CHAPTER 5 DEVELOPMENT GOAL, OBJECTIVES, STRATEGY AND FRAMEWORK

5.1 Development Goal and Objectives

5.1.1 Idea of Flood-proof Rural Development

The ultimate goal to be aimed by the rural development in flood-prone Char and Haor areas is to realize self-reliant rural communities with people empowered by viable livelihood activities and flood-proof living environment. Ideally, human life should be protected from all the conceivable floods, and under flood-proof conditions the people should develop their livelihood activities into viable economic activities. The pursuit of this idea involves four specific objectives of the rural development: (1) flood-proofing, (2) improvement of living environment, (3) livelihood development, and (4) enhancement of people's capacity with institutional development. This idea may not be realized within a foreseeable time frame, as resources available for the rural development are limited and may be augmented only through people's own efforts.

In reality, complete flood-proof conditions cannot be realized, and flood-proofing would be improved only in steps both in areal extent and for increasing levels of protection. The people may increase the level of flood-proofing, and under such conditions, develop various livelihood activities to enhance income levels and increase economic wealth in their rural communities. With the enhanced income levels and increased economic wealth, the people would continue to increase the level of flood-proofing further and/or to expand the area under reasonable flood-proofing. A key to the success of this step-wise development would be the establishment of a mechanism that would allow the people to feed themselves with their limited resources for both flood-proofing and livelihood development. Thus, the four objectives of the flood-proof rural development would be effectively pursued only in a parallel, mutually supportive way, as illustrated in Figure 5.1.

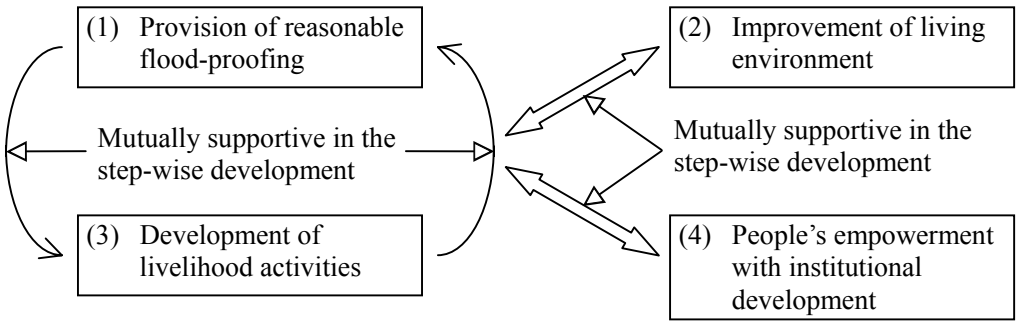

Figure 5.1. Four Mutually Supportive Objectives of Flood-proof Rural Development

5.1.2 Flood Mitigation Targets

To set more realistic and attainable targets for the step-wise flood-proof rural development along the idea clarified above, it is necessary to specify the level of flood-proofing at first. For this

purpose, the concepts of "normal flood", "severe flood" and "most severe flood" which are commonly applied in Bangladesh to plan for flood mitigation measures, are introduced for the Study.

Flood magnitude and damages in the Study Area

Based on the data obtained from the Flood Damage Survey conducted by the Study Team and the NWMP Draft Development Strategy 2000, the 1988 flood is considered the largest in terms of flood level, during the past 15 years, followed by the one in 1998. Three other flood events observed during the period are much smaller. In terms of human life losses, the 1999 flood may be regarded as the smallest.

Based on the Flood Damage Survey, the number of damaged houses is estimated at some 12,600 in the Char area and 18,500 in the Haor area in 1999. The number of damaged houses estimated for the 1998 flood is much larger at some 39,000 in Char and about 107,000 in Haor. The flood in 1998 caused human losses at 32 in the surveyed villages of the Char area and 58 in the surveyed villages of the Haor area, while only one life in Char and three in Haor were lost in 1999 in the same villages.

Normal flood, severe flood and most severe flood

LGED and CARE have applied the concepts of "normal flood", "severe flood" and "most severe flood" in designing flood damage mitigation measures in Bangladesh. The normal flood is conventionally interpreted as the flood that certainly occurs every year, the severe flood is the one that occurs once in 20 years, and the most severe flood is the one that occurs once in 100 years. To apply the normal-severe-most severe flood distinction for the Study, the levels of normal and severe and most severe floods need to be defined.

During the past some 20-year period which more reliable flood data are available, the Study Area has experienced five major floods as described in Subsection 3.7.3. Based on the available data, the largest flood that occurred in 1988 has a return period longer than 20 years, and the second largest floods in 1987 and 1998 probably a 20-year return period. The smallest flood in 1999 returns annually, which may be regarded as a normal flood for the design purpose.

Both LGED and CARE assume that the 1987 and 1998 floods are equivalent to the flood with a 20-year return period, and the 1988 flood equivalent to the one with a 100-year return period. They also assume the 1999 flood as equivalent to the normal flood that returns annually. These assumptions appear to be reasonable, based on the observations above. Under the ongoing Flood Proofing Project, LGED and CARE raised the foundation level of homesteads taking the 1987/1998 flood levels into consideration, and no larger floods have occurred since the construction. For major structures such as flood shelters, LGED and CARE adopt the 1988 flood as the design flood.

The definitions of the normal flood, the severe flood and the most severe flood, and the design flood for major structures for the Study generally follow those adopted by LGED and CARE. The representative sample of the normal flood is the 1999 flood, and that of the severe flood is the 1987 or 1998 flood. Major structures such as flood shelters are to be designed to withstand the magnitude of the 1988 flood. The actual flood levels in these years have been determined based on observations of flood marks and hearings from the local people.

Flood mitigation targets

Based on the aforementioned definitions of the levels of normal, severe and most severe floods, specific flood mitigation targets are set for the Study: (i) protection of everyday livelihood activities from the normal flood, (ii) protection of household properties from the severe flood, and (iii) protection of human lives even under the most severe flood (i.e. with a 100 year return period). Since the normal flood occurs every year with certainty, provision can and should be made in advance for such events.

As observed in the subsection 3.7.3, damages increase sharply once the flood levels of the 1999/2000 floods are exceeded. It is reasonable, therefore, to provide measures of protection of household properties against flood levels higher than those of the 1987/1998 floods or the severe flood with some 20-year return period as defined (target (ii)). The flood-affected people can return to their houses after such flood events. Major structures such as shelters are for the protection of human lives, and therefore should be designed against the most severe flood (target (iii)).

5.1.3 Development Objectives

With the definitions of the normal, severe and most severe floods presented above, the following development objectives are set that can be pursued within the planning period of the Master Plan:

(1) To protect human lives from most severe flood and household properties from the “severe flood”,

(2) To facilitate the improvement of living environment with flood-proofing under the “normal flood”,

(3) To support the livelihood development by providing training, education and other services together with flood-proofing under the “normal flood”, and

(4) To contribute to the enhancement of people’s capacity to make decisions on their own development through their participation in development projects.

The objective (1) aims at satisfying a prerequisite condition for the development of any sort. With a reduced threat of lives, the local people will have better motivation to improve their living environment, which is supported by the objective (2), with flood-proofing conditions against the

normal flood. Under the same level of flood-proofing conditions, the provision of various services would be improved to support the livelihood activities by the objective (3). Livelihood development supported by these objectives is expected to change the awareness of the local people to make them more pro-active for their own development as expressed by the objective (4), rather than aimlessly receptive or only responsive to flood disasters.

5.2 Basic Strategy for Rural Development

Based on the analyses of problems and constraints in Chapter 4, a pragmatic approach should be taken to attain the development objectives with limited financial and administrative capacities. The concept of "triage", namely, a system used to allocate limited budget only to those capable of deriving the greatest benefit from it, shall be applied. Specifically, the effectiveness of projects should be maximized under the limited financial capacity, and measures of more efficient and effective social services delivery and flood mitigation should be pursued under the limited administrative capacity. Application of the triage concept needs to be justified by selecting those people/communities that would help themselves for flood mitigation as the priority in order to ensure fairness. The basic strategy for the rural development in flood-prone areas of Char and Haor, therefore, consists of the following.

(1) A step-wise development strategy is adopted starting with small model projects comprising minimal physical/structural measures combined with non-structural measures such as livelihood support activities. The basic aim of the model projects is to establish such a mechanism that would allow the local people to use their limited resources and increase their resource capacity through the process of flood-proofing and livelihood development. Such a mechanism, with modifications to be made as deemed necessary reflecting lessons learned through the initial implementation, would be replicated in other larger areas in steps.

(2) To increase the chance of success of the initial project implementation, the model projects are formulated for Char and Haor areas that have comparatively more favourable conditions without hindrances or adverse interventions, but with revealed willingness of people to help themselves for flood mitigation.

(3) A participatory approach is taken throughout the planning, implementation, operation and management of every project in order to establish the sense of ownership by the local people and to empower them for continual flood-proofing and livelihood development efforts. Contribution of resources in kind (e.g., labor) and in cash by the local people is the basic condition of the successful project implementation.

(4) Over the entire project cycles, governmental organizations, NGOs and local communities will be involved in close coordination and communication with each other under the designated implementing arrangements, thereby ensuring solid monitoring and evaluation activities, leading to improved transparency and accountability of the projects.

In association with the basic strategy stated above, priority areas are first identified for Char and Haor respectively, where the chance of successful flood proofing is higher. For the identified Char and Haor areas, model projects are formulated by combining complementary measures that can be implemented in the immediate future. These measures include both hardware (structural) and software (social service) components. The most important element of the model projects is to formulate and experiment implementing arrangements with local participation.

Implementation of the model projects will be monitored through the same implementing arrangements, and reflecting monitored results, projects for other areas will be formulated. Structural or physical measures and support services to be included in these subsequent projects will be modified, depending on physical and socio-economic characteristics of the project areas. Implementing arrangements may also be modified reflecting monitored results.

Prior to and in parallel with the implementation of model projects, LGED should take the initiative for project planning, implementation, and, monitoring and evaluation for the entire Study Area, mobilizing also local governments, local communities and local NGOs together with detailed Char/Haor mapping. An evacuation plan will be prepared in relation to location and capacity of existing shelters, and need for additional shelters identified. Construction of new shelters would be implemented at the later stage of the model projects, if the initial implementation in the priority areas was assessed generally successful.

5.3 Development Framework

Specific projects and related measures need to be formulated under the basic strategy defined in Section 5.2 in order to attain the development objectives. In formulating projects and related measures, two aspects are particularly important. One is to identify priority areas for Char and Haor respectively. Typology of Char and Haor is worked out as a framework to identify priority areas. The other is to formulate implementing arrangements for experimentation with the model projects. The basic form of such arrangements is proposed as another framework for project development, and implementation capacities are assessed. Project components to be included in the model and subsequent projects are clarified.

5.3.1 Typology of Char and Haor

To guide the formulation of viable projects for various Char and Haor areas depending on their natural and physical conditions, Char and Haor areas are categorized.

(1) Char

For Char areas, the following types of Char are first defined.

- Attached Char is formed outside a river embankment and attached to the embankment; during the dry season, people in the Attached Char can move to and inside the embankment by land.

- Setback Char is part of the mainland outside a river embankment.
- Island Char is formed within the river as a shoal; people in Island Char need to rely on water transport throughout a year.

Char areas are classified also by their stability, using a map showing the age of chars in the past 23 years, which has been prepared based on the satellite imagery photos. Areal distribution of Chars by their ages are as shown below.

Distribution of Land Cover within the Bankline

Year	Area (ha)									
	Water	(%)	Sand	(%)	**Char Land**	**(%)**	Total	(%)		
1973	48,467	(28)	44,057	(26)	**77,752**	**(46)**	170,276	(100)		
1976	58,547	(34)	37,952	(22)	**73,395**	**(43)**	169,894	(100)		
1978	51,881	(29)	44,851	(25)	**84,076**	**(47)**	180,808	(100)		
1980	58,313	(31)	43,264	(23)	**84,478**	**(45)**	186,055	(100)		
1983	54,676	(28)	55,380	(28)	**86,437**	**(44)**	196,493	(100)		
1984	55,740	(28)	54,009	(27)	**89,580**	**(45)**	199,329	(100)		
1985	60,321	(29)	41,387	(20)	**103,646**	**(50)**	205,354	(100)		
1987	57,046	(28)	46,519	(23)	**98,633**	**(49)**	202,198	(100)		
1989	65,811	(30)	57,605	(26)	**95,588**	**(44)**	219,004	(100)		
1992	61,236	(27)	70,237	(31)	**98,761**	**(43)**	230,234	(100)		
1994	62,054	(27)	49,122	(21)	**119,757**	**(52)**	230,933	(100)		
1995	57,439	(25)	42,786	(19)	**130,723**	**(57)**	230,948	(100)		
1996	61,817	(27)	75,127	(32)	**96,097**	**(41)**	233,041	(100)		
Average	57,950	(28)	50,946	(25)	**95,302**	**(47)**	204,197	(100)		

Age of Chars as of 1996

Age (year)	Area (ha)	Coverage **(%)**	
0-1	18,648	(19)	
1-2	10,741	(11)	
2-4	19,464	(20)	
4-7	13,294	(14)	**(65)**
7-9	6,661	(7)	
9-11	6,112	(6)	
11-12	3,496	(4)	
12-13	1,787	(2)	
13-16	2,712	(3)	
16-18	1,965	(2)	
18-20	1,625	(2)	**(25)**
20-22	1,598	(2)	
over 23	7,994	(8)	**(10)**
	96,097	(100)	**(100)**

Source: Morphological Dynamics of the Brahmaputra-Jamuna River, 1997, WARPO, EGIS

In the Flood Proofing Project (FPP) implemented by CARE-LGED, structural measures are taken for stable Char, which is defined as Char areas where effects of erosion have not been observed for 20 years or longer. Non-structural measures are taken for unstable Char by taking only such Char areas where effects of erosion have not been observed for seven to 20 years.

Given the limited data on the age of Char areas, the Char area classification for the CARE-FPP is adopted in the Study as shown below:

Stable Char:	effects of erosion have not been observed for 20 years or longer;
Unstable Char-1:	effects of erosion have not been observed for seven to 20 years; and
Unstable Char-2:	effects of erosion have not been observed for less than seven years.

Areas of each category of Char are roughly estimated by overlapping the Char age map with the Upazila maps prepared by LGED.

By using these criteria, a two-way classification of Char areas is done as follows.

	Stable Char (1)	Unstable Char – I (2) (7 - 20 years)	Unstable Char – II (3) (1 - 7 years)
Attached Char and Setback Char (A)	A1 (including Setback)	A2 (excluding Setback)	A3 (excluding Setback)
Island Char (B)	B1	B2	B3

Distribution of Charland of different types has been compiled by district and by Upazila as shown in Table 5.1. For Charland as a whole, Attached Char of type A1 is almost non-existent, and Stable Char of type B1 occupies only 5% of the total area, while Setback of type A1 accounts for 42% of the total. All the Upazilas are identified by dominant types of Charland, focusing particularly on Stable Char as shown also in Table 5.1.

(2) Haor

Haor areas are classified into two categories in terms of water depth in monsoon season defined by WARPO, as shown below.

Name of Land type	Water depth in monsoon season	Application
F0	0 - 30 cm	Shallow
F1	30 - 90 cm	Shallow
F2	90 - 180 cm	Shallow
F3	180 - 300 cm	Shallow
F4	>300 cm	Deep

Source: Definition of land type (WARPO, 1987)

Deep Haor and shallow Haor are defined as follows.

- Deep Haor is defined as Haor area where the depth of inundation becomes more than 3.0 meters according to agricultural land division, and effects of erosion of homestead by inundation and wave actions are conspicuous.

- Shallow Haor is defined as Haor area with the inundation not deeper than 3.0 meters, and effects of inundation and wave-induced erosion of homestead do not appear to be serious.

Haor areas are classified also by dominant means of transportation during the dry season, which has been judged by river density, navigation routes, number of ghats, road density, etc. CARE points out that it is necessary to consider the difference in vulnerability of mounds against wave actions according to water depth, as well as the dominant transportation means in the dry season when the FPP intervention was planned.

By using these criteria, two-way classification of Haor areas is done as follows.

	Land transport dominant during dry season（1）	Water transport dominant during dry season（2）
Shallow Haor（A）	A1	A2
Deep Haor（B）	B1	B2

The distribution of different types of Haor areas has been compiled by district and by Upazila as shown in Table 5.2. Shallow Haor relying on land transport occupies 51% of the total Haor area, followed by Shallow Haor relying on water transport with 34%. All the Upazila are identified by dominant types of Haor areas as shown also in Table 5.2.

Table 5.1 Typology of Char Area

Classification No. District / No. Upazila	A1 Total ①+②	Setback A1 ①	Stable Char(over 20 years) A1 ② Attached	Stable Char(over 20 years) B1 ③ Island	Unstable-I (7-20 years) A2 ④ Attached	Unstable-I (7-20 years) B2 ⑤ Island	Unstable-II (1-7 years) A3 ⑥ Attached	Unstable-II (1-7 years) B3 ⑦ Island	Charland Total⑧ (①～⑦) Area	Sand ⑨	Water ⑩	Total (100) ⑧+⑨+⑩	Typology A1/A2 B1/B2	
		(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha) (%)	(ha)		
32. Gaibandha	**9,200 (35)**	**8,636 (33)**	**564 (2)**	**1,198 (5)**	**1,411 (5)**	**2,995 (11)**	**3,667 (14)**	**7,788 (30)**	**26,259 (52)**	**10,826 (21)**	**13,292 (26)**	**50,377**		
21 Fulchhari	**2,491** (16)	2,002 (13)	489 (3)	904 (6)	1,222 (8)	2,259 (14)	3,176 (20)	5,874 (37)	15,925 (60)	3,153 (12)	7,554 (28)	**26,631**	A1/B2/B3	5
24 Gaibandha Sadar	**1,127** (48)	1,112 (47)	16 (1)	108 (5)	39 (2)	270 (11)	102 (4)	702 (30)	2,348 (35)	2,536 (38)	1,773 (27)	**6,657**	A1/B3	3
88 Saghatta	**4,032** (78)	4,019 (78)	13 (0)	99 (2)	33 (1)	249 (5)	86 (2)	646 (13)	5,147 (60)	1,755 (21)	1,656 (19)	**8,557**	A1	1
91 Sundarganj	**1,549** (55)	1,503 (53)	47 (2)	87 (3)	117 (4)	218 (8)	303 (11)	566 (20)	2,840 (33)	3,383 (40)	2,310 (27)	**8,533**	A1/B3	3
39. Jamalpur	**30,381 (82)**	**30,277 (82)**	**104 (0)**	**557 (2)**	**261 (1)**	**1,393 (4)**	**678 (2)**	**3,621 (10)**	**36,891 (70)**	**5,263 (10)**	**10,606 (20)**	**52,760**		
15 Dewanganj	**15,907** (92)	15,813 (91)	94 (1)	62 (0)	236 (1)	155 (1)	613 (4)	404 (2)	17,378 (83)	1,233 (6)	2,277 (11)	**20,888**	A1	1
29 Islampur	**3,302** (70)	3,302 (70)	0 (0)	142 (3)	0 (0)	355 (8)	0 (0)	923 (20)	4,721 (41)	1,755 (15)	5,135 (44)	**11,611**	A1/B3	3
58 Madarganj	**6,301** (94)	6,301 (94)	0 (0)	42 (1)	0 (0)	104 (2)	0 (0)	271 (4)	6,719 (67)	1,335 (13)	2,044 (20)	**10,097**	A1	1
85 Sarishabari	**4,872** (60)	4,862 (60)	10 (0)	311 (4)	25 (0)	778 (10)	65 (1)	2,023 (25)	8,073 (79)	941 (9)	1,150 (11)	**10,164**	A1/B3	3
49. Kurigram	**14,550 (29)**	**14,118 (28)**	**432 (1)**	**3,251 (6)**	**1,080 (2)**	**8,127 (16)**	**2,809 (6)**	**21,131 (41)**	**50,949 (60)**	**12,534 (15)**	**22,001 (26)**	**85,483**		
08 Char Rajibpur	**3,252** (50)	3,204 (49)	48 (1)	285 (4)	121 (2)	712 (11)	315 (5)	1,852 (28)	6,537 (67)	1,430 (15)	1,727 (18)	**9,694**	A1/B3	3
09 Chilmari	**1,710** (19)	1,509 (16)	200 (2)	571 (6)	501 (5)	1,428 (15)	1,302 (14)	3,712 (40)	9,222 (50)	2,774 (15)	6,610 (36)	**18,607**	A1/B2/B3	5
52 Kurigram Sadar	**1,853** (44)	1,853 (44)	0 (0)	232 (6)	0 (0)	579 (14)	0 (0)	1,505 (36)	4,168 (54)	1,370 (18)	2,111 (28)	**7,650**	A1/B3	3
61 Nageshwari	**2,296** (18)	2,118 (16)	178 (1)	899 (7)	445 (3)	2,249 (17)	1,158 (9)	5,847 (45)	12,894 (61)	3,118 (15)	5,048 (24)	**21,060**	A1/B2/B3	5
79 Raumari	**2,343** (37)	2,337 (37)	5 (0)	396 (6)	13 (0)	990 (16)	35 (1)	2,574 (41)	6,350 (82)	726 (9)	626 (8)	**7,702**	A1/B2/B3	5
94 Ulipur	**3,096** (26)	3,096 (26)	0 (0)	868 (7)	0 (0)	2,170 (18)	0 (0)	5,642 (48)	11,776 (57)	3,115 (15)	5,878 (28)	**20,769**	A1/B2/B3	5
88. Sirajganj	**13,717 (31)**	**13,122 (30)**	**596 (1)**	**2,459 (6)**	**1,490 (3)**	**6,148 (14)**	**3,874 (9)**	**15,984 (37)**	**43,671 (56)**	**11,956 (15)**	**22,285 (29)**	**77,912**		
11 Belkuchi	**2,187** (46)	2,041 (43)	145 (3)	127 (3)	363 (8)	318 (7)	945 (20)	827 (17)	4,768 (57)	1,762 (21)	1,785 (21)	**8,315**	A1/A3	2
27 Chauhali	**5,886** (40)	5,839 (40)	47 (0)	833 (6)	118 (1)	2,083 (14)	306 (2)	5,416 (37)	14,643 (60)	3,521 (14)	6,203 (25)	**24,367**	A1/B2/B3	5
50 Kazipur	**2,079** (14)	1,720 (11)	359 (2)	971 (6)	897 (6)	2,427 (16)	2,331 (16)	6,310 (42)	15,014 (58)	3,473 (13)	7,348 (28)	**25,836**	A1/B2/B3	5
67 Shahjadpur	**1,492** (34)	1,463 (33)	29 (1)	265 (6)	72 (2)	662 (15)	188 (4)	1,721 (39)	4,401 (63)	651 (9)	1,890 (27)	**6,942**	A1/B2/B3	5
78 Sirajganj Sadar	**2,074** (43)	2,058 (42)	16 (0)	263 (5)	40 (1)	657 (14)	103 (2)	1,708 (35)	4,845 (39)	2,549 (20)	5,059 (41)	**12,452**	A1/B3	3
Total	**67,848 (43)**	**66,152 (42)**	**1,697 (1)**	**7,465 (5)**	**4,242 (3)**	**18,663 (12)**	**11,028 (7)**	**48,523 (31)**	**157,770 (59)**	**40,579 (15)**	**68,184 (26)**	**266,533**		

Rate of Stable, Unstable-I and Unstable-II
Stable: 10%
Unstable-1: 25%
Unstable-2: 65%

A: Attached Char and Setback Land
B: Island Char
1: Stable Char
2: Unstable Char-I (7-20 years)
3: Unstable Char-II (1-7 years)

A1: 1
A1+A3: 2
A1+B3: 3
B2+B3: 4
A1+B2+B3: 5

Table 5.2 Typology of Haor Area

Classification / No. District / No. Upazila	A1 ① Shallow Land Transport (ha)	(%)	A2 ② Shallow Water Transport (ha)	(%)	B1 ③ Deep Land Transport (ha)	(%)	B2 ④ Deep Water Transport (ha)	(%)	Total Area ①+②+③+④ (ha)	(%)	Typology A1/A2 B1/B2	
36. Habiganj District	**123,518**	**(89)**	**15,871**	**(11)**	**0**	**(0)**	**0**	**(0)**	**139,389**	(100)		
02 Ajmiriganj	14,174	(63)	8,225	(37)	0	(0)	0	(0)	**22,399**	(100)	A1/A2	4
05 Bahubal	5,915	(100)	0	(0)	0	(0)	0	(0)	**5,915**	(100)	A1	1
11 Baniachang	40,628	(95)	2,329	(5)	0	(0)	0	(0)	**42,957**	(100)	A1	1
44 Habiganj Sadar	13,586	(100)	0	(0)	0	(0)	0	(0)	**13,586**	(100)	A1	1
68 Lakhai	14,880	(76)	4,776	(24)	0	(0)	0	(0)	**19,655**	(100)	A1/A2	4
71 Madhabpur	10,861	(100)	0	(0)	0	(0)	0	(0)	**10,861**	(100)	A1	1
77 Nabiganj	23,475	(98)	541	(2)	0	(0)	0	(0)	**24,016**	(100)	A1	1
48. Kishoreganj District	**63,525**	**(38)**	**105,852**	**(62)**	**0**	**(0)**	**0**	**(0)**	**169,377**	(100)		
02 Austagram	0	(0)	35,555	(100)	0	(0)	0	(0)	**35,555**	(100)	A2	2
06 Bajitpur	7,315	(51)	7,148	(49)	0	(0)	0	(0)	**14,463**	(100)	A1/A2	4
33 Itna	8,535	(21)	31,659	(79)	0	(0)	0	(0)	**40,195**	(100)	A1/A2	4
42 Karimganj	19,174	(96)	877	(4)	0	(0)	0	(0)	**20,051**	(100)	A1	1
49 Kishoreganj Sadar	7,361	(100)	0	(0)	0	(0)	0	(0)	**7,361**	(100)	A1	1
59 Mithamain	0	(0)	22,292	(100)	0	(0)	0	(0)	**22,292**	(100)	A2	2
76 Nikli	12,848	(61)	8,320	(39)	0	(0)	0	(0)	**21,168**	(100)	A1/A2	4
92 Tarail	8,291	(100)	0	(0)	0	(0)	0	(0)	**8,291**	(100)	A1	1
72. Netrokona District	**38,483**	**(55)**	**31,639**	**(45)**	**0**	**(0)**	**0**	**(0)**	**70,122**	(100)		
38 Khaliajuri	2,769	(9)	26,996	(91)	0	(0)	0	(0)	**29,764**	(100)	A2	2
40 Kalmakanda	12,870	(100)	0	(0)	0	(0)	0	(0)	**12,870**	(100)	A1	1
56 Madan	9,761	(74)	3,369	(26)	0	(0)	0	(0)	**13,131**	(100)	A1/A2	4
63 Mohanganj	13,083	(91)	1,274	(9)	0	(0)	0	(0)	**14,357**	(100)	A1	1
90. Sunamganj District	**103,233**	**(38)**	**65,950**	**(24)**	**61,096**	**(23)**	**41,026**	**(15)**	**271,305**	(100)		
18 Bishwambarpur	1,915	(17)	0	(0)	5,452	(49)	3,691	(33)	**11,057**	(100)	A1/B1/B2	10
23 Chhatak	1,821	(8)	0	(0)	20,842	(92)	0	(0)	**22,663**	(100)	B1	3
29 Derai	21,654	(51)	16,756	(40)	1,842	(4)	1,842	(4)	**42,094**	(100)	A1/A2	4
32 Dharampasha	28,941	(61)	5,608	(12)	3,459	(7)	9,334	(20)	**47,342**	(100)	A1/A2/B2	9
33 Dowarabazar	0	(0)	0	(0)	5,076	(100)	0	(0)	**5,076**	(100)	B1	3
47 Jagannathpur	18,992	(100)	0	(0)	0	(0)	0	(0)	**18,992**	(100)	A1	1
50 Jamalganj	6,156	(18)	16,256	(48)	4,248	(13)	7,216	(21)	**33,876**	(100)	A1/A2/B2	9
86 Sulla	1,533	(6)	20,755	(80)	766	(3)	3,019	(12)	**26,073**	(100)	A2	2
89 Sunamganj Sadar	20,050	(50)	2,084	(5)	13,179	(33)	4,836	(12)	**40,149**	(100)	A1/B1/B2	10
92 Tahirpur	2,172	(9)	4,491	(19)	6,231	(26)	11,088	(46)	**23,982**	(100)	A2/B1/B2	11
Total	**328,759**	**(51)**	**219,311**	**(34)**	**61,096**	**(9)**	**41,026**	**(6)**	**650,192**	(100)		

A: Shallow Haor
B: Deep Haor
1: Land transport dominant
2: Water transport dominant

A1: 1
A2: 2
B1: 3
A1/A2: 4
B1/B2: 5
A1/B1: 6
A1/B2: 7
A2/B2: 8
A1/A2/B2: 9
A1/B1/B2: 10
A2/B1/B2: 11

5.3.2 Implementing Arrangements

Basic form

Model projects would include minimal structural or physical measures that can be planned in detail and implemented by LGED within its capacities without delay. The key for successful implementation of the projects is how to motivate local people in project areas and organize them to support the project implementation, provided that no serious impediments exist in the selected project areas due to political unrest, social hierarchy or security. One possible way for people organizing may be to utilize the establishment of a flood warning system as the means, by which community leaders would organize local people with concomitant provision of proper information for flood awareness enhancement. At present, such information hardly reaches village people, and the establishment of a communication channel from government agencies to local people is a necessary condition for successful project implementation. Given the dominance of patron-client ties to a prominent/influential man in a village neighborhood (para), such a channel would better be provided by NGOs for effectiveness. While NGO activities are very limited in the Study Area due to unstable nature of Char and Haor, assurance of flood proofing by the model projects would serve as incentives for NGOs to provide support services at the village level.

Skill training and other services to support livelihood development should also be channeled through the NGOs to organized people. These services would be provided only to organized people to give additional incentives for people organizing, with identified leaders who would serve as a channel for service delivery in cooperation with the NGOs.

These services as well as other agricultural input, however, would better be provided at costs to local people in order to motivate them for utilizing the input effectively. These user fees or charges collected would form a seed fund for a saving and credit system to be used against unexpected events such as crop failure due to floods. The saving and credit system would encourage local people to venture on new livelihood activities.

To enhance the effectiveness of the credit and saving system initially, the Government should better provide a matching fund in proportion to the savings accumulated. Such a government support would be phased out as the fund expands along with increasing livelihood activities. The system would become autonomous to be managed by the organized people supported by NGOs as their capacity is enhanced with more viable livelihood activities. The proposed form of implementing arrangements is illustrated in Figure 5.2.

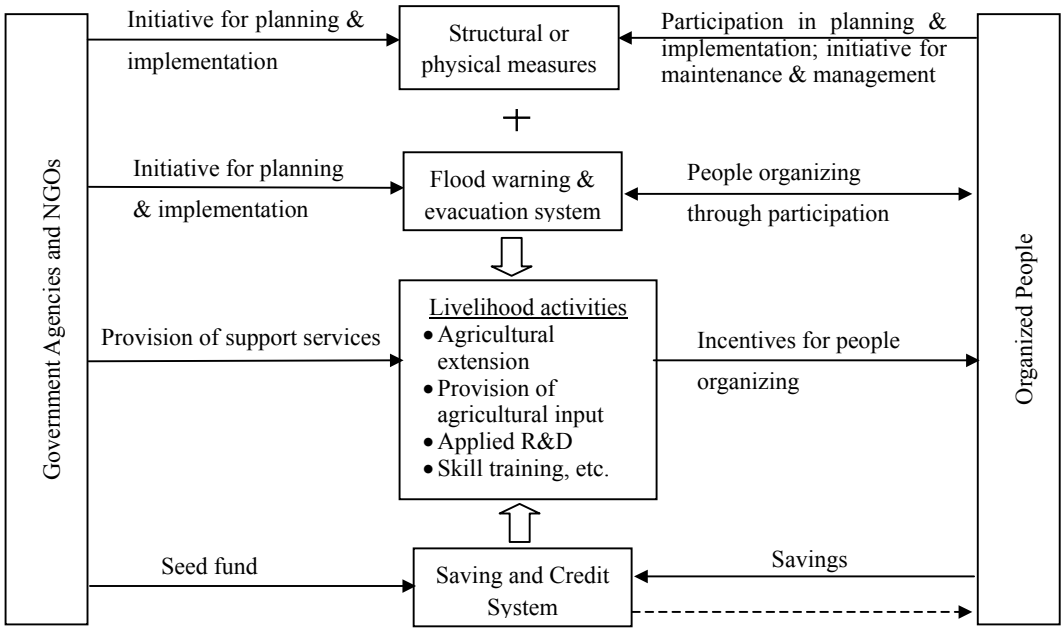

Figure 5.2 Schematics of Implementing Arrangements for Rural Development in Char and Haor Areas

Implementation capacities

Implementation capacities for rural development are assessed, focusing mainly on LGED, the key player in this sector together with local people. LGED has good track records for implementing various infrastructure projects not only for rural roads and flood mitigation works but also for related sectors. The latter include infrastructure development of the Ministry of Agriculture (e.g. irrigation and market facilities), the Ministry of Water Resources, Primary and Mass Education Division (e.g.primary schools), and the Ministry of Health, Population and Family Welfare. Of the rural development budget in the revised Annual Development Program for 2000/01, LGED is responsible for 70% of the total. The LGED share is even larger at 81% in 2000/01 on an expenditure base.

The annual budget for rural development is currently about Tk.25,000 million, of which some Tk.20,000 million is disbursed through LGED. Possible allocation to the Study Area, on a population basis, could be Tk.880 million in total or Tk.700 million through LGED. The annual budget for 36 on-going rural development projects was about Tk.14,500 million for 2000/01, of which the Government contributed to some Tk.6,000 million or 41% with the rest coming as project aids. Therefore, the total annual budget for rural development and related projects by LGED to be provided by the Government and available in the Study Area is more or less Tk.300 million.

Under the local office of LGED at the Zila (District) level, there are 64 executive engineers, and one engineer at every Upazila for a total of 464. The total number of LGED staff is 9,600. This implies that about 20 staff members could be made available at the Upazila level, if LGED

functions are completely devolved to Upazila.

As a whole, LGED has adequate capacity to implement various infrastructure projects through proper management of sizeable development budget and coordination with related agencies. Also LGED has sufficient staff capacity to support local projects through its Upazila offices. A major weakness in the LGED capacities is that they do not have implementing arms that can effectively reach the grass roots (or para) levels. For effective implementation of local projects, therefore, the partnership with NGOs is a must.

5.3.3 Project Components and Step-wise Development

As clarified by the implementing arrangements presented above, a set of measures need to be included as components of the rural development project. First, minimal structural or physical measures under organizing people need to be taken to convince NGOs to take part in project implementation. Second, a flood warning and evacuation system needs to be included as the means to organize people together with flood awareness campaign/education. Third, a set of support services needs to be provided to the organized people for their livelihood development. Specific services would depend on types of livelihood activities, which in turn vary for different areas of various socio-economic and physical characteristics. Fourth, a saving and credit scheme would provide a vehicle to drive the project implementation.

Other structural or physical measures would be introduced at a later stage. For instance, additional shelters would be constructed, following the evacuation planning, at a later stage of the model projects, if the initial implementation is assessed to be generally successful. Under the flood-proof conditions against the normal flood, the delivery of social services would be improved first for priority areas, focusing on primary education and primary health care. These would be implemented by the respective government agencies as part of their regular programs, but their effectiveness would be enhanced by the involvement of organized people in the priority areas. As the local people become better prepared to pursue more diversified livelihood activities under the flood-proof conditions, other economic infrastructures would also be improved in steps such as growth center construction and rural electrification. These would be implemented also by the respective sector agencies, but the priority should be accorded to the model project areas.

The step-wise development procedure and expected effects of projects are illustrated in Figure 5.3 and 5.4.

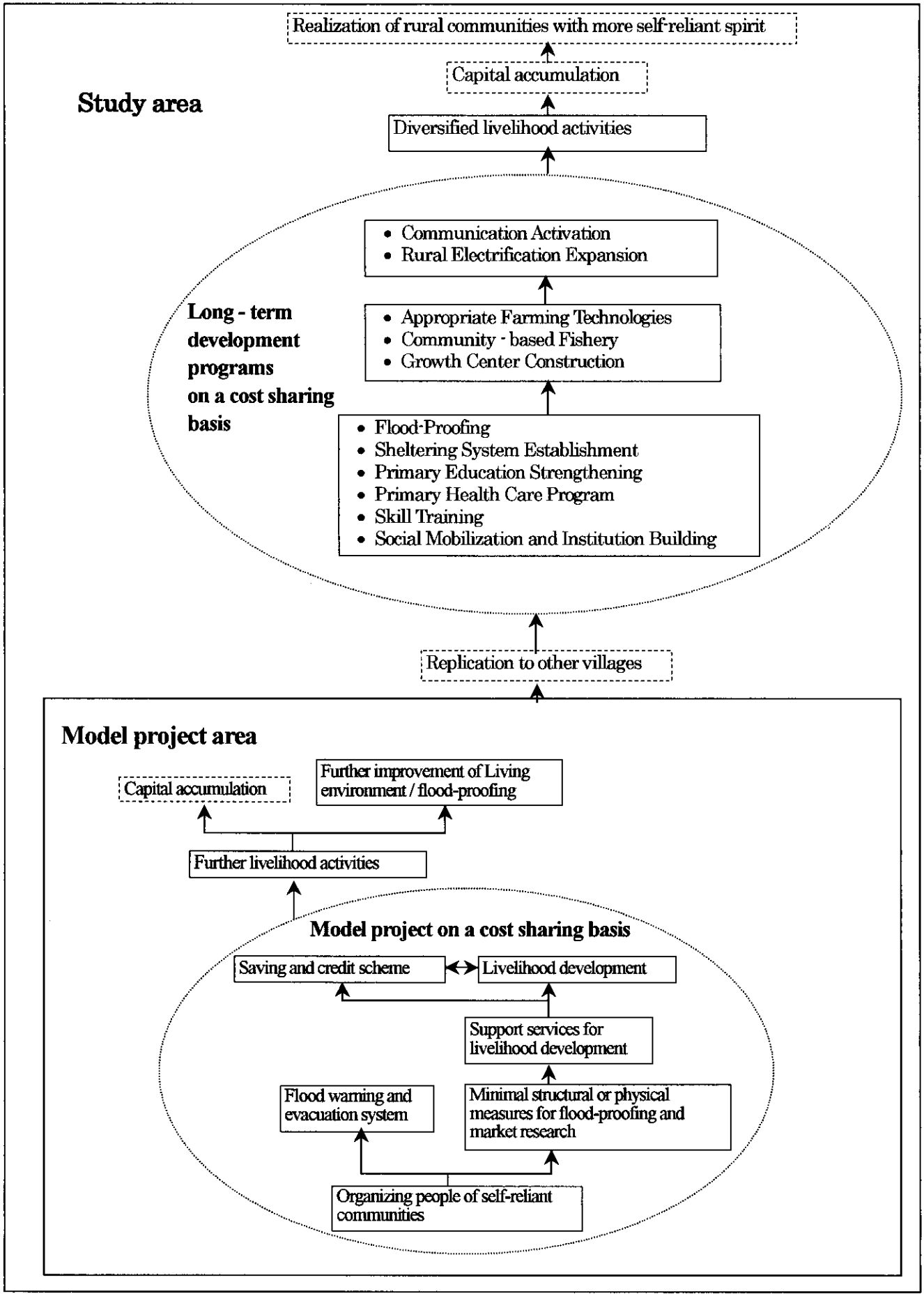

Figure 5.3 Step - wise Development

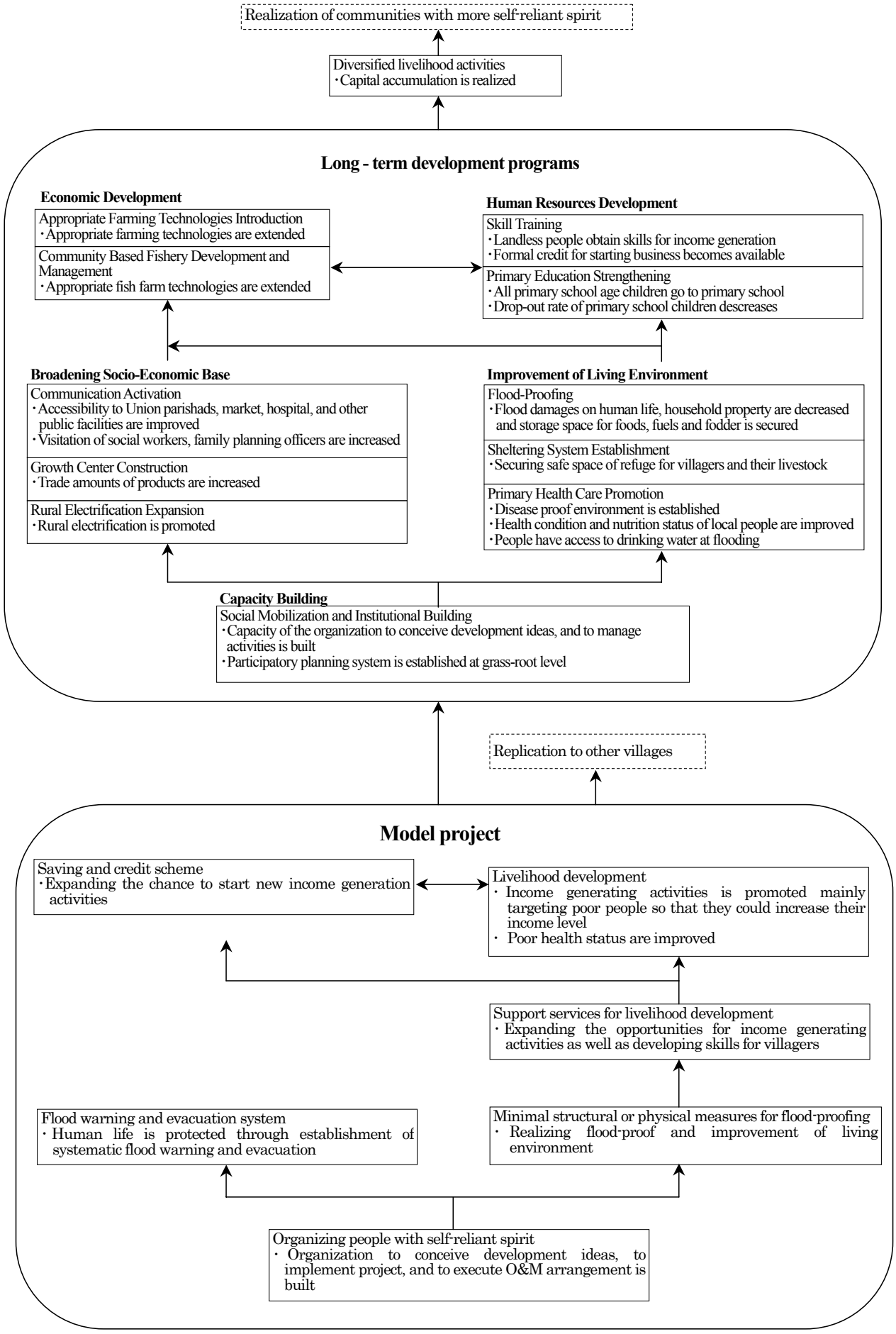

Figure 5.4 Expected Effects of Projects