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# **Impact Assessment of the Minor Tank Development Programme**

**Annex**

INTEGRATED FOOD SECURITY PROGRAMME  
TRINCOMALEE

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Sri Lanka - German Development Cooperation

## Impact Assessment of the Minor Tank Development Programme

### TERMS OF REFERENCE

#### Food Security in Conflict

The Integrated Food Security Programme Trincomalee aims at supporting people at food risk and affected by the ethnic conflict to diversify and intensify their food and income sources and improve their diet and health care (objective). This should contribute to sustainable improvement in the basic needs situation, especially with a view to nutrition and food security amongst the poor population affected by the conflict in Trincomalee district as a pre-condition for peaceful co-existence and cooperation of the various ethnic groups in the district (goal). IFSP started in August 1999 with a first phase until May 2001. A second project phase until end 2003 has been agreed upon as a result of a progress review conducted in July/August 2000.

Food and nutrition security has three main elements: i) availability of food at all times, ii) access to food at all times and, iii) use and utilisation of food according to good dietary standards. To overcome at least some of the constraints of the conflict IFSP emphasises community mobilisation, people's participation and institutional as well as human capacity building. This should in the short- and medium-run encourage the use of local resources, enhance the demand for better services and at the same time increase the contribution towards rehabilitation and reconstruction. The focus on the dimensions of the ethnic conflict requires interventions, which reflect basic needs and priorities of war affected people. All IFSP interventions and activities are expected to support stability.

#### The Minor Tank

Irrigated agriculture is an important aspect of Sri Lankan agriculture. While irrigation can be divided into major, medium and minor on the basis of the acreage served by the irrigation scheme (command area), in terms of the total extent and the total number of farmers served in the country, minor irrigation, often referred to as village irrigation occupies an important place. There are about 450 such minor irrigation tanks in Trincomalee. The majority of these tanks dates back to several centuries. A large number of minor tanks have been abandoned for many years due to the present conflict situation and the consequent displacement of the residents. The comparatively poor economics of paddy cultivation and seasonal hydrological effects may be another reason why tanks are abandoned. On the other hand, farmers are reclaiming abandoned irrigation systems occasionally, probably for reasons of ensuring local food security.

Farmers appear to have developed mechanisms of coping with the conflict. They continue cultivation under risks and uncertainties. Farmers somehow manage to maintain the minor tanks though at a very sub-optimal level. Services from government departments are hardly existent due to the conflict situation resulting in poor water management and comparatively low yields. Minor tanks may have lost their focal function as resource base for the village.

About 200 tanks are estimated to be in need of development or rehabilitation. Another 200 tanks serve purposes other than supplying water for irrigation agriculture. Most of the tanks are hydrological interconnected in a cascade system and are often affected by the vagaries of rainfall, and the storage and delivery efficiencies are affected by the level of damage of the different irrigation structures. The farmers cultivating under these tanks earn a living under difficult circumstances and poverty is an ever-present phenomenon.

The minor tanks do not only provide water for irrigation but are more or less the centre of the village life. Minor tanks regulate the local/regional water table and are vital for ensuring the supply of drinking water. They are "owned" by the local community. Minor tanks are meeting points for taking a bath and for washing clothes. Their effect on the local economy and the social fabric extends far beyond paddy cultivation.

### **The 75 Minor Tank Development Programme**

To contribute to nutrition and food security at village level and to create and rehabilitate productive assets a tank rehabilitation programme has been agreed between IFSP and the Assistant Commissioner Agrarian Development (DoAD), Trincomalee. 75 minor tanks were initially identified. Minutes of Meeting to conduct an agreement between the two institutions were signed in June 1999. The minor tank development programme focuses not only on the technical aspects of repair and reconstruction but more importantly on the socio-economic dimension. The aim is first and foremost to bring the command area back under cultivation. This in turn is expected to contribute to increased production and productivity and income leading to confidence creation and greater stability at the village level amidst the repercussions of the ethnic conflict.

It is also envisaged to increase the capacity of the farmers' organisation to play an active role in the process of rehabilitation and the proper maintenance of the schemes after the rehabilitation. Finally, a tank inventory, a documentation of the conditions of the tanks and an organised approach towards rehabilitation combined with institutional support is expected to enhance the capacity of DoAD.

### **Present Status of the Tank Development Programme**

The 75 tanks for rehabilitation were originally selected from seven DS Divisions: Kuchchaveli, Padavisiripura, Gomarankadawela, Morawewa, Muthur, Eachchilampattai, Thampalakamam. Details of the development and/or rehabilitation works include repairs or renovation of the tanks, repairs of the existing agricultural roads leading to the tanks and strengthening of the community based organisations. The initial activities further include the preliminary investigation, detailed survey and the preparation of the feasibility reports. Then the tank development is undertaken with the participation of the beneficiaries. Food-for-work is applied to encourage participation and contribution from farmer's organisations. The IFSP contributes to up to 80% of the total project cost and the target group is expected to contribute the balance 20% mostly in the form of unskilled labour.

The actual implementation of the programme commenced in October 1999 and ten tanks have already been developed and were handed over to Farmer's organisations. Another 45 tanks are at different stages of development. Planning included a brief assessment of all 75 minor tanks and a thorough review of the local conditions (tank inventory). The selection of the tanks was initially done on a rather arbitrarily basis. However, in line with participatory needs assessment applied by IFSP, the tank rehabilitation has been related to other activities for reconstruction and redevelopment of the village infrastructure for better short-and medium-term food and nutrition security. Contribution from the farmer's organisations towards the work has become an essential element in the efforts of IFSP to mobilise the local communities.

IFSP has been supporting DoAD with manpower, equipment and training: six civil engineers, two draughts persons, computers, levelling equipment, office facilities, small machinery and transport. This should contribute to enhance the department's performance at technical and managerial level. Capacity support is considered a precondition to successfully implement the programme.

Since the programme is implemented in a conflict affected environment significant constraints have been experienced. Mobility is restricted, the movement of goods and services require security clearance and hence, participation is affected. The present capacities of DoAD and other service providers reflect the prevailing ground conditions.

### **Objectives of the Impact Assessment**

The case study/evaluation is expected to review the experience to date and to promote a more standardised and effective approach towards tank development and rehabilitation for

medium-term nutrition and food security. It is further expected to propose to DoAD and other institutions and organisations involved in the rehabilitation of minor irrigation systems in a conflict affected region to adjust and revise procedures and to improve communication with farmer's organisations with the aim to promote participation and ownership.

Recommendations for improved service provisions to the farming community as well as for an effective maintenance system of the assets created would be expected. The case study/evaluation is expected to make mid course corrections for the 75 minor tank rehabilitation programme.

Recent research findings should be tested for application under the specific conditions of the conflict. Finally, the results of the case study/evaluation should contribute to promote a dialogue among stakeholders.

### **Specific Tasks**

1. To review the local and regional conditions (ground conditions), which set the frame for the tank development programme.
2. To identify, describe and analyse coping mechanisms of the farming community amidst uncertainty and risks.
3. To find answers to the questions why farmers abandon minor tanks and why they at times reclaim local irrigation systems (economics, social aspects, security/conflict).
4. To review the mandate of DoAD and other institutions involved in minor tank rehabilitation and for supporting farmer's organisations. The procedural steps adopted by the Department and the type of co-operation between the Department and the IFSP and other parties engaged in tank rehabilitation including their efforts to encourage the mobilisation of farmer's organisations should be examined.
5. To examine critically the technical aspects of the programme – the criteria used for the selection of tanks for rehabilitation, the planning of rehabilitation, the preparation and quality of preliminary investigation report, detail survey and feasibility reports, the quality of the rehabilitation work done, etc.
6. To identify the extent of participation of the rural people (social dimension) – the degree of farmer's consultation in planning, the extent of mobilisation of target groups, contribution of farmers in the construction work, farmer perceptions regarding the quality of work done, capacity building of farmer organisations, sense of ownership created among the farmers, plan for operation and maintenance of the rehabilitated tanks.
7. To determine the impact of the development and rehabilitation of tanks: cost-benefit analysis (cost of inputs, benefits such as increase in water availability and land area cultivated, other uses of tank water, increase in crop intensity, increased incomes, etc.), trade-offs (who is gaining who is loosing etc.).
8. To examine the concurrent improvement in the various agri-support services provided by the other institutions and organisations to reap maximum benefits from the rehabilitation of tanks – agricultural extension service to encourage farmers to adopt proper on-farm water management, crop diversification and suitable cropping pattern, agricultural credit, crop insurance, input supplies, agricultural marketing, etc.
9. To recommend changes for a more effective approach towards implementing the 75 minor tank development programme under IFSP – Department of Agrarian Services including recommendations to apply recent research findings.

10. To recommend changes in the approach and management of DoAD towards meeting its mandate and for other institutions and organisations engaged in tank rehabilitation to effectively target interventions.
11. To prepare a comprehensive report according to IFSP standards (hard copy, digital form) and contribute to presenting the findings to DoAD and partner institutions.

### **Proposed Methodology**

Guiding principles are:

- i) To establish a learning exercise cycle: review – dialogue – analysis – recommendation – implementation – adjustment etc. (“stakeholders meet” or “professionals meet farmers – farmers meet professionals”)
- ii) Engage farmers and farmer’s organisation from the three ethnic groups to jointly express their views, experience and aspiration

Analysis of secondary data – reports, records, etc.; observation of the tanks before, during and after rehabilitation; in-depth case studies of a few selected tanks; Gather and analyse additional information (for example, amount of available water, cultivation, production, income etc.) both before and after rehabilitation

Discussion with key informants using an unstructured schedule – farmers, representatives from farmer’s organisations, engineers, community mobilisers, IFSP management, Assistant Commissioner DoAD, and representatives from other organisations engaged in tank rehabilitation etc.

Cross sectional survey of samples of farmers and farmer organisation representatives using a structured questionnaire

Reflect on recent research findings and state of the art of tank rehabilitation including review of research recommendations for possible application

The case study/evaluation could be considered a learning approach at various levels, e.g. how to understand and recommend changes of the coping mechanisms of the farming community, how to adjust the rehabilitation programme and how to apply research findings

### **Schedule**

The evaluation is scheduled from the second quarter 2002 onwards. A minimum of two cropping seasons should be covered. Review of information and data should be followed by extensive field visits. Mid-term reporting at workshops and reporting of preliminary findings and recommendations are expected to highlight an adjusted/restructured approach. A detailed work plan has to be prepared by the evaluation team. Throughout the case study/evaluation workshops with stakeholders are to be held. The findings are to be documented in a comprehensive report.

### **Evaluation Team**

The evaluation team should comprise of a senior irrigation management expert as team leader. A development economist/social scientist, an agricultural expert, an agricultural economist and a civil engineer are expected to cover subjects listed under the specific tasks above. The team members should have a profound knowledge and experience of the economic, social and ecological dimension of minor irrigation schemes including the village economy and the paddy economy. The team should be in a position to incorporate relevant research results into this exercise. Farmer’s representatives and staff from partner institutions are to be incorporated into the team as far as this is possible.

## DoAD - IFSP Minor Tank Development Programme

S. No.	Inv. No.	D.S. DIVISION & AGRARIAN KENDRA	VILLAGE	TANK	COORDINATES		COMMAND AREA (ha)	FARM FAMILIES	ESTIMATE (TRs.)	EXPENDITURE up to 30.09.2003 (TRs.)	PROGRESS
					Long. (x)	Lat (y)					
		<b>MUTHUR</b>									
1	1	<b>Thoppur</b>	Pallikudiyiruppu , Sinivasapuram,	Keerandankulam	81.314400	8.419640	76	120	1,840.0	1,775.5	100%; ready to hand over to FO;
2	2	Do	Iqbalnagar, Thoppur	Puliyankulam			54	82			Not feasible, abandoned tank.
3	3	Do	Iqbalnagar, Thoppur	Pullaanthikulam			50	81			Farmers re-started cultivation after MoU, Awareness meeting held, PIR is progress.
4	4	Do	Iqbalnagar, Thoppur	Ithikulam			37	25			Not feasible, abandoned tank.
5	5	<b>Sampoor</b>	Sampoor East	Sinnakulam	81.299840	8.484140	10	12	465.0	302.0	80%; work in progress ; to be completed in Nov 2003
6	6	Do	Sampoor East	Periavembukulam	81.317910	8.483430	25	12	920.0	550.0	70% ; work in progress ; to be completed in Nov 2003
7	7	Do	Kokkatti	Vadumangalkulam	81.335450	8.489360	10	15			Accessible after MoU,hydrological potential to be verified in Feb 2003 (dropped from work plan '03?)
8	8	Do	Sampoor East	Thoduvankulam	81.292820	8.487570	18	42	820.0	700.0	85%; work in progress ; to be completed in Nov 2003
9	9	Do	Vembadithoddam , Kadatkarachenai,	Vembadithoddam	81.324860	8.457860	18	11	534.0	467.7	100%; ready to hand over , flood damage repaired by machinery in May 2003
10	10	Do	Sampoor East	Moddaiyandikulam (Sinna)	81.304430	8.487690	22	15	280.0	265.5	100%; ready to hand over , flood damage repaired by machinery in June 2003
11	11	Do	Chennaiyoor	Solaipallakulam	81.320880	8.441720	26	21	969.0	797.7	100%; ready to hand over to FO;
12	12	Do	Chennaiyoor, Kaddaiparichchan	Nariyilanthaikulam	81.310140	8.438520	30	25	650.0		Emergency repairs done , construction work is to commence in Nov 2003 by heavy machinery
13	13	Do	Sampoor East	Periyalankulam			31	34			Rehabilitated in 1999 through DOA.
14	14	Do	Koonithivu	Periyakulam	81.308500	8.505030	18	30	821.5	729.1	95%; work in progress ; to be completed in Nov 2003
15	15	Do	Sampoor west	Kandyadipathinikulam			8	15			Not feasible. agrowell is recommended.
16	16	Do	Sampoor East	Sinnalankulam	81.315530	8.489560	21	18	700.0	533.1	75% ; Work in progress, to be completed on Nov 2003
17	17	Do	Sampoor East	Kokkadikulam			30	24			Rehabilitated under WFP 2000.
18	18	Do	Navaratnapuram	Periyaaripattukulam	81.347830	8.487220	18	16	575.0	545.0	75%; work in progress ; to be completed in Nov 2003
19	19	Do	Navaratnapuram	Periyamoddaiyandikulam	81.308480	8.490810	19	18	805.0	745.0	100%; ready to hand over to FO; 1st round maintenance is in progress
20	20	Do	Sampoor East	Pulavankulam	81.316070	8.477280	10	9	400.0	360.5	100%; ready to hand over to FO; 1st round of maintenance to be done
21	21	Do	Sampoor East	Sinnanaiyanthikulam			35*	22			Work completed by NEIAP in 2003
22	22	Do	Navaratnapuram	Kaddaikadukulam	81.342510	8.497670	37*	25			Not feasible, feared to be land mine
23	77	Do	Ithikulam, Kadatkarachenai	Ithikulam	81.320560	8.436300	18	25	790.0	572.0	95%; work in progress ; to be completed in Sept 2003
24	78	Do	Ilakkanthai	Palaimunaikulam	81.342410	8.483720	10	25	550.0	537.4	100%; ready to hand over to FO; 1st round of maintenance to be done before Sept 2003
25	79	Do	Kadatkarachenai	Koolavadikulam	81.342510	8.450450					Undertaken by WFP
26	84	Do	Pallikudiyiruppu , Sinivasapuram	Marawattaikulam	81.314150	8.425930	70	150			Estimate prepared , agreemnt to be signed, construction work to commence in Nov 2003 by heavy machinery
27	85	<b>Muthur</b>	Periyapalam	Vannankulikulam							Not feasible with selection criteria.

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					Long. (x)	Lat (y)					
		<b>EACHCHILAMPATTAI</b>									
28	23	Eachchilampattai		Tharaisenaikulam			64	130			Hydrological condition not help for rehabilitation.
29	24	Do		Thamaraikulam			16	100			Not feasible with selection criteria.
30	25	Do		Ulugamakulam			40	55			Not accessible.
31	26	Do		Kirankulam			68	130			Work completed by NEIAP in 2002
32	27	Do	Eachchilampattai	Kollankulam	81.368860	8.300520	60	40	675.0	430.1	90%; work in progress ; to be completed in Nov 2003
33	28	Do		Panichchankulam			34	80			NEIAP-2001-Programme.
34	80	Do		Sinnakulam			10	10			Not feasible due to capillary action in colonized area.
		<b>KUCHCHAVELI</b>									
35	29	<b>Pulmoddai</b>	Jinnapuram	Puthuvelikulam	80.983600	8.952280	12	15	748.0	754.5	100%; ready to hand over to Fo. Access road developed and additional one sluice construction started and to be completed on August 2003
36	30	Do	Jinnapuram	Vilankulam			8	5			Undertaken by WFP
37	31	Do	Jinnapuram	Kunchukulam	80.982700	8.957680	10	12	593.0	432.0	100%; work in progress ; have to be done maintance and additional one sluice included and to be completed on August 2003
38	32	Do	Thaqqwanagar	Muhatthankulam	80.994890	8.936790	12	25	1,100.0	1,078.0	100%; handed over to FO in Feb. 2001
39	33	Do		Thuvarankulam			16	20			Undertaken by WFP
40	34	Do		Sinnakulam			8	10			Developed through line ministry fund under DOAD.
41	35	Do	Nilaveli	Thamaraikulam			24	25			Not feasible, pond type tank, limited hydrological potential
42	83	<b>Nilaveli</b>	Nilaveli	Theivanayakikulam			24	50			Not feasible, abondone tank, farmers not ready to contribute
43	86	Do	Periyakulam, Sampalthivu, Athimodda	Kankanikulam							Rehabilitated under NIRP in 1998.
		<b>GOMARANKADAWELA</b>									
44	36	<b>Gomarankadawela</b>	Konabendiwewa	Konabendiwewa			13	22			Not feasible
45	37	Do	Wambadduwewa	Wambadduwewa			16	20			Not feasible
46	38	Do	Thirappanai	Thalluwewa			16	15			limited command area,tank is with in the Army camp boundary
47	39	Do	Paddagama	Paddagama			24	30			resently rehabilited by minister fund through DoI
48	40	Do	Gomarankadawela	Palugaswewa	80.957540	8.674550	20	15	590.5	473.6	100%; hand over to FO ; 1st round of maintance to be done in August 2003
49	41	Do	Galkadawela	Galkadawelakumbukwewa	80.934210	8.689170	38	40	875.0	773.0	100%; ready to hand over to FO; 1st round of maintenance to be done in August 2003
50	42	Do	Kirimetiya	Kirimetiya			10	15			Undertaken to be developed through Japanese aid (SLF)
51	43	Do	Gomarankadawela	Kudadivulwewa			12	10			Rehabilitated by Samurthi in 2000
52	44	Do	Karagahawewa	Karagahawewa	80.950430	8.662240	14	38	1,107.5	1,061.0	100%; ready to hand over to FO; 1st round of maintenance to be done in Sept 2003
53	45	Do	Madugahawewa	Madugahawewa	80.945750	8.655600	35	29	700.0	654.8	100%; ready to hand over to FO; 1st round of maintenance to be done in Sept 2003

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					Long. (x)	Lat (y)					
54	46	Do	Weliwewa	Weliwewa			30	25			Not feasible, land dispute exists (lack of ownership)
55	47	Do	Kumbukwewa	Kumbukwewa			20	22			Undertaken by WFP
56	48	Do	Pambarugashwewa	Navatkulam			12	10			Rehabilitation undertaken by NEIAP
57	49	Do	Kuttikulam	Kuttikulam	80.978660	8.744770	15	16	1,750.0	1,845.5	90% (machinery system :access road and bund completed ) - work in progress , to be cpmpleted before mid of Sept. 2003.
58	50	Do	Halambawewa	Halambawewa			11	10			Not Feasible, limited command area
59	51	Do	Kandamalawa	Sinnaudawewa	80.936380	8.673680	18	16	923.0	549.0	70% work in progress,to be completed in Nov 2003
60	52	Do	Thimbiriwewa	Thimbiriwewa (Kuda)			16	12			Undertaken by NEIAP
61	53	Do	Hapattiyawewa	Hapattiyawewa	80.897950	8.754900	44	35	2,200.0	1,993.6	100%; ready to handover to FO.
62	54	Do	Kuruniyankulam	Kuruniyankulam			44	40			Not feasible , abandoned tank
63	76	Do	Kalyanapura	Behethkawewa	81.050550	8.657340	12	25	1,813.0	863.0	100%; ready to hand over to FO;
64	87	Do	Kudawewa	Kudawewa			12	15			Samurthi done bund work 4yrs back,structural work can be attended by IFSP
65	88	Do	Puliyandikulam	Puliyandikulam							Maintained by Irrigation Dept.
<b>PADAVISRIPURA</b>											
66	55	Padavisripura	Meegaswewa	Meegaswewa			32	28			Tank is under rehabilitation by NEIAP, resettlement of villagers is going to start with IFSP support
67	56	Do		Kaddakulam			44	54			Not feasible , abandoned tank
68	57	Do		Kudakaddakulam			24	30			Not feasible,abandoned tank
69	58	Do		Diyathihawewa			18	16			Not feasible , abandoned tank
70	59	Do	Eramaduwewa	Eramaduwewa	80.889230	8.894350	38	18	2,340.0	2,051.5	95%; work in progress ; to be completed end of Nov 2003
71	60	Do		Karadiyanwewa			16	18			Not feasible with IFSP criteria
72	61	Do	Paranamadawachchiya	Madawachchiwewa	80.878230	8.883290	30	22	1,500.0	1,405.0	100%; handed over to FO Feb. 2001
73	62	Do		Naththavali			60	30			Undertaken by WFP
74	63	Do	Paranamadawachchiya	Puliyankulam	80.866666	8.889930	16	19			
75	64	Do		Wesiathwewa			32	40			Not feasible with IFSP criteria
76	81	Sritissapura	Sritissapura	Pitiyawewa	80.847750	8.932600					Not feasible, limited command area
77	82	Do	Jayanthiwewa	Kokmutawewa	80.846780	8.902580					Not feasible, farmers have alternative irrigation source

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					Long. (x)	Lat (y)					
		<b>MORAWEWA</b>									
78	65	Pankulam	Athabendiwewa	Kathuruwewa	80.919530	8.628330	18	16	600.0	691.7	100%; ready to hand over to FO;
79	66	Do	Athabendiwewa	Ehalawewa	80.918590	8.634510	20	70	915.0	881.5	100%; ready to hand over to FO;
80	67	Do	Mailakudawewa	Kaluwankulam	80.994590	8.627980	65	14	1,240.0	989.5	100%; ready to hand over to FO
81	68	Do	Panikatiyawa	Kudapaniketiawewa			18	16			Reported to have been attended by 'Japan aids'
82	69	Do	Nochchikulam	Nochchikulam			30	18			Reported to have been attended by 'Japan aids'
83	70	Do	Panikatiyawa	Panikatiyawa			46	23			Not feasible:direct beneficiaries are not resettled
84	71	Do	Rottawewa	Rottawewa Thimbiriwewa	80.918890	8.603190	12	11	715.0	710.2	100%; ready to hand over to FO;
85	72	Do	Panikatiyawa	Rottawewa			78	40			NEIAP - 2002 - Work in progress
86	73	Do	Nochchikulam	Kambakotte	80.999430	8.634170	16	14			PIR submitted
87	74	Do	Ralapanawewa	Bellangadawewa	80.917860	8.644630	34	23	1,815.0	1,719.8	100%; ready to handover to FO
88	75	Do		Galgoruwewa			16	18			Not feasible
89		Do		Road to Medawewa					985.0	975.0	100%; ready to hand over to FO;
90		<b>KUCHCHAVELI</b>	Jinnapuram	Road to Puthuveli kulam					692.0	504.0	100%; ready to hand over to FO;
91		do	Jinnapuram	Road to Kunchchukulam					375.0	224.4	
92	89	<b>THAMPALAKAMAM</b>	Jayapura	Puliutu kulam	81.084270	8.520590	40	109	205.0	235.0	100%; ready to hand over to FO;

## Summary

### Physical progress

Tanks originally identified (no.)	75
Tanks surveyed/inventorised (no.)	91
Accesssible tanks (no.)	50
Developed tanks handed over to FOs (no.)	39
Work in progress (no. of tanks)	11
Acreage openend (ha)	1,400
Farm families directly involved (no.)	1,358
14 km access roads developed (no.)	11
Estimated produce (MT p.a., paddy)	4,000
<b>Cost estimate for development works (TRs.)</b>	<b>34,035</b>
<b>Total Expenditure to date (TRs.)</b>	<b>32,505</b>
<b>Average cost per ha developed to date (Rs.)</b>	<b>23,218</b>
<b>Estimated all-in development costs per ha in €</b>	<b>232</b>

### Remark:

S. No. represents continuous numbering; Inv. No. represents the inventory code of IFSP.

Coordinates were taken by GPS at the middle of the bund; where no coordinates are available tank is either non-accessible or developed by other agencies/projects.

Total expenditure includes logistics, capacity building for DOAD and human resources management (full costs).

Date: 15.10.2003

## Annex 3

### Observations of Expert Engineer Regarding the Quality of Irrigation Structures

Observation and Comments by Engineer	Measures taken by IFSP to Rectify Shortcomings and Comments
<b>Behethkawawewa</b>	Labour intensive development done 1999/2000, assessment done in 2003
Bund overgrown –maintenance needed	Disturbances of 2000/2001 affected community: no use of water, no maintenance;
Seepage observed at downstream too	Bund cleared by FO before cultivation; roots of big shadow tree may cause seepage; must not be felled!
Bathing steps need to be provided	FO could do itself; few families would benefit
Slope of bund is satisfactory	
Second sluice is leaking	Repaired until 10/03
Spillway and spill approach are not cleared	FO's responsibility
Anthills observed at bund	FO will clear before cultivation and when cleaning overgrown bund
<b>Galkadawela – Kumbukwewa</b>	
Access road not completed although it is written on the name board	Road ends near spill; if extended damage of spill water may occur
Spill approach and spillway need to be cleaned	Done
Additional bathing steps needed	Considered sufficient in terms of cost-benefit
Anthills observed on bund	FO will remove before cultivation
Sluice outlet is not constructed properly	At time of construction it was of good quality; could have been damaged thereafter
Trees and shrubs grown on the bund	To be cleared by FO before cultivation; prevent erosion
Water observed at downstream toe of bund	
Causeway construction needs refined design	No need since farmers are no willing to provide land
<b>Karagahawewa</b>	
Sluice is leaking	Tightened, does no longer leak
Spill is leaking (bonding was not ensured during construction; poker vibrator should have been used with chipping of the top of old spill profile)	Spill leaks through boulders; needs to be attended by FO with support from DoAD
Bund overgrown with vegetation	To be cleared by FO; needs motivation from DoAD
Spill way not cleared	FO agreed to clear before/during rainy season
<b>Madugawewa</b>	
Water was observed at down stream toe	
Materials selected for bund construction are not suitable (soil test should have been done for borrow pits)	No other material available in either tank bed or close by
Sluice is leaking	Repaired
Breaching section is at deeper place and therefore not proper	Rectified

Observation and Comments by Engineer	Measures taken by IFSP to Rectify Shortcomings and Comments
<b>cont. Madugawewa</b>	
Seepage is observed at various places of bund	Rectified by FO
Spill is leaking	Not relevant due to limited storage capacity of tank
Spill approach needs clearing	FO will attend before cultivation
<b>Rotawewa – Thimbiriwewa</b>	
Access road near tank overgrown with vegetation	FO has to clean access road
Spillway and approach need to be cleared; lacks maintenance	d.o.
Muddy water observed at down stream toe; soil test of borrow pits needed	
Sluice is leaking and water is wasted	Repaired
Main channel overgrown with vegetation and profiles changed; lacks maintenance	Responsibility is with FO
Anthills observed at bund	d.o.
Gravel is not used on top of the bund to cover the clay core; bund cracks observed (usually clay core material should be covered with shell material)	FO to attend when weather permits (after 1 <sup>st</sup> rains or before cultivation)
<b>Ehalawewa</b>	
Bund construction is satisfactory	
Bathing steps need to be provided	Tank is hardly used for bathing; no need for steps
Second sluice is leaking	Leak was arrested
Augmentation of spill with proper operation study is suggested as farmers complained of insufficiency of water	Crest spill was constructed after inspection
Water fed by Maha Ethabendiwewa high-level spill is wasted as Ehalawewa spill is so low	Spill was raised
Thick thickets were observed inside the tank at various places; disturbs continuity of water	Does not affect water storage; no need to remove
<b>Ithikulam</b>	
Bund is formed to profile and in very fine condition	Machinery deployed for final sloping and compaction; soil is of gravel-clay type
Turf is also good	Done during rainy season
Compaction is fair	Done with optimal moisture content of soil
Sluice rod and assembly missing	New sluice constructed in different place; rod is with FO
Channel is overgrown with grass and weeds	FO will clear before/during cultivation; DOAD needs to activate FO
Bathing steps need to be provided	Construction completed (10/03)
Second sluice needs to be constructed (construction started but not finished)	Construction completed (10/03)
Channel for second sluice should also be constructed	Construction completed (10/03)

<b>Observation and Comments by Engineer</b>	<b>Measures taken by IFSP to Rectify Shortcomings and Comments</b>
<b>cont. Ithikulam</b>	
Spillway in high ground has not been constructed	Low ground spillway renovated, functioning; high ground is owned by villagers an is occupied for residence, farming etc.; natural spill path sufficient
<b>Solaipallakulam</b>	
Bund overgrown, not maintained well	Labour intensive work of 1999/2000 vs. inspection of mid 2003; FO's task
Anthills are not removed	Removed, but gets back seasonally; FO's task
Bund profile looks small and not sufficient; in some sections profile is very weak	Improved; occasional damage by elephants is unavoidable; FO's task
Bund material is not gravely clay in some places, soil is more sandy	Not correct, only after heavy rain soil appears to be sandy
Sluice wheel is missing	Farmers take rod off in off-season that it is not stolen
Maintenance is not done	Initiative is with DoAD and FO
Down stream structures are built satisfactorily	IFSP encourages use of water for better irrigation; concentrates on such tasks
Brimms need to be built in bunds to avoid erosion	
Both Ithikulam and Solaipallakulam irrigate a part of the tail-end command area of this cascade / cluster of tanks	This was identified in IFSP's tank inventory and mapping
Less compacted bund, strength looks very low	Full rehabilitation by FFW done; never had any problem
Channel overgrown	FO will attend before cultivation
Spill approach and spillway are not cleared	Cleared; regular maintenance by FO essential
It seems that two separable tanks are joined and hence there is a long bund	Dates back to the '80ies when it was constructed
Three feet height is maintained between bund top level and spill crest (assuming 1 foot afflux and 2 feet minimum free board)	Rehabilitation followed the minor tank technical guideline of Eng. A.S.P. Ponarajah
<b>Vembadithoddankulam</b>	
Bund is not constructed to good profile; seems weak with depressions in- between	Bund profile re-done by machinery acc. to standard in 07/03
Spill seems to be small and not functional since the approach is not cleared	Large enough; cleared in 07/03
Sluice is used to send excessive water out fearing breach of bund	Bund profile was elevated; sufficient strength
Spillway also needs to be cleared	Cleared 07/03
Water seems insufficient and operation study needs revision	Sufficient water available acc. to checks done 2001 and 2001
<b>Keerandankulam</b>	
Bund is alright and constructed to good profile	
Runners are seen in large numbers on the bund; brims have to be built to avoid erosion through runners till the turf takes root	To be filled until mid 11/03 by manual labour and partly by machinery
Sandy soil is seen in some places of the bund	Partly changed in 07/03, rest to be done until mid 11/03
Few anthills were also observed	FO is in charge; requires encouragement from DoAD
Spillway and approach are cleared and in very good condition	
Development work of this tank is fairly good	

Observation and Comments by Engineer	Measures taken by IFSP to Rectify Shortcomings and Comments
<b>Sinnamoddaiyandikulam</b>	
Bund is not constructed to good profile; overgrown t time of visit	Bund re-constructed acc. to standard profile in 08/03
Poor maintenance	FO is in charge; DoAD support needed
Cart track is seen in the natural spill approach	Alternative track established
Constructed co-spill is satisfactory, but spillway needs to be cleared (spill is augmented by 1.5 feet)	Not necessary; all spill water used by farmers
Sluice outlets are not constructed well and water is being wasted when taken out of sluice because there is no constructed channel immediately after sluice opening	Construction of outlets to sluice and downstream channels are to be done by FO
<b>Periyamoddaiyandikulam</b>	
The inlet channel is working well	Participatory planning done initially
All three sluices do not have sluice rods and gates and thereby water is wasted	Attended; sluices are functioning well
Anthills are observed at bund	FO's task; DOAD should initiate a campaign
Bund profile is satisfactory but overgrown	Cover prevents erosion; FO will cut before cultivation
Spill is satisfactory	
<b>Pulavankulam</b>	
Both sluices are constructed well and functioning satisfactorily	no additional work necessary
Bund construction is very good and is in very good condition	
Bund is crossed with barbed wire to avoid animals from tank bed	
Channels are good	
Bund top width is sufficient	
Bund is very clear and about ten feet wide	
<b>Palaimunaikulam</b>	
Spill construction has not been finished	Farmers requested natural spillway; high ground
Excavation is done and metals are piled up at site	Farmer's contribution; will be removed by them for other use
Sluice rod is missing	Sluice only in operation during cultivation; rod with FO
Bund profile is satisfactory	
Channel profile is also satisfactory	Work fully done by FO

Observation and Comments by Engineer	Measures taken by IFSP to Rectify Shortcomings and Comments
<b>Paranamadawachchiwewa</b>	
Sluice is leaking	FO members kept small stone between sluice gate and bottom to drain water
The material (soil) used for bund should have undergone quality tests before construction; in some parts, improper soil was observed	Q-test was not possible at time of planning and construction due to security situation
Cracks observed at bund; clay core should have been covered with good shell material like gravel	FO to attend; requires support from DoAD; TO of DoAD in charge may have overlooked necessary follow-up
Bathing steps need to be provided	FO needs to take care of this additional work
Some of the borrow pits are too close to the down stream toe thus making avenue for seepage as well as it is hazardous to the stability of bund	
Unfelled trees are observed on bund; the roots are hazardous to the stability	
Anthills were observed on bund	FO in charge; usually done before cultivation
Spill approach and spillway should be cleared; study for augmentation is suggested	d.o.; support from DoAD TO recommended
Turf needs to be grown on the bare surface of the bund	d.o.
Reinforcement for shear is not sufficient	
Channel diversion structures need to be renovated; water is being wasted now	d.o.
Access road to the paddy field is yet to be constructed	FO is in charge
<b>Puthuvelikulam</b>	
<b>(a) Tank</b>	
Bund needs strengthening; several lower sections were observed even near sluices	Re-done and rectified
Unfelled trees, which were cut at the top, were observed on tank bund; trunks and roots of these dead trees are hazardous to the safety of the bund	no hazard
Several anthills were observed on the bund, have to be removed	common; destroyed during annual upkeep
The old right bank sluice needs to be repaired	New right bank was constructed
The left bank channel is not properly maintained, over grown and dilapidated and needs reconstruction	FO attends prior to release of water to secure water flow
Spill length is proposed to be 14 meters in the feasibility report, but, the spill measures only 8 meters	
Spill tail channel needs to be constructed as the water spreads into the paddy field	FO instructed to rectify
<b>(b) Vented causeway</b>	
Floods have washed off part of the causeway; hume pipe for water flow is not sufficient; Causeway design, incorporating the peak flow, needs to be done again	Causeway was re-designed and repaired; additional causeway was constructed to absorb peak water
Spill water of up-stream tank (Ramanathankulam) flows through this causeway	
Correct gross catchment area during rainy season, for peak flow at the point of interest, should be found out from engineering survey sheets	

## Schedule for IFSP Engineers, Technical Officers and FO Office Bearers

### A. General Information:

1. DS Division:
2. Agrarian Kendra:
3. GS Division:
4. Village(s):
5. Poverty code(s):
6. Farmer Organisation: Name Reg. no.
7. Tank: No. Name: Co-ordinates:
8. Soil type:
9. Catchment area: ha
10. Vegetation in catchment area: 1. jungle 2. shrub jungle 3. chena 4. other
11. Number of times tank spilled during the last ten years:
12. Previous rehabilitation work done:

### B. Tank Development:

1. Were the criteria followed in the selection of tanks for development: yes-1, no-2
  - a. Pro-rata cost per acre < Rs.20,000 ( )
  - b. Command area => 20 acre ( )
  - c. No. of beneficiaries => 10 ( )
  - d. Not renovated for the last 10 years ( )
  - e. Willingness of CBO to contribute => 10% of the cost ( )

#### 2. Quality of PIR:

Parameter	Yes-1, no-2	Comments
a. Included all necessary information		
b. Included unwanted information		
c. Used realistic values for cost/ benefit		
d. Other (specify)		

3. Was the awareness meeting conducted? yes-1, no-2; If yes:
  - a. Date:
  - b. Resource persons
  - c. Number of participants
  - d. Location (focal village / outside)

#### 4. Quality of feasibility report:

Parameter	Yes-1, no-2	Comments
a. Included all necessary information		
b. Included unwanted information		
c. Used realistic values for cost/ benefit		
d. Other (specify)		

5. Training of farmers and farmer organisation office bearers.

Subject	Conducted: yes-1, no-2. If yes, date	Agency and resource persons	No. of participants	Usefulness*	Suggestions for improvement
a. Technical and O&M					
b. Leadership, govt. procedure & finance					
c. Agric. training class					
d. Agric. field tour / demonstration					
e. Agric. other (specify)					
f. Any other farmer training (specify)					

\* very useful-3, useful-2 and not useful-1

6. Were there any delays in completing the work? yes-1, no-2

If yes, give details: yes-1, no-2

Activity	Date	Delay (yes-1, no-2)	Reasons
a. Selection of tank			
b. Initial visit to tank / village			
c. Submission of PIR			
d. Approval of PIR			
e. Submission of FR			
f. Approval of FR			
g. Signing of contract			
h. Commencement of work			
i. Completion of work			
j. Handing over			

7. Type of work done:

Activity	Proposed by farmers	Recommended by engineer	Actually implemented
a. Deepening tank bed			
b. Improvement to tank bund			
c. Construction / repair to sluice			
d. Improvement to spill			
e. Improvement to channels			
f. Other (specify)			

8. Cost of tank development:

Agency	Amount in Rs.'000		Percent	
	Planned	Actual	Planned	Actual
a. GTZ – IFSP				
b. CF – IFSP				
c. DoAD				
d. Farmers				
e. Total				

9. Food for work:

	No. of person days		Appro. no. of people involved
	Planned	Actual	
a. Male			
b. Female			
c. Total			

10. Did food for work help in the following? yes-1, no-2

- Encourage participation and contribution of unskilled labour from farmers ( )
- Provide employment between Maha and Yala seasons ( )

- c. Bridge the seasonal food deficits ( )
11. Did you experience any difficulties in implementing the food for work programme in tank development? yes-1, no-2  
If yes, give reasons:

Reason	Yes-1, no-2
a. Farmers did not experience food shortage at that time.	
b. Better alternative employment available to farmers at that time	
c. Composition of food basket was not satisfactory	
d. Farmers not committed to their contribution to tank development	
e. Other (specify)	

12. Were any defects / damages already observed after rehabilitation? yes-1, no-2

13. If yes, give details:

14. Were they attended to? yes-1, no-2

15. Do you think that there is any more development work to be done to increase irrigation water availability? yes-1, no-2

16. If yes, specify:

### C. Project Outputs:

Comment on the condition of the following: very good-4, good-3, satisfactory-2 and poor- 1 before and after the development of the tank:

	Before	After	Comments
a. Tank bed			
b. Tank bund			
c. Sluices			
d. Spill			
e. Spill channel			
f. Irrigation channels			
g. Drainage system			
h. Other (specify)			

### D. Project Effects:

1. Details of farmers and command area:

	Before	After
a. Total number of farmers cultivating in command area		
b. Number of owner cultivators		
c. Number of tenant cultivators		
d. Number of owner cultivators resident in the village		
e. Number of tenant cultivators resident in the village		
f. Capacity of tank in ha metres		
g. Irrigable area in Maha (ha)		
h. Irrigable area in Yala (ha)		

2. Details of cultivation:

	Before Development				After Development			
	Maha ( )		Yala ( )		Maha ( )		Yala ( )	
	Paddy	OFC*	Paddy	OFC*	Paddy	OFC*	Paddy	OFC*
a. Extent cultivated (ha)								
b. Ave. cost (Rs/ ha)								
c. Extent harvested (ha)								
d. Ave. yield (kg/ha)								
e. Ave. price (Rs/kg)								
f. Ave. revenue (Rs/ha)								

\* Specify the major OFCs

**E. Operation and Maintenance:**

1. What are the purposes for which tank water is used? Not at all – 1, to some extent-2, to a great extent-3

Purpose	Before	After	Comments
a. Irrigation			
b. Livestock			
c. Fishing			
d. Bathing and washing			
e. Drinking			
f. Other (specify)			

2. Who carries out the following activities: TO-1, FO-2, DO-3, others-4, none-5

Activity	Before	After	Comments
a. Maintenance of the bund			
b. Maintenance of spill and spill channel			
c. Maintenance of sluice			
d. Deciding cultivation dates			
e. Operation of sluice			
f. Preparation of water delivery schedule			
g. Distribution of water along the channel			
h. Maintenance of channels			
i. Other (specify)			

3. Frequency of performance of the following maintenance activities: more than twice a year-4, twice a year-3 and once a year-2, never-1.

Activity	Before	After	Comments
a. Cutting shrubs along tank bund			
b. Erosion control/earthwork on bund			
c. Removal of anthills on bund			
d. Lubricating sluice gates			
e. Painting sluice gates			
f. Clearing spill channel			
g. Weeding irrigation channels			
h. Earthwork on channels			
i. Other (specify)			

4. How are the farmers selected for the above operation and maintenance activities?

5. Describe the level of participation of farmers in the above activities: very good-3, satisfactory-2, poor-1

6. What sanctions are imposed by the FO on those who do not participate in the above activities?

7. Other O & M matters:

**F. Farmer Organisation:**

1. Details of the farmer organisation and its activities

	Before	During	After
a. Number of members			
b. Availability of the constitution			
c. Office bearer's knowledge of the constitution *			
d. Frequency of executive committee meetings			

e. Frequency of meetings with members			
f. Frequency of meetings with villagers			
g. Total fund available in bank (Rs.)			
h. Exhibition of audited account statements			
i. How are office bearers selected			
j. Activities other than irrigation: i. trade			
ii. transport			
iii. tractor hire			
iv. other (specify)			
k. Member participation in the above activities *			
l. FO's relationship with other CBOs in the area *			
m. FO office bearers' relationship with the members / villagers *			

\* good-3, satisfactory-2, poor-1

2. Was assistance received from IFSP for strengthening the FO? Yes-1, no-2

3. If yes, describe:

Type of assistance	Yes-1, No-2
a. Funds through projects	
b. Training	
c. Problem solving	
d. Other (specify)	

4. What assistance was provided by the FO to its members in obtaining agri-support services?

Service Type	Details of assistance provided	
	Before	After
a. Agricultural credit		
b. Seeds and planting materials		
c. Livestock breeds		
d. Fertilisers and pesticides		
e. Information / extension		
f. Marketing of agricultural produce		

### G. Agri-support Services:

1. Describe the availability of the following agri-support services in your area: good-3, satisfactory-2, poor-1.

Service Type	Agency Responsible	Before	After	Comments
a. Formal credit for agriculture				
b. Seed paddy				
c. Other seeds and planting materials				
d. Livestock breeds				
e. Fertiliser				
f. Pesticides				
g. Agricultural extension / information				

h. Marketing of agricultural produce				
i. Agricultural machinery				
j. Establishment of network / among service agencies				

2. How could IFSP assist in improving the supply of agri-support services in the developed tank areas?

## H. General

1. In what ways does the development of minor tank contribute to food security?
2. Overall comments:

**Schedule for Farmers****A. General Information**

1. DS Division:
2. Agrarian Kendra:
3. GS Division:
4. Village: Village code:
5. Poverty code: Poverty level: Poverty rank:
6. Farmer Organisation name:
7. Tank no.:
8. Tank name:

**B. Demographic Information:**

1. Name of respondent:
2. Address (Residence):
3. Age (years):
4. Education:
5. Marital status: unmarried (1), married (2), widowed (3)
6. Farming: part-time (1), full-time (2)
  - a. Before
  - b. After
7. If part-time, what are the other income sources?

Type of employment	Annual income (Rs.)	
	Before	After
a. Farm labour		
b. Off-farm labour		
c. Public service (specify)		
d. Business		
e. Other (specify)		

8. Number of children (daughters and sons):
9. Number of male children over 15 years of age:
10. Number of female children over 15 years of age:
11. Total number of households in the family (parents, children, grand-parents, grand-children etc.):
 

Before	After
--------	-------
12. Place of birth :

	Village	Nearby Town	District	Code
a. Respondent				
b. Respondent's spouse				
c. Respondent's parents				
d. Spouse's parents				
e. Respondent's grandparents				
f. Spouse's grandparents				

Code: Same village (1), nearby village (2), distant village in the same district (3), another district (4)

### C. Land Holding and Tenurial Pattern:

1. Extent of land owned (ac): Irrigable lowland:                      highland:
2. Is the land: Inherited (1), acquired (2) or encroached (3)?
3. Type of land ownership: Permit (1), deed (2) or other title (specify) (3).
4. Is your land title lost? Yes (1), no (2)
5. If yes, when?                      And how?                      .
6. Is the farmer: owner cultivator (1), tenant cultivator (2), or other (3)?
7. If tenant cultivator:
  - a. What kind of tenancy agreement do you have?
  - b. Who is the owner? Relative (1), other (2), name?
  - c. From where is he? Same village (1), outside (2), other (3)
  - d. What is his present occupation?
  - e. Extent of land leased (ac): Irrigable lowland                      , highland                      .
8. If you give your land to a tenant:
  - a. What kind of tenancy agreement do you have?
  - b. Who is the tenant? Relative (1), other (2), name?
  - c. From where is he? Same village (1), outside (2), other (3)
8. Respective shares of land for husband (1)                      and wife (2)
9. Distance of land from homestead (km): Irrigable lowland                      , highland
10. Location of irrigable lowland on the main channel: Head (1), middle (2), tail (3)
11. Location of highland:
12. Are you closely related to any other landowner in the same command area (parent, child, sibling or in-laws)? yes (1), no (2)
13. Do you own land under any other tanks? Yes (1), no (2)
14. If yes: Name of tank:                      extent (ac):
15. Membership in any other farmer organisation: yes (1), no (2)
16. If yes, name of the FO:

**D. Socio-economic Indicators:**

1. Type of house:
  - a. Size: small <500 sq.ft (1), medium 500 – 1000 sq.ft (2), big >1000 sq.ft (3)
  - b. Number of rooms
  - c. Floor: mud (1), cement (2)
  - d. Wall: mud (1), brick (2), cement (3)
  - e. Roof : cadjan (1), tin sheet (2), asbestos sheet (3), tiles (4).
2. Home-garden: yes (1), no (2)
3. If yes, main crops cultivated:
4. Livestock:

Type	Number
a. Buffalo	
b. Bull	
c. Cow	
d. Goats	
e. Poultry	

5. Assets:
  - a. Availability of electricity: yes(1), no(2)
  - b. Equipment: television ( ), refrigerator ( ), radio ( ), sewing machine ( )
  - c. Vehicles: motor cycle ( ), bicycle ( ), cart ( ), other ( )
  - d. Farm implements: 4W tractor( ), 2W tractor( ), sprayer( ), water pump( )
  - e. Drinking water source: tank (1), common well (2), individual well (3), tap (4)

**E. Agricultural Activities:**

1. Are / were you yourself cultivating?
  - a. Before tank development: yes (1), no (2)
  - b. After tank development: yes (1), no (2)

2. If no, who is / was assisting you in your cultivation?

Type of Assistance	Before	After
a. Family members (number of people)		
b. Hired manpower (number of people)		
c. Community exchange		
d. Other (specify)		

3. Details of cultivation:

	Before Development				After Development			
	Maha ( )		Yala ( )		Maha ( )		Yala ( )	
	Paddy	OFC*	Paddy	OFC*	Paddy	OFC*	Paddy	OFC*
a. Extent cultivated (ac)								
b. Total cost (Rs)								
c. Extent harvested (ac)								
d. Total production (kg)								

e. Price / kg (Rs.)								
f. Total gross income (Rs)								
g. Total net income (Rs)								
h. Amount consumed (kg)								
i. Amount sold (kg)								

\* Specify the major OFCs (other field crops)

## F. Agri-support Services

### 1. Agricultural Credit :

	Before	After
a. Account in the bank*		
b. Obtained loan from the bank*		
c. Refused loan from the bank*		
d. Borrow loan from non-institutional sources*		
e. Borrow money by mortgaging*		
f. FO assist in obtaining loan*		
g. Availability of agric. loan+		

\* Yes (1), no (2) \* Good (3), satisfactory (2), poor (1)

### 2. Agricultural extension activities:

	Before	After
a. Awareness of extension worker. yes (1), no (2)		
b. Agricultural training class+		
c. Agricultural demonstration / field tour+		
d. Individual farm visit by extension worker+		
e. Visit to extension centre by farmer+		
f. Availability of extension / information*		

+ Number per year \* Good (3), satisfactory (2), poor (1)

### 3. Agricultural inputs:

	Before	After
a. Source of seed paddy+		
b. Availability of seed paddy*		
c. Source of other seeds and PMs+		
d. Availability of other seeds and PM*		
e. Source of livestock breeds+		
f. Availability of livestock breeds*		
g. Source of fertilizer+		
h. Availability of fertiliser*		
i. Source of pesticides / weedicides+		
j. Availability of pesticide/weedicide*		

\* Good (3), satisfactory (2), poor (1) + Own (1), govt. agency (2), NGO (3), shop (4)

### 4. Agricultural marketing:

	Before	After
a. Where did you market paddy+		
b. Where did you market the OFC produce+		
c. Did you receive a reasonable price. Yes (1), no (2)		
d. Availability of marketing facilities*		

+ Village shop / market (1), private trader (2), MPCS / govt. agency (3)

\* Good (3), satisfactory (2), poor (1)

## G. Farmer Organisation:

Details of the farmer organisation and its activities:

	Before	During	After
a. Membership of respondent+			
b. Membership of wife / child +			
c. Membership of close relative+			
d. Knowledge of constitution*			
e. How are office bearers selected**			
f. Frequency of meetings with members			
g. Frequency of meetings with villagers			
h. Do you attend the meetings++			
i. Payment of membership fee++			
j. Participation in decision making of FO+ +			
k. Participation in activities of FO++			
l. Financial dealings of FO*			
m. Assistance received from FO in obtaining agri-support services*			
n. Relationship of FO office bearers with members and villagers*			

+ Yes (1), no (2). ++ Yes, regularly (3), yes, sometimes (2), no (1)

\*Good (3), satisfactory (2), poor (1) \*\* Nomination (1), election (2)

## H. Tank Development:

1. Did you attend the awareness meeting? Yes (1), no (2)
2. Were you consulted regarding the development of the tank? Yes (1), no (2)
3. Did you contribute to the cost of development? Cash ( ), kind ( ), labour ( ).
4. Did you participate in the food for work programme? Yes (1), no (2)
5. What are your comments on the food for work programme?
6. Comment on the condition of the following before and after the development of the tank. Very good (4), good (3), satisfactory (2), poor (1)

	Before	After	Comments
a. Tank bed			
b. Tank bund			
c. Sluices			
d. Spill			
e. Spill channel			
f. Irrigation channel			
g. Drainage system			
h. Bathing steps			
i. Other (specify)			

7. Were any defects/damages already observed after rehabilitation? Yes (1), no (2)
8. If yes, give details:
9. Were they attended to? Yes (1), no (2)
10. If yes, by whom? Farmers (1), DoAD (2), IFSP (3)
11. Whom do you think should attend to these defects / damages?

12. Do you think that there is any more development work to be done to increase irrigation water availability? Yes (1), no (2)

13. If yes, specify:

### I. Operation and Maintenance

1. What are the purposes for which tank water is used? Not at all (1), to some extent (2), to a great extent (3)

Purpose	Before	After	Comments
a. Irrigation			
b. Livestock			
c. Fishing			
d. Bathing and washing			
e. Drinking			
f. Other (specify)			

2. Who do you think is responsible for the following activities: TO (1), FO/Farmers (2), DO (3), Vatta Vidhana (4), others (specify)(5), none (6)

Activity	Before	After	Comments
a. Maintenance of the bund			
b. Maintenance of spill			
c. Maintenance of spill channel			
d. Maintenance of sluice			
e. Deciding cultivation dates			
f. Operation of sluice			
g. Preparation of water delivery schedule			
h. Distribution of water along the channel			
i. Maintenance of channels			
j. Other (specify)			

3. Person carrying out and the frequency of performance of the following maintenance activities:

Activity	Before		After	
	Person*	Freq.+	Person*	Freq.+
a. Cutting shrubs along tank bund				
b. Erosion control / earthwork on bund				
c. Removal of anthills on bund				
d. Lubricating sluice gates				
e. Painting sluice gates				
f. Clearing spill channel				
g. Weeding irrigation channels				
h. Earthwork on channels				
i. Other (specify)				

\* TO (1), FO/Farmers (2), DO (3), Vatta Vidhana (4), others (5), none (6)

+ More than twice a year (4), twice a year (3), once a year (2) and never (1).

### J. General:

1. Are there any conflicts among water users? Never (1), rare (2), frequent (3)

2. If yes, what conflicts?

3. How are these conflicts resolved?

4. Was the development of tank useful in increasing the extent of cultivation?

Yes, to a great extent (3), yes, to some extent (2), no (1)

5. Are you prepared to pay some charges for the maintenance of the irrigation system? Yes(1), No (2)
6. Whom do you think owns the tank? Villagers (1), govt. (2)
7. General comments of the respondent:
8. General observations of the enumerator:

Date completed:

Time taken:

Enumerator: