napam conducted trials performance of submerged tolerant rice variety 'Jalkuwari', and indicated that, 80 per cent farmers reported its suitability to long submergence and 40 per cent farmers stated to have better market preference for this rice variety and 20 per cent sample farmers observed low incidence of insect pest, susceptibility to draught and

availability of seeds in time etc. However, In the study area almost all the sample farmers reported dwarf seedlings & lower yield as major problems with the adoption of rice variety Jalkuwari

4. The Pitcher drip irrigation in banana had been found to be practiced in the field of 5 sample farmers and 80 per cent of them reported to have increase in fruit size and off season production. As high as 50% farmers experienced to realize high market value for this crop even in the off season. Three major problems namely labour intensiveness, water scarcity and insect pest attack like fruit scaring beetle, pseudo stem borer etc. were experienced by banana growers in the study area. Yield variation in banana plantation within and outside demonstration has been recorded being 67.9 q/ha inside demonstration against 61.1 q/ha in outside demonstration.
5. The rejuvenation of khasi mandarin and Assam lemon orchards had been done in 5 sample farm situations by KVK. Napam with input supplementation of NPK, vermin compost, CuSo₄, lime glyphosate etc. Some of the good features of technology intervention had been reported in terms of increase in food juice content, decrease of pest and disease incidence, increased productivity and improvement in the realization of market price etc.
6. KVK, Jorhat conducted technology trials on two submerged tolerant rice varieties viz. Jalashree and Jalkuwari indicated that demonstrated varieties possess attributes like submerged tolerance, better root proliferation, profuse tillering, tolerant to pest and diseases, fine grain size, good panicle length etc. However farmer's assessment about the technology differed from village to village as it profusely depends on land characteristics and location specific constraints etc. Among the weaknesses revealed by sample farmers were the requirement of higher dose of fertilizers, susceptibility to pest and diseases, prolong water logging condition, dwarf seedling characteristics, late maturity of crop varieties etc. Characteristic differences between the two rice varieties Jalashree & Jalkuwari were also reported by the farmers in the study area. Jalashree was found to produce less tiller per plant and more susceptible to disease and dry condition compared to Jalkuwari.
7. Technology intervention by Directorate of Extension Education under AACP on different aspects such as fishery, vermin composting, commercial production of bio-fertilizers, sericulture, farm mechanization, apiculture etc. were also reviewed in the study. Various good features such as increase in family labour utilization, reduction in cost of production, more use of organic resources, harnessing off season production, devising indigenous storage structure, reduction in post harvest losses, growth of local fish farming etc. were observed in the study area.
8. The technology intervention under ATMA had been carried out in 8 Block resource Centers (BRCs) Viz. Dhekargarah, Selenghat, Baghchung, Titabor, Majuli, Ujani Majuli, Kaliapani and chipahikhula in the Jorhat district. Out of this 8 BRCs, 6 BRCs i.e. Dhekargarah, Selenghat, Baghchung, Titabor, Kaliapani and chipahikhula had been selected purposively for detailed investigation. Each BRC had given demonstration on several aspects like rice production, sericulture, piggery, goatery, duckery, vegetable production, floriculture and vermin compost etc. under guidance & supervision of ATMA.
 - A total 120 respondents including inside and outside demonstration had been interviewed in order to study the technological impact on productivity, B.C. ratio, percentage coverage of area under the specific technology intervention programme.
 - A total of 30 farmers (15 farmers each from inside & outside demonstration) engaged in piggery had been selected for the study. On comparison, the productivity level of farmers before the technology intervention, it was observed that the total profit had been raised to R. 3,39,050/- from Rs. 2,30,500/- with an increased B.C. shift of 0.2. In case of outside demonstration the total profit had also been increased to Rs. 3,50,850/- from Rs. 2,19,600/- with an increased B.C. shift of 0.3.

- In case of goatery, a total of 25 farmers (14 farmers from inside & 11 from outside demonstration) had been selected for the study. On comparison, the productivity level of farmers before the technology intervention, it was observed that the total profit had been raised to Rs. 1,81,300/- from Rs. 96,500/-. In case of outside demonstration, the total profit had also been increased to Rs. 1,35,350/- from Rs. 1,06,600/-. However the overall B.C. ratio remains unchanged.
- A total of 58 farmers (27 farmers from inside & 31 from outside demonstration) engaged to vegetable cultivation had been selected for the study. On comparison, the productivity level of farmers before the technology intervention, it was observed that the total profit had been raised to Rs. 8,26,600/- from Rs. 3,62,350/- with an increased B.C. shift of 0.9 . In case of outside demonstration, the total profit had also been increased to Rs. 6,58,210/- from Rs. 2,80,740/- with an increased B.C. shift of 0.7. However, the productivity had remarkably increased with a shift of 127.7 q/ha & 88.4 q/ha respectively under inside & outside demonstration.
- In case of rice, a total of 10 farmers (4 farmers from inside & 6 from outside demonstration) had been selected for the study. On comparison, the productivity level of farmers before the technology intervention, it was observed that the total profit had been raised to Rs. 45,250/- from Rs. 22,500/- with an increased B.C. shift of 0.6. In case of outside demonstration the total profit had also been increased to Rs. 55,800/- from Rs. 33,500/- with an increased B.C. shift of 0.3. However, the productivity had increased with a shift of 30 q/ha & 10 q/ha respectively under inside & outside demonstration.
- A total of 34 farmers (18 farmers inside & 16 from outside demonstration) engaged in potato cultivation had been selected for the study. On comparison of productivity before and after the technology intervention, it was observed that the total profit had been raised to Rs. 3,98,740/- from Rs. 2,03,100/- with an increased B.C. shift of 1.0. In case of outside demonstration, the total profit had also been increased to Rs. 2,07,450/- from Rs. 96,000/- with an increased B.C. shift of 1.1. However, the productivity had remarkably increased with a shift of 182.8 q/ha & 155 q/ha, respectively under inside & outside demonstration.
- The only technological intervention given by KVK Shillongani was the zero energy cooling chamber. The technology had been started for adaptive trial with a structural set up at a single farmer house and another at KVK farm. The review survey had been conducted from 18.05.2010 to 20.05.2010 and noticed a significant impact although the demonstration had been given an adaptive trial basis.
- In order to see the spread affect of technology intervention in Barpeta District, a sample of five farmers each from six villages that were included in the earlier survey and five fresh farmers each from the concerned villages were selected constituting a total sample of 60 farmers. It was observed that 70% farmers from all the six villages in case of earlier survey were continuing with the technology intervened while 30% farmers discontinued or abandoned the technology intervened. As on date, 60% and 40% farmers respectively continuing and discontinuing the intervened technology. On comparing among all the six villages under technology intervention, farmers' continuity of technology adoption reduced by 20 per cent in village. Helanarpam, Subha and Bajegaon while in another two villages – Borborijhar & Borbila, the farmers' sustainability of technology adoption increased by more than 20 per cent. Only in case of Sila village present and earlier status of farmers' technology intervention remained the same.
- Apart from the research projects stated above, improved and latest technologies were demonstrated to the farmers for adoption in the farmer's field as well as Field Centers.

Moreover, 22 (twenty two) numbers of training of 3 days duration each, for 550 nos. of farmers commenced from July 2008. All the 22 trainings have been completed involving 550 nos of farmers belonging to the districts of Jorhat, Sonitpur, Dhemaji, Nalbari, Karbi-Anglong, Nagaon, Barpeta, Kamrup, Dibrugarh, Hailakandi and Dhubri on improved production practices of rice, commercial cultivation of pulses & oilseeds and fruits & vegetables, commercial production of bio-pesticides, entrepreneurship development in dairy farming and fish production, TPS Production, Bee Keeping, mechanized crop production, IT for commercial agriculture, post harvest management of fruits and vegetables, market led technology and extension, vermin-compost production, bio-fertilizer production and rejuvenation of citrus orchard.

- Another 8 (eight) numbers of training conducted for Farm Women on bee keeping, kitchen gardening, food and nutrition for women, strengthening of self help group and improve method of silkworm rearing where 25 (twenty five) numbers of farm women participated in each training belonging to Jorhat, Sonitpur, Dhemaji, Nalbari, Karbi-Anglong, Nagaon, Barpeta, Dibrugarh, Hailakandi and Dhubri districts.

19.7 Annex-7.A: List of Farmers Information Advisory Centre (FIAC)

District	Sl.	Name of FIAC	Location	Contract Amount (Rs)
Cachar	1	Silchar	JDA 's Quarter Campus Silchar	702721
	2	Sonai	Agriculture Campus Sonai	638258
	3	Barjalenga	Barjalenga Dev Block	645430
	4	Narshingpur	Narshingpur Dev Block	688458
	5	Palonghat	Palonghat Dev Block	645430
	6	Binnakandi	Binnakandi Dev Block	695630
	7	Lakhipur	Lakhipur Dev. Block	695638
	8	Rajabazar	Rajabazar Dev Block	717144
	9	Banskandi	Agril. Qtr Campus at Banskandi Town	674115
	10	Udharbond	S.I.R.D Campus at Block	680570
	11	Borkhola	Bijoypur Seed Farm Campus	681287
	12	Tapang	Tapang Block. Dev Campus	652601
	13	Salchapra	Salchapara Block Dev. Campus	666944
	14	Katigorah	Katigorah Block Dev. Campus	681287
	15	Kalain	Kalain Block Dev. Campus	674038
Karimganj	16	R.K. Nagar	R.K. Nagar SDAO's Office Campus	673398
	17	Dallavcherra	Dallavcherra Dev . Block Campus	673398
	18	Patherkandi	Patherkandi Dev Block Campus	717144
	19	Lowairpoa	Lowairpoa Dev . Block Campus	717144
	20	North Karimganj	North Karimganj Dev. Block Campus	641844
	21	South Karimganj	Nilambazar Circle Office Campus	645430
	22	Badarpur	Mahakal FTS Campus	681286
Lakhimpur	23	Dhakuwakhana	SDAO'S Office Dhakuwakhana	678273
	24	Ghillamora	Ghillamora VLEW's quarter Complex	676809
	25	Boginadi	Boginadi Farming Corporation Office Complex	676904
	26	Lakhimpur	DAO's Office Campus	675016
	27	Telahi	Telahi Dev Block	679294
	28	Karunabari	Karunabari Seed Farm	678048
	29	Narayanpur	SDAO'S Office Campus	680642
	30	Naoboicha	Naoboicha Block Campus	676144
	31	Bihpuria	Bihpuria VLEW's Quarter Campus	676817
	32	Dangtol	Dangtol Dev. Block Campus	655052
	33	Boitamari	Progeny Orchard Campus , Boitamari	702413
Bongaigaon	34	Srijangram	SDAO Office campus , North Salmara Abhayapuri	682346
	35	Tapattary	Tapattary Dev. Block Campus	667292
	36	Manikpur	Manikpur Dev. Block Campus	682346
	37	Sidli	Supervisory Training Center District Center , Kajalgaon , Chirang	683100
Chirang	38	Borobazar	SDAO Office Campus , Bijni, Chirang	709100
	39	Sipajhar	Sipajhar Dev Block	625928
Darrang	40	Pachim Mangaldai	Agriculture Campus , Mangaldai	641740
	41	Kalaigaon	Kalaigaon Dev Block	649033
	42	Pub- Mangaldai	Pub- Mangaldai Dev Block	635871
	43	Dalgaon -Sialmari	Dalgaon -Sialmari Dev Block	649158
	44	Besimari	SDAO Office Campus , Dalgaon	649017
	45	Rangjuli	Rangjuli Dev .Block	712000
Goalpara	46	Kuchdhowa/ Dudhnoi	Kuchdhowa Dev Block	712000
	47	Matia	Matia Dev Block	712000
	48	Krishnai	Krishnai Dev Block	712000
	49	Balijana	Balijana Dev Block	697760
	50	Jaleswar	Jaleswar Dev Block	705749
	51	Kharmuza	Simlabari in Agri. Dept Land	705749
	52	Lakhipur	Nidanpur in Agri Deptt. Land	697760
	53	East Podumoni	District Agri.Office , Golaghat	631786
Golaghat	54	Central Kathalguri	Central Kathalguri Block Campus	631786
	55	North Dergaon	North Dergaon Block Campus	638820
	56	West Bokakhat	Sub- Divisional Agri office Campus	652271
	57	South Sarupathar	Sub- Divisional Agri office Campus	666432
	58	Morongi	Morongi Block Campus	666432
	59	Gomariguri	Gomariguri Block Campus	676919
	60	Kakodunga	Kakodonga Block Campus	638073
Kokrajhar	61	Kokrajhar	Office of the Block Dev Officer , Kokrajhar	702476
	62	Dotma	Field Trail Station , Agril . Dept, Kokrajhar	713100

District	Sl.	Name of FIAC	Location	Contract Amount (Rs)
	63	Kachugaon	Kachugaon Dev Block , Garufella	708256
	64	Gossaigaon	SDAO, Office , Gosaigaon	683100
	65	Hatidhura	Grahampur Samabay Samiti , Grahampur	703100
Morigaon	66	Mayong	Mayong Dev Block Campus, Jagibhakatgaon	661563
	67	Laharighat	Laharighat Dev Block Campus, Laharighat	711600
	68	Bhurbandha	BhurbandhaDev Block Campus, Bhurbandha	711600
	69	Kapili	Kapili Dev Block Campus , Barapujia	640440
	70	Moirabari	Moirabari Dev Block Campus , Moirabari	690252
Sivasagar	71	Khelowa	DAO Office Campus , Sivasagar	691659
	72	Demow	Demow Dev Block Campus	698556
	73	Gaurisagar	Rudrasagar G.P.Office Campus	696224
	74	Amguri	Amguri SDAO Office	698557
	75	Nazira	Nazira SDAO Office Campus	691732
	76	Lakuwa	Hollow Phukan G.P. Office Campus	698556
	77	Pachim Abhayapur	Pachim Abhayapur Dev . Block Campus	698556
	78	Sonari	Khumtai G.P. Office Campus	701339
	79	Sapekhati	Sapekhati Dev . Block Campus	701339
Tinsukia	80	Hapjan	Guijan Dev. Block Campus	685083
	81	Saikhowa	Saikhowa Dev. Block Campus	704214
	82	Kakopathar	Kakopathar Dev . Block Campus'	694017
	83	Chapakhowa	SDAO, Office Campus , Sadiya	821574
	84	Margherita	SDAO Office Campus Margherita	704387
	85	Itakhuli	Itakhuli Dev. Block Campus	689154
	86	Guijan	Guijan Dev. Block Campus	702625
Udalguri	87	Udalguri	District Agri.Office , Campus , Udalguri	624031
	88	Mozbat	Habigaon Progeny Orchard	646726
	89	Rowta	Farmers Training Campus Rowta	638073
	90	Kairabari	Kairabari Dev. Block Campus	620912
	91	Bhergaon	Sub- Divisional Agri Campus Dimakuchi	634452
Total				61844328

19.8 Annex-8A: Performance of the functioning Gopal Mitras upto 2007-08

#	District	Name of GM	GM Centre	Block	No. of AI done
1	Barpeta	Ahadul Islam	Kalgachia	Rupshi	1426
2		Dwijen Talukdar	Singimari	Bajali	1996
3		Saityaram Das	Bakua	Jalah	569
4		Rafikul Islam	Bhairaguri	Barpeta	1336
5		Alepuddin Ahmed	Kowaimari	Gobardhana	1741
6		Abrel Hussain	Madhyabalik	Mandia	1601
7		Mahananda Lahkar	Kirkira	Barpeta	294
8		Maheswar Gowari	Mainamata gaon	Gobardhana	833
9		Sarbes Ali Ahmed	Chenlimari	Mandia	830
10	Kamrup	Salehuddin Ahmed	Patrapur	Bezera BVD	396
11		Pabitra Das	Maloibari	Maloibari SVD	542
12		Nripen Mandal	Kahibari	Kahibari /Boko SVD	601
13		Lukuram Das	Barakhat	Chaygaon SVD	55
14		Madan Das	Bhathipara	Do	110
15		Dibakar Kalita	Haberikum no.2	Kamalpur SVD	64
16		Nimajuddin Ahmed	Jogipara no.1	Bondapara SVD	3795
17		Utpal Medhi	Barhardia	Halogaon SVD	80
18		Sachindra Das	Bhatipara	Chaygaon SVD	52
19		Riajul Ahmed	Sabdal	Karara SVD	95
20		Ismail Hussain	Rupahara	Boko	1395
21		Joydev Das	Oujari no.2	Maloibari	51
22		Prangobinda Sarkar	Singmari	Chaygaon SVD	120
23		Promod Ch. Deka	Garogaon	Karara	128
24		Rameswar Das	Borchandra	Changsari	36
25		Sanidul Islam	Bihapara	Rangia	50
26	Nagaon	Faruk Hussain	Chitalmari bil	Juria SVD	428
27		Biren Laskar	Borkula	Khagarijan BDV	12
28		Bokul Nath	Kaki No.1	Lanka SVD Kaki SC	298
29		Prem Kumar Sinha	West Nandapur	Hojai SVD	1255
30		Prakash Jyoti Borah	Deodhar	Nagaon SVD	294
31	Morigaon	Ritumoni Borah	Jagigaon	Do	389
32		Kamendra Das	Alichinga	Do	197

#	District	Name of GM	GM Centre	Block	No. of AI done
33		Achim Patar	Padumpukhuri Gaon	Gacharguri SC	59
34		Pranab Kr. Deka	Duani Gaon	Gacharguri SC	89
35		Rajen Sarma	Amlighat	Mayong BVD Bhakat gaon	2663
36		Keshab Paudal	Amlighat	Mayong BVD Bhakat gaon	1727
37	Sonitpur	Jadav Ghimire	Rangsali	Bihali SVD	911
38		Swajal Ghosh	Kacharigaon	Tezpur SVD	7429
39		Diganta Borah	Panigaon	Shamdara SVD	280
40		Bobib Bharali	Bamparbatia	Mission chariali ICDP	870
41		Gitupan Das	Uzarachuk	Jamugurihat SVD	164
42		Md. Nazrul Islam	Khagarijan	Thelamara SVD	1786
43	Darrang	Achyut Ch. Goswami	Bhanga Barua	Kalaigaon SVD	383
44		Abdul Hai Ahmed	Chamuakhat	Bhakatpara SVD	443
45		Asadur Rahman	Pub Kamarpara	Kharupetia SVD	529
46		Jitendra Nath Sarma	Lakshimpur	Deo mornoi SVD	787
47		Mahadev Nath	Malibaritari	Duni SVD	866
48		Premeswar Sarma	Khatikuchi	Sipajhar SVD	209
49		Khagendra Sarma	Karmipara	Dhula AIC	68
50		Tulsi Kachari	Purbahubahi	Bhergaon KVC	483
51	Jorhat	Pranab Kr. Nath	Borguri	Kamalabari,Majuli	37
52		Babulal Das	Kaliapani Chaporigaon	Teok	37
53		Pranjal Saikia	Teok Dihingiagaon	Lichubari	38
54		Saurav Kalita	Kaliapani Chaporigaon	Teok	66
55		Naba Nidhi Gogoi	Boloma moran Gaon	Jorhat	46
56		Rajen Narah	Rangchali Missing Gaon	Kamalabari,Majuli	5
57		Tilok ch. Bora	Jugunidhari Gaon	Kamalabari,Majuli	15
58		Brijalal Pegu	Kulamua	Kamalabari,Majuli	10
59		Bisheswar Milli	Ajarguri	Kamalabari,Majuli	13
60		Satya Nath Narah	Nagarchuk Missing Gaon	Kamalabari,Majuli	6
61		Naren Ch. Saikia	Guwalbari	Kamalabari,Majuli	3
62		Pranab Kr. Das	Senchowa Balichapori	Kamalabari,Majuli	12
63		Ratul Dutta	Bhogpur Bezgaon	Kamalabari,Majuli	2
64		Bodheswar Saikia	Uriumpara	Kamalabari,Majuli	7
65	Cachar	Safique Uddin	Nayabil	Borjelenga	14
66		Chandan Choudhury	Uttar Dhalaichera	Harinagar	5
67		Mansur Ahmed	Tarapur	Kashipur	16
68		Shyamal Ch. Nath	Boali	Kachudaram	19
69		Anup Kr. Ghosh	Thaligram	Thaligram	5
70		Jagadish Nuria	Silcoorie	Gghungoor	7
71		Sajal Kr. Das	Gangapur	Kashipur	2
72	Karimganj	Nazrul Islam	Abdullapur	Nilambazar SVD	39
73		Surajit Chandra	Bagadahar	Patherkandi SVD	18
74		Santosh Turia	Chandkhira T.E Basti	Do	13
75		Nurul Amin	Jabda	North Karimganj BVD	4
76		Subhash Debnath	Pahartal	Bazarghat SVD	22
77		Sultan Ahmed	Harinadhik	Mahakal SVD	2
78		Nilu Kanta Das	Purba Jarail bari	Bazarghat SVD	3
				Total	41281

19.9 Annex-8.B: Copy of Govt. Notification of 2004 regarding AI cost Recovery

GOVERNMENT OF ASSAM
VETERINARY DEPARTMENT
DISPUR

ORDERS BY THE GOVERNOR

NOTIFICATION

Dated Dispur, the 28th Sept/2004

NO.VFV:245/2004/4 :- The Governor of Assam is pleased to fix the recovery cost of Frozen Semen Straw as per the negotiation criteria of the World Bank and the Govt. of Assam for the period from 2005-06, 2006-07 and 2007-08 as shown below. The rate will be applicable throughout Assam in view of implementation of all artificial insemination schemes;

	RECOVERY FOR THE YEAR	RECOVERY/ SEMEN STRAW	WITHOUT SALARY	WITH SALARY
1.	2005-2006	@ 50% of Production cost.	Rs.21.88	Rs.27.97
2.	2006-2007	@ 75% production Cost.	Rs.23.58	Rs.33.40
3.	2007-2008	@ 100% Production Cost.	Rs.25.80	Rs.31.15

This will come into force with immediate effect and until further orders.

Sd/- R. K. SARMAH,
Deputy Secretary to the Govt. of Assam,
A.H. & Veterinary Department

Memo NO.VFV:245/2004/4-A, Dated Dispur, the 28th Sept/2004
Copy to :-

1. The Agriculture Production Commissioner and Chairman, ARIASP Society, Khanapara, Guwahati- 22
2. The Project Director, ARIASP Society, Khanapara, Guwahati- 22
3. The Director, A.H. & Veterinary, Assam, Chenikuthi, Guwahati- 3
4. The Chief Executive Officer, Assam Livestock Development Agency, Assam, Khanapara, Guwahati- 22
5. The Nodal Officer, A.A.C.P./ L.D.C. Chenikuthi, Guwahati- 3

By Order etc.,

28/09/04
Deputy Secretary to the Govt. of Assam,
A.H. & Veterinary Department

19.10 Annex-8.C: Copy of Govt Notification of 2015 regarding AI cost recovery



Assam Livestock Development Agency

(Sponsored by Govt. of India & Govt. of Assam)
 (Regd. No. RS/KAM/240/T/03 of 2004-05 dated 7.5.04)
 G S Road, Khanapara, Guwahati-22. Telefax : 0361-2334507
 Email : ceoalda@gmail.com

Ref. No. ALDA/ FSSP/2006-07/2324-68 Dated 22/1/15

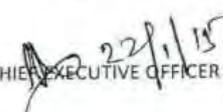
GENERAL CIRCULAR

In the interest of self sustainability and viability of Artificial Insemination services rendered by Government and Private A.I. Workers at their respective service areas and A.I. Centres, the cost recovery of **Cattle and Buffalo Frozen Semen**, produced / supplied by Assam Livestock Development Agency (ALDA), is revised to **Rs 50.00 (Rupees Fifty) only per semen straw dose**, against the existing unit rate of Rs 26.00, with immediate effect and until further revision. This has the approval of the Governing Body of ALDA in its meeting held on 20th January 2015.

Sd/- 
 Dr Sairen Das
 CHIEF EXECUTIVE OFFICER

Copy to:

- 1) The Addl Chief Secretary & APC, Govt of Assam cum President-ALDA, Dispur.
- 2) The Principal Secretary to the Govt of Assam, AH & Veterinary Deptt cum Vice President-ALDA, Dispur.
- 3) The Director, AH & Veterinary Deptt, Assam, Chenikuthi, Guwahati.
- 4) The Director, Dairy Development, Assam, Khanapara, Guwahati.
- 5) All District AH & Veterinary Officers, Assam.
- 6) All Frozen Semen Banks of ALDA, for compliance.
- 7) RAIO Nalbari & Umrangshu for compliance.
- 8) Veterinary I/C, SSB, Frontier HQ, Guwahati.
- 9) QCO, ALDA, Khanapara, for required action effective from the latest consignment received from SAG-Bidaj, Gujarat. Revised rate to be mentioned in the issue challans.


 CHIEF EXECUTIVE OFFICER

19.11 Annex-8.D: Year wise AI Performance since inception of ALDA

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15 (Till 11/2014)	Total
AI Done	88909	112913	124138	119611	142503	214039	210546	272995	260778	330049	153216	2029697
Calf Born	38415	39172	45249	51214	52232	73510	87915	91833	104212	115764	59117	758633
% Success	43%	35%	36%	43%	37%	34%	42%	34%	40%	35%	39%	37%

19.12 Annex-9: Capacity building activities under Livestock Development

Sl	Name of Activity	Target	Achievement
During AACP			
1.	Training of Gopal Mitra (GM)	400	164
2.	Stipend for GM	400	164
3	Refreshers course for GM	400	164
4	Training on Lab. Instrument at IVRI for officers at Izatnagar, UP.	20	10
5	Visit by senior level officers at Anand, BAIF etc	15	6
6	Visit by policy level officers at Anand	8	4
7	Participation in national level Seminar	45	2
8	Training of Spearhead Team at Anand	25	25
9	Orientation visit of farmers at Anand	120	123
10	Procurement training at Hyderabad	4	5
11	Lab Diagnosis training at ADMAS/IVRI	30	28
12	Training of GIS on Animal diseases	15	5
13	Advance training on FS technology for FSPC officials at BAIF	30	20
14	Training on Sire evaluation & Progeny Testing at BAIF	30	20
15	Continuation of Mobile AI training camp including POL cost	144	104
16	State Level Workshop	6	3
17	Computer Training for departmental Officers and Staff	40	31
18	Women's training in Management of Duck rearing	500	500
19	Training of officers in Poultry Management	20	20
20	3 months Entrepreneurship Development Programme for Unemployed Veterinary graduates at Pune	20	17
21	Training of farmers on Piggery Development	960	1400
22	a. Training on Viral vaccine Production b. Training on Production & Standardization of Poultry vaccine		2 1
23	Training on Laparoscopic Surgery in Small Animals		2
24	Study tour of Officers on Goat Development at West Bengal		5
During AACP-AF			
1.	Exposure Visit for Study on Goat Development in Nepal and Rajasthan	4	-
2.	Pig Rearers group (PRG) Members' Training in Kamrup District	500	-
3	Goat Keepers' Society (GKS) Members' Training in Kamrup District	500	-
4	Training of Trainers at Goat research Station, Baryhat & NERDDL	6	-
5	Interactive Session on Successor project to AACP	172	-
6	Goat Keepers' Society (GKS) Members' Training in Kamrup District	250	-
7	Pig Rearers group (PRG) Members' Training in Kamrup District	250	-
8	Visit by officers to Amritsar for procurement of Beetal Buck	2	-
9	Procurement training on World bank Aided project	4	-

19.13 Annex-10: List of 25 FPOs formed under AACP-AF

#	Block	Gram Panchayat	Name of the Cooperative Society	Registration Number	Number of Farmer Members	Area under cultivation (in Ha)	Marketable Surplus (in Quintals)
Kamrup District (Agriculture FPOs)							
1	Goroimari	Achalpara	Nabajyoti Utpadankari Krishak Cooperative Society Limited	G-01/2014-15 Dated 3rd July 2014	735	400	Boro paddy (10000), Sali paddy (5000), Jute (6500), Mustard (1000), Cabbage (4000), Cauliflower (1600), Brinjal (1500), Potato (1500) and Ridge Gourd (1300)
2	Goroimari	Hatipara	Hatipara Rajoni Krishak Cooperative Society Ltd.	G-02/2014-15 Dated 3rd July 2014	1048	1333	Sali Paddy (12000), Boro Paddy (26000), Mustard (1950)
3	Boko	68 No. Boko	Sarbo Unnayan Krishi Samobai Samitee Limited	G-05/2014-15 Dated 17th July 2014	713	667	Boro paddy (9000), Sali paddy (22000) and Mustard (2400)
4	Bongaon	Bongaon	Green Valley Krishi Utpadak Samobai Samitee Limited	G-03/2014-15 Dated 17th July 2014	798	1333	Sali paddy (15000), Mustard (4000), Pineapple (4734), Banana (2631) and Orange (2060)
5	Boko	71 No. Bekeli	Pragati Krishi Samobai Samitee Limited	G-04/2014-15 Dated 17th July 2014	600	864	Sali paddy (24600), Boro Paddy (11280) and Mustard (8100)
Nalbari District							
6	Barkhetri	62 No. Loharkatha Adabari	Brahmaputra Krishak Cooperative Society Limited	N-82/2014-15 Dated 3rd July 2014	702	949	Boro paddy (2056), Sali paddy (10441), Mustard (972), Cabbage (4840), Cauliflower (5791), Ridge Gourd (1593), Brinjal (3955) and Coriander (474)
7	Barbhag	50/4 Upper Barbhag	Adarsha Krishak Cooperative Society Ltd	N-86/2014-15 Dated 11th July 2014	565	844	Boro paddy (23000), Sali paddy (2000), Mustard (3200)
8	Barbhag	49/3 Upper Barbhag	Sonali Krishak Cooperative Society Limited	N-85/2014-15 Dated 5th July 2014	400	613	Boro paddy (20000), Sali paddy (1200), Potato (2000), Cabbage

#	Block	Gram Panchayat	Name of the Cooperative Society	Registration Number	Number of Farmer Members	Area under cultivation (in Ha)	Marketable Surplus (in Quintals)
							(4000), and Brinjal (800)
9	Barkhetri	61 No. Ghoga	SiraSeuj Krishak Cooperative Society Limited	N-83/2014-15 Dated 5th July 2014	522	355	Boro paddy (1505), Sali paddy (2772), Jute (6838), Mustard (3738), Cabbage (6313), Cauliflower (1901) and Ridge Gourd (2228)
10	Barkhetri	15 No. Dijhari	Mahabahu Krishak Cooperative Society Ltd.	N-84/2014-15 Dated 3rd July 2014	520	667	Sali Paddy (6000), Mustard (3000), Cabbage (10000), Cauliflower (5000)
Nagaon District (Agriculture)							
11	Laokhowa	Tubuki Jaroni	Tubuki Jarani Panchagram Krishak Samabai Somity Ltd.	KB - 29/2014 Dated 25th June 2014	579	467	Boro paddy (15000), Sali paddy (3000), Potato (9000), Brinjal (2500), Cabbage (4000) and Cauliflower (1300)
12	Laokhowa	Bhurbandha	Bhurbandha Seug Krishi Unnayan Samabai Somity Ltd.	KB - 31/2014 Dated 2nd July 2014	480	587	Boro paddy (18000), Sali paddy (6000), Brinjal (700), Cabbage (5000), Cauliflower (1600) and Potato (10000)
13	Laokhowa	Bogamukh	Bogamukh Krishi Unnayan Samabai Somity Ltd.	KB - 30/2014 Dated 30th June 2014	450	827	Boro paddy (11970), Sali paddy (1600), Brinjal (3000), Cabbage (2500), Cauliflower (3600) and Bitter Gourd (1200)
14	Laokhowa	Laokhowa	Annapurna Krishak Unnayan Samabai Somity Ltd.	KB - 32/2014 Dated 2nd July 2014	400	240	Sali Paddy (800), Boro Paddy (1900), Cabbage (10,000), Cauliflower (9500), Knolkhol (4000) and Potato (9500)
15	Pachim Kaliabor	Lakhonabandha	Lakhonabandha Seuj Krishi Unnayan Samobai Samity Ltd.	KB - 33/2014 Dated 19th August 2014	1000	2667	Sali Paddy (4000), Boro Paddy (8000), Mustard (800), Jute(4000), Cabbage (3000), Cauliflower (1400), Brinjal (1200) and Potato (1500)
Nagaon District (Fishery)							
16	Batadrava	Kathaguri	Rawmari Bhai Bhai Matchya Utpadak Samobai Samity Ltd.	N-118/2014 Dated 8th July 2014	200	293	Rohu (1400), Bahu (1350), Grass Carp (600), Mirika (400), Kuhi (400), Dekera (600), Bhangaon (400), Silver Carp (450)
17	Batadrava	Kathaguri	Katahguri Rupjyoti Matchya Utpadak Samobai Samity Ltd.	N-121/2014 Dated 8th July 2014	530	320	Rohu (500), Bahu (400), Grass Carp (350), Mirika (400), Kuhi (430), Dekera (400), Bhangaon (350), Silver Carp (200)
18	Batadrava	Tuktuki	Tuktuki Jilmil Matchya Utpadak Samobai Samity Ltd.	N-119/2014 Dated 8th July 2014	341	600	Rohu (800), Bahu (750), GrassCarp (480), Mirika (500), Kuhi (520), Dekera (540), Bhangaon (500), Silver Carp (300)
19	Batadrava	Dhaniabeti	Dhaniabheti Milan Jyoti Matchya Utpadak Samobai Samity Ltd.	N-122/2014 Dated 8th July 2014	421	640	Rohu (1200), Bahu (1000), GrassCarp (900), Mirika (900), Kuhi (700), Dekera (650), Bhangaon (700), Silver Carp (500)
20	Batadrava	Batadrava	Batadrava Seuj Matchya Utpadak Samobai Samity Ltd.	N-120/2014 Dated 8th July 2014	321	400	Rohu (1200), Bahu (1400), GrassCarp (700), Mirika (800), Kuhi (450), Dekera (600), Bhangaon (400), Common Carp (300)
Sonitpur District (Fishery)							
21	Balipara	Siloni, Rongajan, Mansari, Napam	Milon Jyoti Matchya Utpadak Samabay Samiti Ltd.	T-55/2014-15 Dated 30th May 2014	284	277	Rohu (380), Bahu (400), GrassCarp (350), Mirika (345), Kuhi (400), Dekera (350), Bhangaon (300), Common Carp (270)
22	Naduar	Dakshin Silabondha, Madhya Silabondha, Paschim Borbhuga	Naduar Min Palan Samabay Samiti Ltd.	T-56/2014-15 Dated 30th May 2014	448	146	Rohu (910), Bahu (780), GrassCarp (520), Mirika (488), Common carp (325), Silver Carp (455)
23	Borchola	1 No. Pirakata, Sirajuli	Sanjukta Matchya Utpadak Samabai Samiti Ltd.	T-57/2014-15 Dated 30th June 2014	300	333	Rohu (1200), Bahu (1776), GrassCarp (960), Mirika (640), Kuhi (560), Silver Carp (720)
24	Pub-Chaiduar	Kolabari	Adarsha Matchya Utpadak Samabai Sammitee Ltd.	B.222/2014-15 Dated 8th August 2014	320	600	Rohu (1500), Bahu (1200), GrassCarp (800), Mirika (800), Silver Carp (1000)
25	Sootea	Sootea 4 No., Madhya Nagshankar	Sootea Machya Utpadak Cooperative Society Ltd.	B.T-59/2014-15 Dated 14th October 2014	260	220	1.Rahu. 2.Bahu 3.Grass Carp 4 Mirika 5. Kuhi 6.Dekera 7. Bhangan 8.Silver Carp

19.14 Annex-10A: Particulars of DCSs handling more than 100 litter milk/day

#	Name of the DCS	Date of Organization	Quantity of milk collection per day in Liters
	Barpeta		
1	Ashray DUSS	1/12/2005	826
2	Himalaya DUSS	27/7/2011	1609
3	Halapakuri Jyotirmoy DUSS	7/9/2006	1321
4	Milanjyoti	7/9/2006	1224
5	Purabi DCS	7/9/2006	564
6	Kamdhenu DCS	01/08/2007	5568
7	Antaranga DCS	01/07/2008	318
8	Pathsala DCS	01-12-2005	641
9	Parijat DCS	18-11-2010	338
10	Muguria DCS	01/02/2007	463
11	Pragati DCS	10/12/2006	654
12	Kapili DCS	01/11/2006	695
13	Deepjyoti DCS	10/12/2006	428
14	Gopal Ata DCS	17/05/2007	593
15	Bezkucho DCS	01/08/2007	1527
16	Nabajagaran DCS	13/12/2006	255
17	Hathinapur DCS	28/10/2008	173
18	Bamakhata DCS	01/12/2005	289
19	Banbahar Maralatar DCS	06/11/2010	721
20	Surabhi DCS	01/12/2005	148
20	DCSs handling more than 100 liter milk/day		20
	Darrang		
1	Nizbarambar Nabajyoti DCS	20/03/2007	123
2	Goalpara DCS	31/08/2007	326
3	Alikhapara DCS	18/08/2007	262
4	Ramgaon DCS	18/08/2007	82
5	Lakhimpur Mahila DCS	31/08/2007	240
6	Athiabari DCS	20/08/2007	623
7	Saloipara DCS	01/09/2007	341
8	Mahaliapara DCS	17/08/2007	122
9	Niz Sarabari	03/09/2007	359
10	Kapili DCS (1 no Chengabari)	17/08/2007	806
11	Brahmaputra DCS	07/10/2007	78
12	Khatara DCS	27/09/2007	115
13	Gargori DCS	09/11/2007	176
14	Lakhimi DCS	04/10/2007	137
15	Nanoipara DCS	04/11/2007	101.5
16	Bhakatpara DCS	17/11/2007	34
17	Pub Bahabari DCS	21/02/2008	204
18	Pachim Bahabari DCS	16/02/2008	129
19	Niz Nagajan DCS	18/02/2008	110
20	Ondulajhar DCS	20/02/2008	180
21	Khataniapara DCS	15/05/2008	237.5
22	Hirapara DCS	19/06/2008	134
23	Barangabari DCS	29/07/2008	132.5
24	Bokrajhar DCS	21/02/2009	240
25	Surabhi DCS	27/05/2008	
26	Niran Chuba DCS	18/02/2008	313
27	Potapukhuri DCS	25/12/2008	142
28	Burhinagar DCS	28/02/2009	
29	Haripur DCS	18/02/2008	546
30	Asomi DCS	11/08/2008	304
31	Kadamtoli DCS	25/06/2010	201
32	Paniakhat DCS	30/06/2010	147
33	Krishak Bandhu DCS	23/06/2010	117
34	Dimila DCS	08/07/2010	66
35	Nagajan DCS	30/10/2010	426
36	Baigarmari Rajanigandha DCS	25/11/2010	146
37	Islampur Sonali DCS	29/11/2010	875
38	Otala DCS	01/07/2011	579
38	DCSs handling more than 100 liter milk/day		34
	Nagaon		

#	Name of the DCS	Date of Organization	Quantity of milk collection per day in Liters
1	Nabajagaran	05/07/2007	243
2	Sri Krishna	11/07/2007	923
3	Jamuna Valley	21/07/2007	1262
4	Amitdhara	29/09/2008	351
5	Lakshmi	29/09/2008	384
6	Kamdhenu	09/08/2007	89.5
7	Kapili, Bhimarali	26/08/2007	603.5
8	Govinda DCS	18/12/2008	131.5
9	Bhotaideka	24/09/07	129.5
10	Surabhi	27/09/2008	163
11	Brahmaputra	03/10/2007	199
12	Moonlight	03/11/2007	146.5
13	Deodhar Anchalik DCS	19/11/2007	245
14	Naba Udayan	30/11/2007	189
15	Sunai Mahila	17/12/2007	217
16	Naba Jyoti	24/11/2007	355
17	Rangili	22/02/2008	110.5
18	Kalongparia	27/03/2008	206
19	Surabhi Mahila	21/03/2008	338
20	Prerona	08/05/2008	285
21	Jasoda	28/05/2008	403.5
22	Basudev	28/05/2008	606.5
23	Krishna	15/06/2008	672
24	Rupali	24/06/2008	255.5
25	Kapili DCS	19/09/2008	183
26	Jamuna	25/10/2008	145
27	Gitanjali	28/05/2008	212
28	Sunali	27/03/2008	240.5
29	Sadasiva	21/06/2008	244
30	Josuda Krishna	22/05/2008	156
31	Patarithol	11/02/2008	239
32	Buraguhain	25/09/2008	149
33	Pragati	13/11/2008	124
34	Jeuti	29/09/2008	355
35	Panchajanya	15/12/2008	201
36	Borpani	04/12/2008	249.5
37	Kachuwa Tiniali Anchalik	23/02/2008	588
38	Burapahar	02/02/2008	556
39	2 No Kaki	18/12/2008	114
39	DCSs handling more than 100 liter milk/day		38
Kamrup			
1	Santipur DCS	08/01/2007	554
2	Khalihamari DCS	07/05/2006	150
3	Niz Bahana DCS	20/12/2006	483
4	Nandini Mahila DCS	17/01/2009	709
5	Sutirmukh Bezpara DCS	17/02/2006	453
6	Bhakuamari Sastar DCS	10/02/2007	126
7	Ukhura Nabarun DCS	25/09/2007	100
8	Chakamtoli DCS	28/02/2006	551
9	Uma Mahila DCS	02/02/2006	670
10	Gopal DCS	20/07/2008	246
11	Bulujyoti DCS	01/06/2009	32
12	Ramkrishna DCS	11/10/2008	272
13	Chechamukh DCS	20/02/2007	88
14	Gorkhya Pachim DCS	24/09/2008	376
15	Barni DCS	08/02/2006	191
16	Hajo DUSS	05/02/2006	875
17	Gorkhya Uttar DCS	24/09/2008	516
18	2 no Tukrapara DCS	01/06/2009	58
19	Krishna Gopal DCS	04/07/2009	64
20	Barchapari DCS	21/02/2007	622
20	DCSs handling more than 100 liter milk/day		16
Sonitpur			
1	Kamdhenu DCS	01/02/2006	75
2	Jia no.1	2011	259

#	Name of the DCS	Date of Organization	Quantity of milk collection per day in Liters
3	Brahmaputra	07/12/2006	117
4	Sonali	15/02/2007	100
5	Gelapukhuri	04/02/2006	228
6	Killinf Mukh	12/02/2007	75
7	Bisha Nath Dagaon	06/03/2007	99
8	Gaumoti	18/03/2007	68
9	Tinsuti	12/02/2006	77
10	Natun Roumari	04/12/2007	207
11	Rangchali	02/12/2007	121
12	Batiaruka No. 1	15/02/2008	91
13	Samardoloni	14/03/2007	102
14	Kadomoni	24/03/2008	555
15	Monabari	01/02/2006	101
16	Luit	04/12/2007	122
17	Kasomari Kumar Pukhuri	19/02/2007	57
18	Ghiladharimukh	2010	67
19	Laodalani	11/02/2006	110
20	Kherbari B Chapari	22/02/2007	71
21	Panibharal	05/05/2007	69
21	DCSs handling more than 100 liter milk/day		11
	Morigaon		
1	Bhurbandha	08/08/2007	542
2	Solmari	23/08/2008	48
3	Bar Manipor	21/08/2007	177
4	Chikabori Anchalik	28/10/2007	95
5	Parampara	24/10/2007	92.5
6	Pabitora	18/07/2007	198
7	Jagi	26/06/2007	1011
8	Kumoi	26/06/2007	615
9	Bhakatgaon	01/07/2007	60
10	Manaha Nasatra	02/07/2007	496
11	Rodali	24/11/2007	88.5
12	Kamdhenu	20/08/2007	395
13	Nepali Khanajan	20/08/2007	315
14	Kapili	20/08/2007	169
15	Sonali	20/08/2007	372
16	Suravi	20/08/2007	433
17	Kaliajari Jonaki	19/02/2008	164
18	Buwalguri Dhruvatara	07/05/2008	198
19	Sahariagaon	16/05/2008	127
20	Sanjibani	19/08/2008	149
21	Gopal Krishna	20/08/2008	63.5
22	Dighabari Anchalik	11/06/2008	148
23	Bongalbori	03/06/2008	131
24	Lakhmi Mahila	20/03/2008	254
25	Kumuraguri Mahila	07/02/2008	109
26	Mikirgaon	01/12/2008	152
27	Ujjal	22/03/2009	35.5
28	G.L.Udiyaman	25/11/2008	272
28	DCSs handling more than 100 liter milk/day		21
	Golaghat		
1	Kamdhenu	02/11/2006	1291
2	Sammannya	28/08/2009	570
3	Dhansirimukh	06/11/2009	322
4	Negheriting	27/07/2009	236
5	Rangagora	23/04/2010	774
6	Purabi	06/12/2010	454
7	Lakhimi	05/01/2011	211
8	Brahmuptra	Jan/2005	246
9	Rupalim	06/01/2006	269
10	Anandachapori	11/11/2007	387
11	Srikrishna	16/08/2008	252
12	Baruahtamuli Pathar	21/12/2006	656
13	Parijat	18/09/2008	225
14	Sonali	09/03/2009	327

#	Name of the DCS	Date of Organization	Quantity of milk collection per day in Liters
15	Balijan	21/05/2008	479
16	Gayatri	24/02/2008	343
17	Devagram	16/09/2006	296
18	Pub Ghiladhari	10/05/2011	424
19	Dhansiri	11/10/2009	749
20	Jasoda	16/09/2008	472
21	Kamini	25/12/2010	424
22	Surabhi	07/01/2010	724
23	Ramdhenu	28/08/2011	841
24	Krishna	25/04/2011	579
25	Khumtai	18/08/2010	361
25	DCSs handling more than 100 liter milk/day		25
	Jorhat		
1	Surabhi	20/12/2006	543
2	Falengi Chuk	28/08/2007	521
3	Rupali	22/05/2007	1104
4	Dahikhur Bhuyan Chuk	14/09/2007	301
5	Amrit	16/11/2007	245
6	Chengelichetia	09/06/2007	982
7	Lachit	07/04/2008	593
8	Phesual	24/06/2008	537
9	Panchamukhi, Nakari	30/03/2008	577
10	Kalyani	08/03/2009	326
11	Luitporia	10/12/2008	495
12	Pachim Tatabor	28/11/2009	731
13	Maa Lakhmi	28/08/2009	474
14	Kamini	22/04/2010	406
15	Panichakua	12/07/2010	252
16	Koliani Amarjyoti	29/11/2010	101
17	Agrajyoti	13/12/2010	235
18	Surjudaya Mahila	27/12/2010	346
19	Pokamura Mahila	23/10/2010	186
20	Lakhimi, Piakota, Gohain	16/12/2010	205
21	Lakhimi, Borhala	12/12/2010	344
22	Ashroy	09/11/2010	241
22	DCSs handling more than 100 liter milk/day		22

19.15 Annex-11: Division wise List of 47 JFMCs with the plantation area

										<i>Area in ha.</i>
	Name of the JFMC	Digboi	Haltugaon	Kamrup West	Karimganj	Lakhimpur	Nagaon	Nagaon South, Hojai	Parbatjhora	Grand Total
1	Akashiganga							175		175
2	Alukhunda			130						130
3	Amguri		210							210
4	Awlia Mazika						95			95
5	Bannyaguri								190	190
6	Barophutia	170								170
7	Bhitorpowai	175								175
8	Borbil No. 3	160								160
9	Borghat						95			95
10	Christianbasti							150		150
11	Dekapara			130						130
12	Dewanbeel			242						242
13	Dhulpahar						85			85
14	Dhupguri			130						130
15	Gulaijuli					130				130
16	Hatigarh						165			165
17	Hatikhuli							90		90
18	Joyhing					115				115
19	Jugicherra - Sobri				185					185
20	Kakoi Dhekiajuli					115				115
21	Kalabakra			130						130
22	Kathaltoli							175		175
23	Kharkhari								190	190
24	Khoraghat								175	175

Area in ha.

	Name of the JFMC	Digboi	Haltugaon	Kamrup West	Karimganj	Lakhimpur	Nagaon	Nagaon South, Hojai	Parbatjhora	Grand Total
25	Lankajan							175		175
26	Maisam						95			95
27	Mirzaghat			180						180
28	Nahargaon							175		175
29	Nakhuti							175		175
30	Nalapara			140						140
31	Nazirating	180								180
32	Nijraguri		135							135
33	Nowapara			105						105
34	Panijani								190	190
35	Pokapum			126						126
36	Rampur Deori					115				115
37	Sadhukhuti							85		85
38	Sakalpur				185					185
39	Samuka			105						105
40	Seuj Pahar						95			95
41	Shyamjadu							140		140
42	Sivasthan						70			70
43	Sriramrup				185					185
44	Swmkwr		160							160
45	Tilbhum				170					170
46	Udmari						115			115
47	West Bismuri		136							136
	Grand Total	685	641	1418	725	475	815	1340	745	6844

19.16 Annex-11A: Notification regarding enhancement of sharing of benefits from harvesting of the plantations between JFMC community and the Forest Department

GOVERNMENT OF ASSAM
ENVIRONMENT AND FORESTS DEPARTMENT
DISPUR, GUWAHATI-6

No.FRP.18/2013/127. Dated Dispur, the 21st December, 2013

NOTIFICATION
OFFICE ORDER

The Joint Forest Management Committees under National Resource Management and Integrated Livelihood (NaRMIL), Assam Agriculture Competitiveness Project are hereby entitled to 50% (fifty percent) of the net receipts from main (final) felling of trees from the forest land managed by them. The net receipt mean, the sale value of the produce less direct cost of creation and harvest.

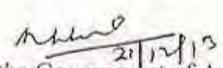
This notification is issued as per Cabinet approval accorded to the AACP on 16/10/2004 and communicated vide letter No.AGA.340/2004/113 dated 28/10/2004.

Sd/- N. Ahmed, IAS,
Secretary to the Government of Assam,
Environment and Forests Department,

Memo No.FRP.18/2013/127-A. Dated Dispur, the 21st December, 2013
Copy to:-

1. The Principal Chief Conservator of Forests, Assam, Rehabari, Guwahati-8 for favour of information and necessary action. This has the reference to his proposal No.FDG.542/FDA/JFMC/04-07/Pt Vol.-I dated 13/12/2013.
2. The Nodal Officer, NaRMIL, Basistha, Guwahati-29
3. The State Project Director, ARIAS Society, AACP, Khanapara, Guwahati-22
4. P.S. to Additional Chief Secretary & APC, Assam, Guwahati-6

By order etc.,


Secretary to the Government of Assam,
Environment and Forests Department

HS
21/12

19.17 Annex-12: Type of plantations created under JFMCs over the years

Area in ha.

Type	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Grand Total
1 Agarwood					8		8
2 ANR	450	25	75	305	681	304	1840
3 AR				225	142	19	386
4 Aromatic					40		40
5 Bamboo mixed with Hollong						70	70
6 Bamboo mixed with teak	105	167	33	220	310	270	1105
7 Bamboo mixed with Teak / Gamari			10	10		165	185
8 Broom Stick					40		40
9 Cane						100	100
10 Fuel wood	103	229	72	219	470	390	1483
11 Medicinal	18			5	30	20	73
12 Misc.	34	50	60	215	513	322	1194
13 NTFP				5	30	75	110
14 Sericulture	55			10			65
15 Terresing						40	40
16 Fodder					105		105
Grand Total	765	471	250	1214	2369	1775	6844

19.18 Annex-13: Complied JFMCs wise performance grading

Complied NaRMIL JFMCs Grading for the Project Divisions														
Sl.	Name of Division	Name of the JFMC	% of Plantation target achieved	Marks -15	Survival % of the plantation in JFMC (%)	Marks -15	Attendance % in GBM meetings (%)	Marks -10	Total Revenue generated by the JFMC since inception (Rs.)	Marks -5	Grading for timely submission of Accounts 1/2/3/4 (1-very good; 2-good; 3-Average; 4-Bad)	Marks -5	Total Marks -50	Area suggested by JFMC for intercropping under AF (ha)
1	Kamrup West	KALABAKRA	100%	15	55%	9	80%	8	120000	2	1	5	39	0
2		ALUKHUNDA	100%	15	30%	4.5	75%	8	10000	1	2	4	32.5	0
3		NALAPARA	100%	15	25%	4.5	75%	8	0	1	2	4	32.5	0
4		SAMUKA	100%	15	30%	4.5	75%	8	0	1	3	2	30.5	0
5		DEKAPARA	100%	15	65%	10.5	80%	8	50000	1	1	5	39.5	0
6		DHUPGURI	100%	15	60%	9	65%	7	150000	2	1	5	38	0
7		NOWAPARA	80%	12	60%	9	77%	8	10000	1	3	2	32	0
8		MIRZAKHAT	100%	15	75%	12	78%	8	40000	1	2	4	40	0
9		POKAPAM-BOGALINE	100%	15	60%	9	78%	8	0	1	2	4	37	0
10		DEWAN BEEL	100%	15	82%	13.5	82%	9	10000	1	1	5	43.5	0
11	DIGBOI	NAZIRATING	100%	15	90%	13.5	70%	7	159900	5	1	5	45.5	20
12		BARAPHUTIA	94.44%	15	80%	12	70%	7	159900	5	1	5	44	20
13		BHITORPOWAI	97.22%	15	80%	12	75%	8	159900	5	1	5	45	25
14		BORBIL NO.3	88.89%	13.5	80%	12	69%	7	159900	5	1	5	42.5	40
15	LAKHIM-PUR	JOYHING	80%	12	60%	9	70%	7	-		3	2	30	10
16		GULAIJULI	80%	12	80%	12	72%	8	6900	1	3	2	35	10
17		KAKOI DHEKIAJULI	70%	10.5	80%	12	69%	7	42150	3	2	4	36.5	50
18	KARIM-GANJ	RAMPUR DEORI	80%	12	70%	10.5	55%	6	3000	1	3	2	31.5	10
19		JUGICHERRA-SOBRI	100%	15	75%	12	75%	8	-		-		35	50
20		SAKALPUR	100%	15	70%	10.5	60%	6	-		-		31.5	50
21		SRIRAMPUR	100%	15	70%	10.5	60%	6	-		-		31.5	50
22	TILBHUM	100%	15	80%	12	65%	7	-		-		34	50	
23	PARBAT JHORA	PANIJANI	100%	15	76%	12	55%	6	21000	2	2	4	39	50
24		KHORAGHAT	92.10%	15	75%	12	50%	5	49950	3	2	4	39	75
25		BANYAGURI	100%	15	63%	10.5	50%	5	-		3	2	32.5	55
26		KHORKHORI	100%	15	68%	10.5	62%	7	19700	1	1	5	38.5	30
27	KOKRAJ HAR	AMGURI	100%	15	80%	12	48%	5	93935	5	2	4	41	60
28		WEST BISHMURI	90%	13.5	70%	10.5	45%	5	95000	5	2	4	38	50
29		NIJIRAGURI	100%	15	75%	12	64%	7	90065	5	2	4	43	75
30	SWMKWR	100%	15	75%	12	40%	4	82768	5	2	4	40	75	
31	NAGAO N SOUTH	NAHARGAON	100	15	65.5	10.5	62	7	769645	5	1	5	42.5	20
32		KATHALTOLI	100	15	75	12	70	7	407388	5	1	5	44	1
33		LANKAJAN	100	15	82.25	13.5	78	8	250585	3	1	5	44.5	37

Complied NaRMIL JFMCs Grading for the Project Divisions														
Sl.	Name of Division	Name of the JFMC	% of Plantation target achieved	Marks -15	Survival % of the plantation in JFMC (%)	Marks -15	Attendance % in GBM meetings (%)	Marks -10	Total Revenue generated by the JFMC since inception (Rs.)	Marks -5	Grading for timely submission of Accounts 1/2/3/4 (1-very good; 2-good; 3-Average; 4-Bad)	Marks -5	Total Marks -50	Area suggested by JFMC for intercropping under AF (ha)
34		AKASHIGANGA	100	15	66.25	10.5	60	6	321763	4	1	5	40.5	26
35		NAKHUTI	100	15	70	10.5	75	8	168800	2	1	5	40.5	19
36		CHRISTIANBASTI	85.7	13.5	67.5	10.5	73	8	90000	1	1	5	38	46
37		SHYAMJADU	93.33	15	77.5	12	75	8	11550	1	1	5	41	0
38		HATIKHULI	60	9	68.69	10.5	75	8	12600	1	1	5	33.5	0
39		SADHUKHUTI	56.6	9	66.67	10.5	75	8	8700	1	1	5	33.5	0
40	NAGAO N	MAISAM/Boithalansu	100%	15	50%	7.5	80	8	0	1	3	2	33.5	75
41		SEUJ PAHAR	100%	15	40%	6	70	7	0	1	3	2	31	75
42		HATIGARH	100%	15	60%	9	60	6	32000	2	2	4	36	75
43		AWLIA MAZIKA	100%	15	45%	7.5	55	6	NIL	1	2	4	33.5	75
44		SIVASTHAN	100%	15	60%	9	80	8	NIL	1	2	4	37	75
45		UDMARI	100%	15	60%	9	70	7	NIL	1	2	4	36	75
46		DHULPAHAR	100%	15	50%	7.5	80	8	NIL	1	2	4	35.5	75
47		BORGHAT	70%	10.5	50%	7.5	60	6	NIL	1	3	2	27	75

19.19 Annex-14.A: Selection Criteria for Rural Roads for upgradation

Criteria for Ranking of Rural Roads

Strategic Principle : Road to be taken up shall ideally not be of less than 10 Km. length

Name of District		Name of Sub Division	
Name of the Road:		Starting Point In Km	End Point In KM.
Number of Villages Covered by the Road		Nos.	Nearest Town
Name of the Villages Covered by the Road			

Item	Criteria			Formula	Points allocated	Methodology		
						Maximum Points	Remarks	
1	Length of the Road selected to be of minimum of 10 Km or more, connected to a MDR/SH/NH/NEC/a Town					No Points	Note: No MDR/SH/NH/NEC Road. Only Rural Roads can be considered under the Project subject to fulfilment of the criteria listed here.	
2	Traffic Intensity					(+) 15	FP + 15 marks if Traffic Intensity is 100 motorized vehicles/Day or above. (+) 10 for 70 to 99 vehicles/Day (+) 5 for 50 to 69 vehicles/Day 0 for 30 to 49 vehicles/Day (-) 5 for 15 to 29 vehicles/Day (-) 10 for 10 to 14 vehicles/Day (-) 15 for 0 to 13 vehicles/Day	
2	Population Intensity			PIV=TPV / RLV		(+) 15	FP +15 marks if 500 Person/Km. or above. (+) 10 for 400 to 499 Person/Km. (+) 5 for 300 to 399 Person/Km. 0 for 250 to 299 Person/Km. (-) 5 for 249 to 200 Person/Km. (-) 10 for 100 to 199 Person/Km. (-) 15 for 0 to 99 Person/Km.	
	PIV= Population Intensity	TPV= Total Population in the Villages Covered by the proposed Road	RLV=Total length of the proposed Road					
3	Agriculture & Allied Activity							
3.1	STW Intensity Vs. Road							
	SIV= STW Intensity	TSV= Total No. of STWs in the Villages Covered by the proposed Road	NCAV = Net Cropped Area of the all the villages covered by the road	SIV = NCAV / TSV		(+) 20	District STW Intensity = SID $SID = \frac{NCAV}{TSV}$ $TSD = \frac{\text{Total No. of STWs in the District}}{\text{Net Cropped Area of the District}}$ FP +20 marks if SIV = 2 x SID or above. (+) 15 when SIV = 1.75 x SID to 1.99 x SID (+) 10 when SIV = 1.50 x SID to 1.74 x SID (+) 5 when SIV = 1.25 x SID to 1.49 x SID 0 when SIV = 1.00 x SID to 1.24 x SID (-) 5 when SIV = 0.75 x SID to 0.99 x SID (-) 10 when SIV = 0.50x SID to 0.74 x SID (-) 15 when SIV = 0.25 x SID to 0.49 x SID (-) 20 when SIV = 0.24 x SID or Less	
3.2	Cropping Intensity					(+) 20	FP +20 marks, if CI = 200% or above (+) 15 when CI = 180% to 199% (+) 10 when CI = 165% to 179% (+) 5 when CI = 155% to 164% 0 when SI = when SI = 151% to 154% (-) 5 when CI = 150% to 125% (-) 10 when CI = 115% to 124% (-) 15 when CI = 110% to 123% (-) 20 when CI = 100% or less	
	CI = Cropping Intensity	GCA= Gross Cropped Area in the Villages Covered by the Road	NCA= Net Cropped Area in the Villages Covered by the Road	CI=(GCA / NCA) x 100				
3.3	Fishery Activity					(+) 5	FID = Fishery Intensity District $FID = \frac{GAD}{WBD}$ $GAD = \frac{\text{Total Geographical Area in Hectare of the District}}{\text{Total Water Body Area in Hectare in the District}}$	
	FI = Fishery Intensity	GAV = Total Geographical Area in Hectare of the Villages Covered by the Road	WBV =Total Water Body Area in Hectare in the Villages	FI= (GAV/WBV)				

Item	Criteria			Formula	Points allocated	Methodology		
						Maximum Points	Remarks	
			Covered by the Road					FP +5 marks if FI = 2 x FID and above. (+) 3 when FI = 1.50 x FID to 1.99 x FID (+) 2 when FI = 1.25 x FID to 1.49 x FID 0 when FI = 1.00 x FID to 1.24 x FID (-) 2 when FI = 0.50 x FID to 0.99 x FID (-) 2 when FI = 0.25 x FID to 0.49 x FID (-) 5 marks if FI = 0.24 x FID and Less.
3.4	Livestock Activity							
	AIV= Artificial Insemination Intensity	AIV = Total AI Done in the Villages Covered by the Road	TCV = Total No. of Cattle in the Villages Covered by the Road	AIV = AIV / TCV		(+) 5		AIID = District Artificial Insemination Intensity $AIID = AIV / TCD$ $AID = Total\ number\ of\ Artificial\ Insemination\ Done\ in\ the\ District$ $TCD = Total\ No.\ of\ Cattle\ in\ the\ District$
								FP +5 marks if AIV = 2 x AIID and above. (+) 3 when AIV = 1.50 x AIID to 1.99 x AIID (+) 2 when AIV = 1.25 x AIID to 1.49 x AIID 0 when AIV = 1.00 x AIID to 1.24 x AIID (-) 2 when AIV = 0.50 x AIID to 0.99 x AIID (-) 3 when AIV = 0.25 x AIID to 0.49 x AIID (-) 5 marks if AIV = 0.24 x AIID and Less.
4	BPL Intensity							
	BPLIV= BPL Intensity Village	TBPLV = Total BPL Population in the Villages Covered by the proposed Road	TPV = Total Population in the Villages Covered by the proposed Road	BPLIV = TBPLV / TPV		(+) 5		BPLID= BPL Intensity District $BPLID = TBPLD / TPD$ $TBPLD = Total\ BPL\ Population\ in\ the\ District$ $TPD = Total\ Population\ in\ the\ District$
								FP +5 marks if BPLIV = 2 x BPLID and above. (+) 3 when BPLIV = 1.50 x BPLID to 1.99 x BPLID (+) 2 when BPLIV = 1.25 x BPLID to 1.49 x BPLID 0 when BPLIV = 1.00 x BPLID to 1.24 x BPLID (-) 2 when BPLIV = 0.50 x BPLID to 0.99 x BPLID (-) 3 when BPLIV = 0.25 x BPLID to 0.49 x BPLID (-) 5 marks if BPLIV = 0.24 x BPLID and Less.
5	Market Facility							
	MF: There should be atleast one market on the proposed length of the road or one market within 5 Km. of the Starting and End Point of the proposed Road.					(+) 10		Note: TMV should includes Total Market in the Villages Covered by the Road + Markets falling within 5 Km. of Starting and End Point of the Road FP +10 marks if MF is fulfilled 0 marks if MF is not fulfilled. There shall be no negative mark.
6	Environmental Issues							
	No Environmental Damage during construction.					(-) 10		[+]5 mark if no environment related issues
	NTU : No. of Trees that may have to be uprooted/cut							(-) 2 mark for each 5 trees
	RPFA : Road Passing through Forest Area							(-) 3 mark for RPFA
	SAS: Source of appropriate Soil							(-) 3 marks if SAS is a hill or SAS is a paddy field
	DWB: Damage to existing Water Bodies							(-) 2 marks if damage to a community/ farmers pond.
7	Requirement of Bridges							
						(-) 5		FP (-) 5 marks for every bridge of length more then 30 Mts and also if the total Bridge length in Running Metre / Km. of the Road exceeds 6 Running Meters/ Km. of Road

Note To qualify for a Selection of a Road proposal, the road must secure a minimum of 80 points.
x ' indicates multiplication.

Signatures

Remarks: (if any)					
(Name)	(Name)	(Name)	(Name)	(Name)	(Name)
Concerned Executive Engineer, PWD	District Fishery Officer	District Veterinary Officer	District Agriculture Officer		Deputy Commissioner or District Development Officer as Representative of DC

Annexure-2							
List of Prioritized Roads for inclusion under AACP							
Prioritized Roads shall be based on marking as per Annexure-1							
Name of District							
Sl.	Name of Road	Starting Point (Km.)	End Point (KM)	Length in Km	No of SPT Bridges	Marks obtained from Annexure-I	Remarks

Note : 3. The list of prioritized roads so prepared by Deputy Commissioners of the respective districts in association with the Executive Engineer, PWD (Roads) and with inputs from the respective District Agriculture Officer/ Executive Engineer (Agriculture), District Fishery Development Officer, District Veterinary Officer.

19.20 Annex-14: List of Roads taken up for upgradation during AACP

SL.	Pkg. Sl.	Package No.	Road Name	Length (km.)	No. of Bridges	No. of Culverts
BARPETA DISTRICT						
1	1	BR-3	Bhabanipur to Barpeta	8.85	5	2
2	2	BR-4	Chenga to Belbari	5.4	5	4
3	3	BR-5 * (Terminated and taken up under AF)	Dr. Jinaram Das	5.31	1	9
4	4	BR-6	Rajakhat to Barsimla	10.36	6	7
5	5	BR-7A	Barpeta Jania Howly (Km 1.50 - Km 4.00)	2.5	1	0
6	6	BR-7B	Barpeta Jania Howly (Km 4.00 - Km 11.86)	7.858	6	4
Barpeta Sub-Total				40.280	24	26
DHUBRI DISTRICT						
7	1	DH-1	Fakirganj to Tikrikilla	11.44	3	21
8	2	DH-2	Gazarikandi to Pipulbari	6.815	3	18
9	3	DH-3	Krishnanagar to Kazarikata Hudurchar	6.698	4	12
10	4	DH-4	Dhubri to Kachugaon	24	3	8
11	5	DH-6	Bahalpur to Bhakatgaon	14.6	3	9
12	6	DH-8	Dharamsala to Durahati	2.9	1	0
13	7	DH-13	Agamani Satrasal Sonahat	6.569	1	0
14	8	DH-14	Fakiragram to Sapatgram	9.062	0	4
Dhubri Sub-Total				82.084	18	72
GOALPARA DISTRICT						
15	1	GLP-2	Abhirampara Road	9.35	6	4
16	2	GLP-4	Balijana to Barjhora	14.668	5	29
17	3	GLP-5	Krishnai Charali to Balpara	16.472	6	13
18	4	GLP-6	Damani to Bohati	10.628	2	9
19	5	GLP-7	Bolbola Bodhapur Hatigaon	13.085	8	15
20	6	GLP-9	Banglipara to Simlitola	10.4	1	11
Goalpara Sub-Total				74.603	28	81
HAILAKANDI DISTRICT						
21	1	HLC-1 (Terminated)	North Narayanpur Pt.IV to Silchar-Hailakandi Rd	-	-	-

SL.	Pkg. Sl.	Package No.	Road Name	Length (km.)	No. of Bridges	No. of Culverts
22	2	HLK-2A	Rangabok - Boldabaldi (Ch 0 to Ch 10)	10.000	8	22
23	3	HLK-2B	Rangabok - Boldabaldi (Ch 10 to Ch 20)	10.000	8	39
24	4	HLK-3	NH 154 to Lakhinagar	13.9	3	39
25	5	HLK-4	Abdullapur to Dinonathpur	10.325	5	37
Hailakandi Sub-Total				44.225	24	137
JORHAT DISTRICT						
26	1	JH-1	NH-37 to Mallow Ali	15.56	5	25
27	2	JH-2	Bahphola to Neolgaon	5.558	1	3
28	3	JH-3A	Lahdoigarh Road (Km 0 to Km 14)	11.99	5	13
29	4	JH-3B	Lahdoigarh Road (Km 14 to Km 26.10)	12.243	4	28
30	5	JH-4	Birinasayek to Dhodar Ali Mohimbari to Titabor	16.928	1	45
31	6	JH-5	Teok - Balama - Nakachari	10.865	3	9
32	7	JH-6	Halowa to Gondhia , NH-37 to Golaghat Dist.	11.715	0	30
33	8	JH-7	Garmur to Jengrai	21.66	0	0
34	9	JH-8	Mallow Ali to Mallow Bund	9.445	1	3
35	10	JH-9	NH-37 to Bhagamukh	9.7	2	21
36	11	JH-10	New Honowal to Boloma Kharikatia	7.8	1	26
Jorhat Sub-Total				133.464	23	203
KARIMGANJ DISTRICT						
37	1	KMJ-1	Karimganj to Sutarkandi	12.33	1	18
38	2	KMJ-3	Baraigram Eraligool up to Fakua	8.824	6	38
39	3	KMJ-4	Patherkandi to Mukamtilla	10.202	3	27
40	4	KMJ-5	Nilambazar to Fakua	14.67	2	82
41	5	KMJ-6	Rakhalbasti to Netaji Nagar	5.323	5	13
Karimganj Sub-Total				51.349	17	178
MORIGAON DISTRICT						
42	1	MR-1	Dimaruguri to Kamarpur	11.3	0	5
43	2	MR-2A	Barangabari to Bagalipara (Km 0 to Km 8)	8	2	2
44	3	MR-2B	Barangabari to Bagalipara (Km 8 to Km 13)	5	2	1
45	4	MR-2C	Barangabari to Bagalipara (Km 13 to Km 18.8)	5.564	1	0
46	5	MR-4	Chabukdhara to Bhurbandha	12.8	2	6
47	6	MR-5A	Sukdal to Tuktuki (Km 0 to Km 4)	4	1	4
48	7	MR-5B	Sukdal to Tuktuki (Km 4 to Km 19.55)	12.84	3	6
Morigaon Sub-Total				59.504	11	24
NALBARI DISTRICT						
49	1	NL-1	Bishnupur Kairara to Sandha Satra	11.915	4	15
50	2	NL-2	Haripur to Suplekuchi	9	2	14
51	3	NL-3	Tamulpur to Ghograpar	12.87	0	9
52	4	NL-4	Nalbari to Kamarkuchi	14.079	4	13
53	5	NL-5	Tihu Haribhanga Kaithalkuchi Nalbari	13.114	9	19
54	6	NL-6	Chamata Kaithalkuchi Barama	7.876	2	17
55	7	NL-8	Tihu to Barama	9.93	0	8
56	8	NL-10	Loharkatha to Arikuchi	9.41	2	12
57	9	NL-13	Joysagar to Sonapur	8.825	1	6
Nalbari Sub-Total				97.019	24	113
SONITPUR DISTRICT						
58	1	SN-1	Balipukhuri Tinali to Rangapara	19.02	1	12
59	2	SN-2	Borbhogia to NH 52	8	1	0
60	3	SN-3	Jamuguri to Dhalaibil	11	0	8
61	4	SN-4	Sadharu Panibharal to Nabazar	12	0	0
62	5	SN-5	Chariali to Pavo	14.63	0	4
63	6	SN-6	Mornoiguri to Sakura	7	0	3
64	7	SN-7	Karsantola to Itakhola	7.7	1	11
65	8	SN-8 (Terminated)	Chaibari to Rangachakuwa	-	-	-
66	9	SN-10	Kawaimari to Thelamara	14.13	1	10
Sonitpur Sub-Total				93.48	4	48
Grand Total				676.006	173	945

19.21 Annex-15: List of Roads taken up for upgradation during AF

Sl.	Name of Road	Package No.	Road length (Km)	Bridges (Nos.)
SONITPUR DISTRICT				
1	Chandamari Bengali to Dulungmukh Road	AACP-AF-SN-11	11.03	2
2	Jamuguri to Gomiripal Road	AACP-AF-SN-12	12.16	0
GOALPARA DISTRICT				
3	Dhumerghat Tarangapur road	AACP-AF-GLP-1	12.87	2
4	Darrangiri Nandeshwar road	AACP-AF-GLP-2A	6.00	3
5	Darrangiri Nandeshwar road	AACP-AF-GLP-2B	4.00	3
6	Darrangiri Nandeshwar road	AACP-AF-GLP-2C	4.45	2
7	Nepalikhuti to Bhojmala road	AACP-AF-GLP-3	11.47	3
8	Maladhara Barobaguan road	AACP-AF-GLP-4	10.80	3
NALBARI DISTRICT				
9	Mukalmua Addatari via Narayanpur	AACP-AF-NL-7	-	1
10	Road from Jagara Satra supa via Sanirammandal LP School to Khakharisal LP school & Baishya supa	AACP-AF-NL-8	6.71	0
11	Road from Belsor Kendubari via Gandhia to Nalbari Palla Road at Sukekuchi	AACP-AF-NL-9	5.21	0
12	Road from Nalbari Palla Road near Sukekuchi to Bhojkuchi (Tihu)	AACP-AF-NL-10	-	0
13	Belsor PWD IB to Jagra Mulakmua Road via Nalicha	AACP-AF-NL-17	4.04	0
14	Road from Piplibari Gohaighar via Tengabari, Kaihati to Ulubari	AACP-AF-NL-18	4.66	0
15	Kuchiarchuk to Bahjani PHE via Dhoptal	AACP-AF-NL-19	6.12	0
BARPETA DISTRICT				
16	Dr. Jinaram Das Road (Balance work of BR-5 under AACP)	AACP-AF-BR-15	12.34	1
JORHAT DISTRICT				
17	Dagaon Road (0-3Km)	AACP-AF-JH-13	3.00	0
18	Raidang Kamargaon Road (2nd Km to 8th Km)	AACP-AF-JH-14	7.00	0
SIVASAGAR DISTRICT				
19	Aaideopukhuri Road (from Teokghat to Sapekhati)	AACP-AF-SIV-16	13.35	0
KARIMGANJ DISTRICT				
20	Chorgola to Chandrapur via Kaliganj bazar (Ch.0.00 to 9.60Km)	AACP-AF-KMJ-5A	9.60	0
21	Chorgola to Chandrapur via Kaliganj bazar (Ch.9.60 to 16.804 Km)	AACP-AF-KMJ-5B	6.60	1
22	Kaliganj BTC to Srimanta Kanishail via Boslabazar	AACP-AF-KMJ-6	8.83	2
Total			160.240	23

19.22 Annex-16: List of Roads connecting markets and dairy/fisheries production hubs

District	Sl.	Road Name	Length (Km)
BARPETA	1	Mandia Whole Sale Market	0.42
	2	Bahari Whole Sale Market	0.84
	3	Kalgachia Whole Sale Market	0.26
Sub-Total			1.52
CACHAR	4	Natun Bazaar Whole Sale Market	0.21
	5	Sonai Rural Haat Market	0.23
Sub-Total			0.44
DARRANG	7	Namkhola Rural Haat Market	0.35
	Sub-Total		
GOALPARA	8	Bakaitari Part I to Matia Singlitola Road	1.04
	9	Construction of Road from Dariduri Fish Seed Production Centre to Ambari Baguan Roan	1.42
Sub-Total			2.46
GOLAGHAT	10	Amguri Bachapathar Beel to PWD Road	2.00
	11	Nagajuri to Dhansiripar Road (through Nagajuri Christian Basti)	5.10
	12	Hatighuli to Gelabeel Road	1.50
	13	Doimaguri to Amguri Padumpathar PWD Road	3.00
JORHAT	14	Tonajan Nabeel to Kachomari Road	2.00
	Sub-Total		
JORHAT	15	Aruna Borali Beel to Kokilamukh Road	1.23
	16	Pub Sawguri Beel to Negheriting Road	2.00
Sub-Total			3.23
KARIMGANJ	17	Dasgram (PWD Batertol Point) to To Gandhai Bazaar via Dasgram HS School Road	1.25
	18	Kaliganj Bazaar to Janakalyan/Fatepur Road	6.00
	19	Kaliganj Bazaar to Chakirmukh Road	2.85
Sub-Total			10.10
LAKHIMPUR	20	Boginadi Whole Sale Market	0.35
	21	Dejoo Rural Haat Market	0.16
Sub-Total			0.51
MORIGAON	22	Kushtoli Rural Haat Market	0.02
	23	Laharighat Whole Sale Market	0.21
	24	Moirabari Whole Sale Market	0.84
	25	Construction of road from Charipunia Beel to Chabukdhara	2.10
	26	Construction of road from Dimal Beel to Silsang	2.00
	27	Janpar Beel to Khandapukhuri Road	2.00
	28	Dubaritoli Beel to Azarabari Road	3.70
	29	Link Road to Annapurna MPI, Bangalpara	0.65
30	Link Road to Bhurbandha Suravi DUSS Ltd	0.70	

District	Sl.	Road Name	Length (Km)
		Sub-Total	12.22
NAGAON	31	Balisatra Whole Sale Market	1.28
	32	Santijan Rural Haat Market	0.41
	33	Nakhuti Rural Haat Market	0.10
	34	Juria Whole Sale Market	0.41
	35	Kathiatoli Rural Haat Market	0.21
	36	Katahguri Rural Haat Market	0.13
	37	Singia Rural Haat Market	0.64
	38	Murajhar Rural Haat Market	0.18
	39	Link Road from Raikata Islampur Road to Laxmi DCS, Milikbasti	3.00
	40	Link Road from Hojai Lanka Road to Basudev DCS, Dakhin Jamunamandal	1.20
	41	Link Road from Hojai Jurapukhuri Road to Gitanjali DCS, Dhanuharbasti	1.50
	42	Link Road from NH-36 to Jamuna Velly DCS, Changmajipathar	0.68
			Sub-Total
NALBARI	43	Dhamdhama Whole Sale Market	0.08
	44	Mukalmua Whole Sale Market	0.46
			Sub-Total
SONITPUR	45	Gohpur Rural Haat Market	0.49
	46	Lokhora Whole Sale Market	0.07
	47	Bindukuri Rural Haat Market	0.30
	48	Dikorai Whole Sale Market	0.62
			Sub-Total
UDALGURI	49	Bhergaon Rural Haat Market	0.65
			Sub-Total
Grand Total			56.79

19.23 Annex-17: List of Markets developed under AACP

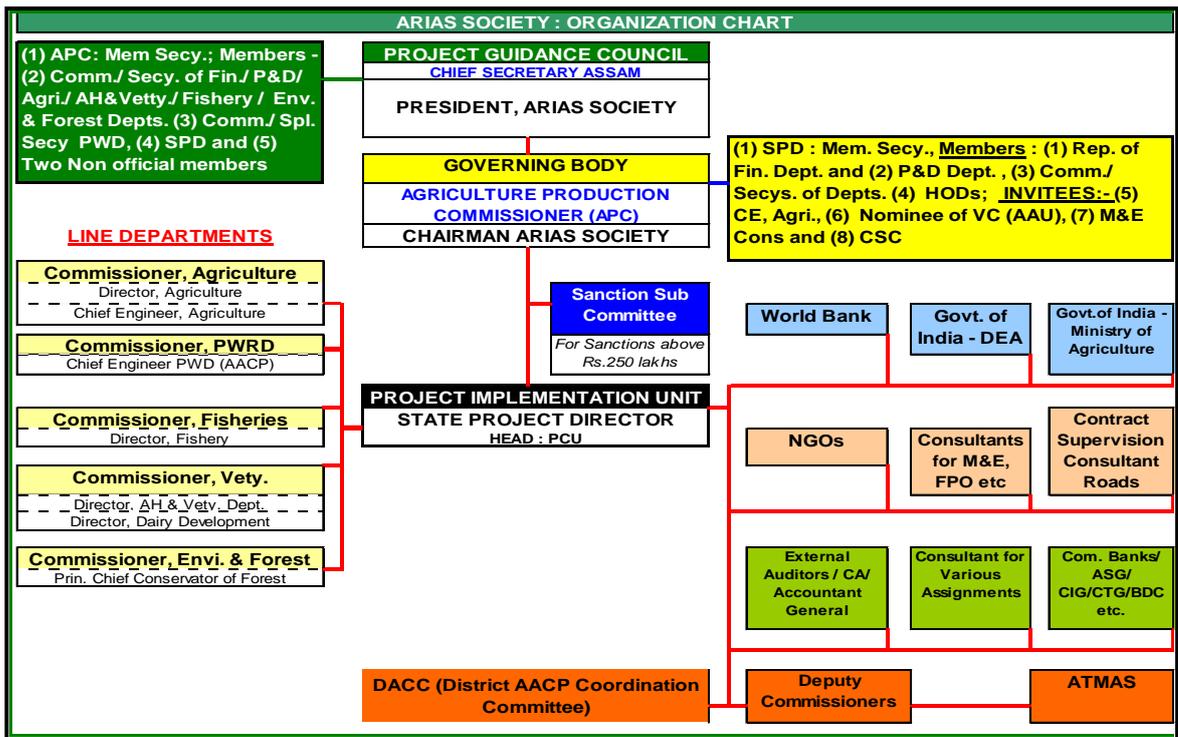
Rural Haats			Wholesale Market		
Sl.	Name of market	District	Sl.	Name of market	District
1	Laimekuri Bazar	Dhemaji	18	Dudhnoi	Goalpara
2	Bilashpur	Bongaigaon	19	Mukalmua	Nalbari
3	Raniganj	Dhubri	20	Panbari	Chirang
4	Nobogoto Simli Tola	Goalpara	21	Dhamdhama	Bagsa
5	Patharighat	Darrang	22	Baginadi	Lakhimpur
6	Dirzoo	Lakhimpur	23	Rajmai Hat	Sibasagar
7	Kakopathar	Tinsukia	24	Jonai Bazar	Dhemaji
8	Sapekhati Weekly Market	Sibasagar	25	Dimakuchi	Udalguri
9	Topatoli	Kamrup	26	Kaila Moila	Chirang
10	Jamira	Hailakandi	27	Boko	Kamrup
11	Bedeti	Sonitpur	28	Bahari	Barpeta
12	Chengmara	Sonitpur	29	Mondia	Barpeta
13	Kaliapani	Jorhat	30	Rupahihat	Nagaon
14	Titabor	Jorhat	31	Juria	Nagaon
15	Patgaon	Kokrajhar	32	Katlichera	Hailakandi
16	Dulakharia Haat	Golaghat	33	Balugaon (Alikash)	Darrang
17	Sonai bazar	Cachar	34	Uriamghat	Golaghat
			35	Moirabari	Morigaon
			36	Natun Bazar	Cachar
			37	Nilam Bazar	Karimganj
			38	Balajan Tinali	Kokrajhar

19.24 Annex-18: List of Markets taken up under AF

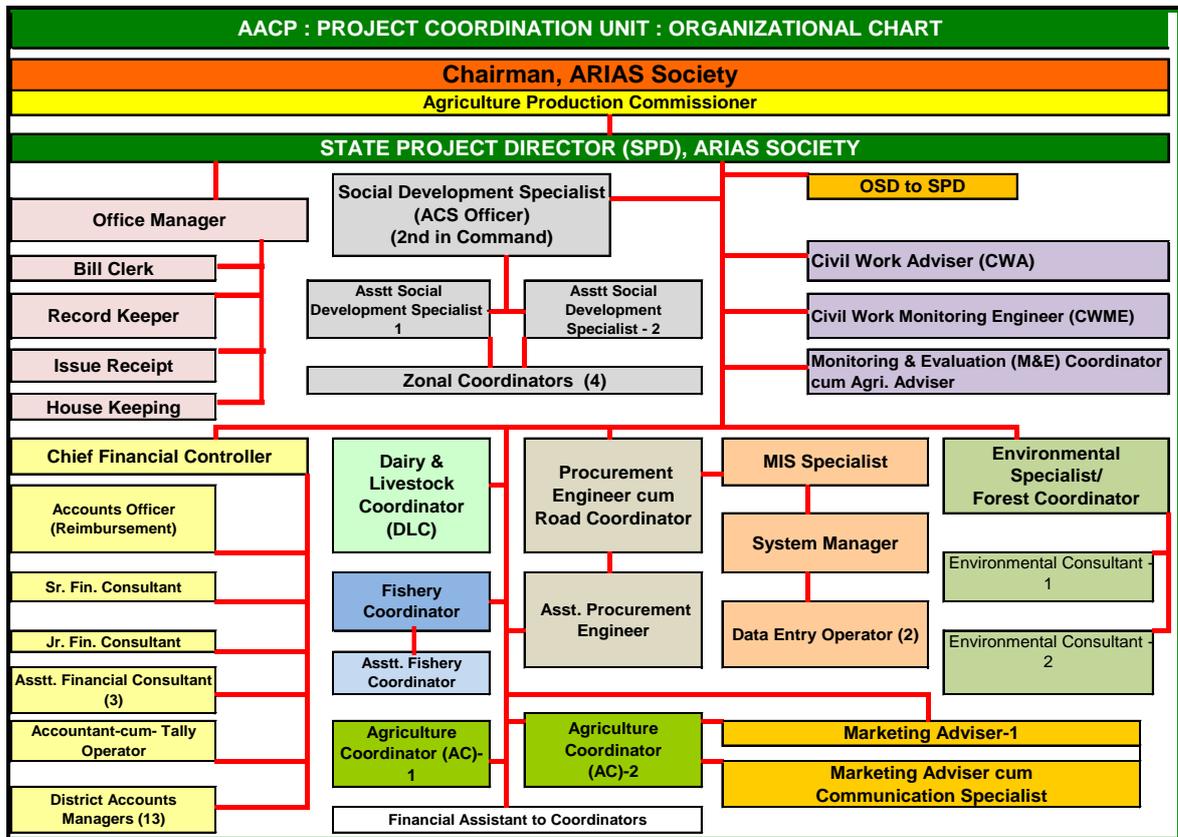
District wise list of markets taken up during the AF period							
Sl No	District	Mkt Sl.	Name of Market	Sl No	District	Mkt Sl.	Name of Market
1	Darrang	1	Tangni-WSM	7	Nalbari	36	Kaplabari-WSM
		2	Namkhola-RH			37	Kashimpur-WSM
		3	Nepali bazar-WSM			38	Belsor-RH
		4	Silbori-RH			39	Bijulighat-RH
		5	Panbari-WSM			40	Baritopa-WSM
		6	Ramhari-WSM			41	Kalgachia-WSM
2	Udalguri	7	Orang-RH	8	Barpeta	42	Sarupeta-WSM
		8	Bhergaon-RH			43	Khetri-RH
		9	Majbat-WSM			44	Jorshimuli-RH
3	Sonitpur	10	Gohpur-RH	9	Kamrup	45	Hahim-WSM
		11	Lokhora-WSM			46	Chakihali-RH
		12	Bindukuri-RH			47	MalegaRH-RH
		13	Dikorai-WSM			48	Khagarpur-RH
		14	Borchola-RH			49	Kaldoba-WSM
		15	Garubandha-RH			50	Pipulbari-RH
4	Nagaon	16	Borgaon-RH	10	Bongaigaon	51	Hatsingimari-WSM
		17	Ambagan-WSM			52	Kalapakani-RH
		18	Balisatra-WSM			53	Dhupdhara-WSM
		19	Santijan-RH			54	Darrangiri-WSM
		20	Nakhuti-RH			55	Sutarpara-RH
		21	Murajhar-RH				
		22	Kathiatoli-RH				
		23	Singia-RH				
		24	Amsoi-RH				
		25	Katahguri-RH				
5	Morigaon	26	Habibarangabari-WSM	11	Dhubri		
		27	Jaluguti-WSM				
		28	Nakhola-WSM				
		29	Lahorighat-WSM				
		30	Kushkoli-RH				
		31	Nellie-WSM				
6	Baksa	32	Baganpara-RH	12	Goalpara		
		33	Subankhata-RH				
		34	Mushalpur-WSM				
		35	Simla-RH				

District wise cumulative list of markets developed under the Project (both original credit & AF)									
Sl.	District	Wholesale	Rural Haat	Total	Sl.	District	Wholesale	Rural Haat	Total
1	Baksa	2	3	5	15	K-Anglong	0	0	0
2	Barpeta	4	0	4	16	Karimganj	1	0	1
3	Bongaigaon	0	4	4	17	Kokrajhar	1	1	2
4	Cachar	1	1	2	18	Lakhimpur	1	1	2
5	Chirang	2	0	2	19	Morigaon	6	1	7
6	Darrang	5	3	8	20	N.C. Hills	0	0	0
7	Dhemaji	1	1	2	21	Nagaon	4	7	11
8	Dhubri	2	3	5	22	Nalbari	4	2	6
9	Dibrugarh	0	0	0	23	Sivasagar	1	1	2
10	Goalpara	3	2	5	24	Sonitpur	2	7	9
11	Golaghat	1	1	2	25	Tinsukia	0	1	1
12	Hailakandi	1	1	2	26	Udalguri	2	2	4
13	Jorhat	0	2	2		Total	46	47	93
14	Kamrup	2	3	5					

19.25 Annex-19: Organization chart of the ARIAS Society



19.26 Annex-20: Organization chart of the Project Coordination Unit (PCU)



19.27 Annex-21: List of various Missions by the World Bank for the project

Sl.	Month/year of World Bank Mission/visits	World Bank Mission members/ other individuals
1.	March 7-11, 2005 (Project launch workshop on March 9, 2005)	Mr. Robert Epworth , Task Leader AACP, Prabir Joardar (Irrigation Engineer), Paul Singh Sidhu (Agriculturist), Deepak Ahluwalia (Economist), D. Baxi (Procurement Specialist), Mridula Singh (Social Development Specialist), Tapas Paul (Environmentalist). Ashok Kumar (Roads Engineer) visited Assam previous week. Mr. Michael Carter, Country Director World Bank, joined the project launch workshop.
2.	September 18-28, 2005	Prabir Joardar (Task Team Leader), Paul Singh Sidhu (Agriculturist), D. Baxi (Procurement Specialist), Tapas Paul (Environmentalist) Ashok Kumar (Roads Engineer), N.R. Basin (Livestock Specialist); G. Dixie (Marketing Specialist); Mario Pedini (Fishers Specialist); Tanuj Mathur (Financial Management Specialist),
3.	February 09-22, 2006	Prabir Joardar (Mission Leader), Ashok Kumar (Roads Engineer), Tapas Paul (Environmentalist), Mridula Singh (Social Development Specialist), Tanuj Mathur (Financial Management Specialist), N K Bandyopadhyay (Irrigation Specialist) and N.R. Basin (Livestock Specialist). Dr. P S Sidhu (Agriculturist) independently visited Assam in January 2006, and D J Baxi (Procurement Specialist) carried out only desk review. Mr. G Pathmanathan (Sector Manager, SASAR) joined the mission from February 15-19, 2006
4.	August 28 to September 6, 2006	Prabir Joardar (Mission Leader), P S Sidhu (Agricultural Specialist), Vijay Kalavakonda (Finance and Micro Credit Specialist), Tapas Paul (Environmental Specialist), Debabrata Chakraborti (Procurement Specialist), Grahame Dixie (Agric. Market Specialist), Subhas Mittal (Financial Management Specialist), Maroti Upare (Fisheries Specialist) and N.R. Basin (Livestock Specialist).
5.	April 23 to 26, 2007	Mr. Prabir Joardar (Task Team Leader), Mr. Mohan Gopalakrishnan (Financial Management Specialist) and Ms Mridula Singh (Social Development Specialist)
6.	July 23 to 27, 2007 (Short review Mission)	Prabir Joardar (Mission Leader). Manivannan Pathy (Agricultural Specialist), Assnye Legesse (M&E Specialist)
7.	October 2 to 6, 2007	Mme./Messrs. Prabir Joardar (Task Team and Mission Leader); Manivannan Pathy (Agriculture/Agri-Marketing Specialist); Mridula Singh (Social Development Specialist); Tapas Paul (Environmental Specialist); Ashok Kumar (Rural Roads Specialist); Assaye Legesse (M&E Specialist); Debabrata Chakraborti (Procurement Specialist); N K Bandyopadhyay (Irrigation Specialist); Sumeet Singh (Financial Management Specialist).
8.	DEC. 2-4, 2007	Mr Graham Dixie, senior agribusiness & marketing specialist, new Task Team Leader, preparatory visit to Assam prior to MTR
9.	February 1- 14, 2008 (Mid Term Review Mission)	Mme./Messrs. Grahame Dixie (Mission and Task Team Leader); Manivannan Pathy (Agriculture & Market Development Co Team Leader); Paul Shidhu (Agricultural Extension), Grant Milne (Forestry); Ashok Kumar (Rural Roads); Assaye Legesse (M&E); Anupam Joshi (Environment); Mridula Singh (Social Development); D. Chakraborti (Procurement); Mohan Gopalakrishnan (Financial Management); J Julian (Cost Tab); Bank Consultants: Prabir Joardar (Project Management and Coordination); N K Bandyopadhyay (Community Irrigation); FAO Consultants : S Selvarajan (Economist); N R Bhasin (Livestock); Paul Ryan (Community Forestry), Sumeet Singh (Financial Management) and M A Upare (Fisheries)
10.	June 16 - 17 June 2008 (Short Implementation Support Mission)	Mr. Grahame Dixie, Senior Agribusiness Specialist (Task Team Leader);
11.	September 22-26, 2008 (Short Implementation Support Mission)	Mr. M. Pathy, Co-Task Leader

Sl.	Month/year of World Bank Mission/visits	World Bank Mission members/ other individuals
12.	May 20-24, 2008 (Short Implementation Support Mission)	Mr. M. Pathy, Co-Task Leader
13.	November 17-21 2008	Mme./Messrs. Grahame Dixie (Mission and Task Team Leader); Manivannan Pathy (Agriculture & Market Development Co Team Leader); Ashok Kumar (Rural Roads); Jackie Julian (M&E & Cost tables); Kalesh Kumar Procurement); Mohan Gopalakrishnan (Financial Management); FAO Consultant N K Bandyopadhyay (Community Irrigation);
14.	March 31 st to April 3 rd , 2009	Mr. Grahame Dixie, Senior Agribusiness Specialist (Task Team Leader) and Mr. M. Pathy (Co-Task Leader)
15.	June 15-19, 2009 [Mission for Retrofitting the Governance and Accountability Action Plan (GAAP) for AACP]	Messrs. Manivannan Pathy (Sr. Agricultural Specialist and Co-TTL AACP), Paul Singh Sidhu (Sr. Agricultural Specialist and AACP Team Member), Durga Prasad Duvuri (Portfolio Retrofitting Specialist - Consultant) and Mohinder S. Mudahar (Economist – Consultant).
16.	August 30- September 7, 2009	Mmes./Messrs. Grahame Dixie (Mission and Task Team Leader); Manivannan Pathy (Agriculture & Market Development and Co Task Team Leader); Ashok Kumar (Rural Roads); Jacqueline Julian (Cost tables); Kalesh Kumar (Procurement); Mohan Gopalakrishnan (Financial Management); Ai Chin Wee (Monitoring and Evaluation) Paul Singh Sidhu (Agriculture & Extension), Varun Singh (Social Development) Anupam Joshi (Environment) Sumeet Singh (FM Consultant); FAO Consultants; N K Bandyopadhyay (Community Irrigation); Maroti Upare (Fisheries), N.K. Bhasin (Dairy and Livestock) and S. Selvarajan (Economist)
17.	December 21-24, 2009 (Short Technical Mission)	Mr. M. Pathy, Co-Task Leader
18.	February 12 – 13, 2010 (Short Implementation Support Mission)	Mr. Grahame Dixie (Task Team Leader), and Dr. Maximo Torero, Division Director of the Markets, Trade, and Institutions Division at the International Food Policy Research Institute (IFPRI), Washington DC.
19.	March 15 th - 21 st , 2010	Mmes./Messrs. Grahame Dixie (Mission and Task Team Leader); Manivannan Pathy (Agriculture & Market Development and Co Task Team Leader); Ashok Kumar (Rural Roads); Kalesh Kumar (Procurement); Mohan Gopalakrishnan (Financial Management); Ai Chin Wee (Monitoring and Evaluation) Paul Singh Sidhu (Agriculture & Extension), Varun Singh (Social Development) Anupam Joshi (Environment) Sumeet Singh (FM Consultant); FAO Consultants; N K Bandyopadhyay (Community Irrigation); Maroti Upare (Fisheries), N.K. Bhasin (Dairy and Livestock), Paul Ryan (Forestry) and S. Selvarajan (Economist)
20.	September 16 to 25, 2010	Mmes./Messrs. Grahame Dixie (Mission and Task Team Leader); Manivannan Pathy (Agriculture & Market Development Specialist and Co-Task Team Leader); Ashok Kumar (Rural Roads); Kalesh Kumar (Procurement); Mohan Gopalakrishnan (Financial Management); Ai Chin Wee (Monitoring and Evaluation); Paul Singh Sidhu (Agriculture & Extension); Anju Gaur (Irrigation, Drainage Mechanization and Community Irrigation); Varun Singh (Social Development); Anupam Joshi (Environment); Sumeet Singh (FM Consultant); Murahari Reddy (Roads consultant); and FAO Consultants: Maroti Upare (Fisheries) and S. Selvarajan (Economist).
21.	February 14-16, 2011 (Short Implementation Support Mission)	Mr. M. Pathy, Co-Task Leader (Mr Pathy took over as TTL w.e.f. March 15, 2011)
22.	May 02-06, 2011	Mmes./Messrs. Manivannan Pathy (Mission and Task Team Leader); Kalesh Kumar (Procurement); Mohan Gopalakrishnan (Financial Management); Varun Singh (Social Development); and Anupam Joshi (Environment);
23.	November 21–25, 2011 (Implementation Support and Pre Appraisal Mission for Additional	Mmes./Messrs. Manivannan Pathy (TTL), Bekzod Shamsiev (Co-TTL), Helen Leitch (Dairy), Ashok Kumar (Rural Roads), Mohan Gopalakrishnan (FM), Kalesh Kumar (Procurement), Geeta Shivdasanai (Procurement),

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	Financing)	Anupam Joshi (Environment) and Varun Singh (Social), Julian (Cost Tables), S. Selvarajan (Economic analysis), Venkat Bayana (Consultant – Social) and Maroti Upare (Consultant – Fisheries).
24.	March 23, 2012 (Short FM Mission)	Mr. Mohan Gopalakrishnan, Senior Financial Management Specialist
25.	May 21–25, 2012	Mmes./Messrs. Manivannan Pathy (Mission and Task Team Leader); Bekzod Shamsiev (Co-TTL and Sr Economist), Paul Singh Sidhu (Sr. Agriculturalist); Ashok Kumar (Sr. Transport Specialist); Helen Leitch (Sr. Livestock Specialist); Maroti Upare (Fisheries Specialist – Consultant); Mohan Gopalakishnan (Sr. Financial Management Specialist); and Mridula Singh (Sr Social Development Specialist).
26.	21 st May 2012 (World Bank’s ‘Country Programme Strategy Consultation Workshop)	Officials from the Country Management Unit: Mr. Hubert Nove-Josserand, Operations Advisor; Mr. Roland Lomme, Governance Advisor; Mr. Sascha Djumena, Sr. Country Officer; Ms. Gunjan Gulati, Economist, IFC; Mr. Roger Grawe, Consultant; Mr. Severin Kodderritzsch, Lead Country Sector Coordinator; Mr. Ashok Kumar, Senior, Transport Specialist; Mr. Manivannan Pathy, Senior Agricultural Specialist & TTL AACP.
27.	September 14 -19, 2012 (Short Mission for reviewing the Forestry Component of AACP)	Mr. Grant Milne, Senior Natural Resources Specialist and Mustaqur Rahman (Sr. Operations Specialist, FAO Consultant)
28.	September 17 -21, 2012 (Short Technical Mission)	Mr. M. Pathy, Task Leader and Ms. Anju Gaur
29.	December 10–18, 2012	Mmes./Messrs. Manivannan Pathy (Mission and Task Team Leader); R. S. Pathak (Sr. Water Resources Specialist); Helen Leitch (Sr. Livestock Specialist); Mustaqur Rahman (Sr. Operational Specialist - FAO CP); Heenaben Yatin Doshi (Procurement Specialist); Mohan Gopalakishnan (Sr. Financial Management Specialist); and Mridula Singh (Sr. Social Development Specialist). Grant Mile (Sr. Natural Resources Management Specialist) visited in Sept.14-19, 2012 to review the forestry activities under the project
30.	April 10 -12, 2013	Mr. M. Pathy, Task Leader
31.	May 07, 2013	Visit by US delegation consisting of the US Assistant Secretary Lago, U.S. Executive Director to the Asian Development Bank (Skip Orr), and his wife, Mr. Joseph Dickson (from U.S. Treasury's multilateral development bank office), Bill Foster, U.S. Treasury attache in India
32.	May 14 to 16, 2013	Mr. Simeon Ehui, Sector Manager, South Asia Region, ARD along with Mr. Manivannan Pathy (Task Leader);
33.	May 20-27, 2013 (Documentary Film by the World Bank on AACP)	Ms Vinita Ranade (External Affairs) World Bank , along with a film crew from the World Bank
34.	June 4-6, 2013	Mr. Onno Ruhl, Country Director, India, World Bank, along with Mr. Michael Haney (Operations Advisor), Ms. Sona Thakur (Communication Officer), Mr. Manivannan Pathy (Task Leader);
35.	June 10–14, 2013	Mmes./Messrs. Manivannan Pathy (TTL and Sr. Agricultural Specialist), Bekzod Shamsiev (Co-TTL and Sr. Economist); Paul Sidhu (Sr. Agricultural Specialist – FAO Consultant); Helen Leitch (Sr. Livestock Specialist); Mustaqur Rahman (Sr. Operational Specialist - FAO Consultant); Maroti Upare (Fisheries Specialist – FAO Consultant); Mohan Gopalakishnan (Sr. Financial Management Specialist); M Atikuzzaman (Financial Management Specialist); Heenben Doshi (Procurement Specialist); Anupam Joshi (Sr. Environmental Specialist); and Mridula Singh (Sr. Social Development Specialist).
36.	September 02 to 05, 2013 (Short Technical Mission)	Manivannan Pathy (TTL and Sr. Agricultural Specialist), Mr. Kanv Garg (Energy Specialist) and Mr. S. Selvarajan (Economist)
37.	December 9-18, 2013	Mmes./Messrs. Manivannan Pathy (TTL and Sr. Agricultural Specialist), Bekzod Shamsiev (Co-TTL and Sr. Economist); Paul Sidhu (Sr. Agricultural Specialist – Consultant); Helen Leitch (Sr. Livestock Specialist); Reena

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		Gupta (Forestry Specialist); M. Atikuzzaman (Financial Management Specialist); Heenben Doshi (Procurement Specialist); and Anupam Joshi (Sr. Environmental Specialist). Mr. Animesh Shrivastava (Country Sector Coordinator) joined the mission from December 16-17, 2013.
38.	February 11 th & 12 th 2014 (Media Visit)	Mr. Manivannan Pathy (TTL and Sr. Agricultural Specialist), along with Ms. Nandita Roy, World Bank; Mr. Asit Ranjan, Mint; Mr. Zia Haq, Hindustan Times; Mr. Naresh Mitra, Times of India; Ms. Kabita, Assam Tribune; Mr. Roopak Goswami, Telegraph; Mr. Samudra Kashyap, Indian Express and Mr. Nayanjyoti, Asomiya Pratidin
39.	April 28 and 29, 2014 (Short Technical Mission)	Mr. M. Pathy, Task Leader
40.	August 25-30, 2014, Implementation Support and Review Mission	Mmes./Messrs. Manivannan Pathy (TTL and Sr. Agricultural Specialist), Paul Sidhu (Sr. Agricultural Specialist – Consultant); Anju Gaur (Sr. Irrigation Specialist); M. Atikuzzaman (Financial Management Specialist); Heenben Doshi (Procurement Specialist); Mridula Singh (Sr. Social Development Specialist) and Anupam Joshi (Sr. Environmental Specialist).
41.	February 16 -19, 2015, Final Implementation Support and Review Mission	Mmes./Messrs. Manivannan Pathy (Task Team Leader and Sr. Agricultural Specialist); Bekzod Shamsiev (Sr. Agricultural Economist); Anju Gaur (Sr. Irrigation Specialist); Helen Leitch (Sr. Livestock Specialist – consultant, FAO CP); Maroti Upare (Fisheries Specialist – consultant, FAO CP); Jacqueline Julian (Operations Specialist); Sanjay Vashishtha (Solar Energy Specialist – consultant, FAO CP); Suraiya Zannath (Sr. Financial Management Specialist); Heenaben Doshi (Procurement Specialist); and Vanitha Kommu (Environmental Specialist - Consultant). Mridula Singh (Sr. Social Development Specialist) undertook a desk review of the social safeguards under the project.
