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Social Impact Assessment
Phu Ninh Subproject

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Social Impact Assessment for Phu Ninh Subproject

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1. INTRODUCTION

1. The construction of Phu Ninh irrigation system, Quang Nam province, began in 1977 and was completed in 1985. Before the construction of the irrigation system, the plain area of the Southern districts of the province had seriously shortage of irrigation water, especially for the Autumn Summer crop, cultivation soil was not fertile (heavy soil was mixed with sand and white sand). There was lack of water, and food production was uncertain. The life of citizens in some areas were threatened with hunger due to shortage of foodgrain while other areas experienced flood.

2. The Phu Ninh irrigation project has made great contribution to flood control\(^1\) and the socio-economic development of Quang Nam province. Especially in the fields of agriculture by ensuring the irrigation of 349,162 ha of paddy cultivation and nearly 50,000 ha of farm produce cultivation including industrial crops. In terms of cultivation area 15,170 ha out of the total of 23,000 were irrigated, reaching 66% of the designed capacity, including 12,170 ha for paddy cultivation and 3,000 ha of farm produce. Since the completion of the Phu Ninh irrigation system, the lives of the people in the area had been changed day by day. Paddy output of Tam Ky increased from 600-700kg/ha/year (year 1976) to 3-4 tones/ha/year (2002). Foodgrain output of Tam Ky town and Thang Binh district increased from 25,000 tones/year /1976 to 42,000 tones/year/ 2002.

3. The scheme has supplied domestic water for over 400,000 rural people in the beneficiary area (year 2001) and Phu Ninh water supply provided 15,000 m\(^3\)/day to Tam Ky town. The system also supplied water to factories of sugar, cassava starch, fruit-vegetables processing for export, and will (when restored) be able to supply water to Chu Lai-Ky Ha industrial zone with flows of 55,000 m\(^3\)/day. With capacity of nearly 350 million m\(^3\), water surface area of 3,200ha Phu Ninh enables the raising of fresh water fish, sometimes up to 70 tones, creating jobs for many farming households living close to the lake. In addition it creates an important waterway line for nearly 8,000 inhabitants and has made a communications network convenient.

4. Phu Ninh Lake plays a very important role in flood control. Phu Ninh project completely stoped all floods at the beginning of flooding season, and it regulates over 40% of the total flood volume of main flooding season. Phu Ninh Lake also creates great potential of ecological tourism with many beauty spots, cool weather, many valuable birds, animals in the forest, and is only 7 km away from the centre of town.

5. The Phu Ninh Subproject scheme\(^2\) includes:

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1 Although there was the historical flood of 12/1999, with frequency of 1.5-2%, flow of flood peak was 2,890 m\(^3\)/s, flood volume in 24 hours was 131.1.10m\(^3\), Phô Ninh lake regulated 48% of total volume, reducing flooding level at the lower area of Tam Kú town from1-1.5m (source: TrÇn H-u ThÖ, Quang Nam irrigation project exploitation Company).

2 The present office for management and exploitation of Phu Ninh is “Phu Ninh irrigation Project Management Company (IMC Phu Ninh)”, comprising of 4 irrigation enterprises of Nui Thanh, Phu Ninh, Thang Binh and Que Son. Each enterprise includes from 1 to 5 irrigation clusters. 2 out of total of 2 irrigation clusters do not manage irrigation area, but manage head works area and main north canal, named “head works management cluster” and
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- Head works, including: 1 Main weir, 3 auxiliary weirs, 1 controlled spill way at the height of 26m, 1 free spill way 31m for precautions against big flood and combination with the controlled spill way, 2 sewers. The head works comprises of 12 working items if the hydraulic works of the hydroelectric station is included.
- Two main North and South canals: the main North canal is at height level of 17m, running from Tu Yen pass to the foot of Hon Bang mountain bordering with Duy Xuyen district, with its length of 47 km; the main South canal is 8 km from the beginning of Tam Xuan commune to Tam Anh commune of Nui Thanh district. Total length of the two main canals is 55km.
- 427 km of canal grade 1 downwards
- 200 works on main canal.
- 1200 works on canals from grade 1 downwards.

6. Table 1 below gives an overview of the location, and classifies the communes according to irrigation cluster.

Table 1. Beneficiary Communes Classified According to Irrigation Clusters

<table>
<thead>
<tr>
<th>Order</th>
<th>Irrigation Enterprise</th>
<th>Irrigation cluster</th>
<th>Canal and Works assigned by IMC for management, exploitation.</th>
<th>Communes getting irrigation service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enterprise for exploitation of Phu Ninh irrigation project</td>
<td>Phu Ninh head works management</td>
<td>Head works area management: main weir, 3 spillways, South sewer.</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Truong Xuan</td>
<td>N2, N4, N4B, Tam Loc Pump Station.</td>
<td>Wards of Tan Thanh, Truong Xuan, An My, AN Son, Hoa Luong, Communes of Tham Thai, Tam Dan, Tam Phu, Tam Ngoc (Tam Ky town)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cam Khe</td>
<td>N19A, N10B, N12, Tam Loc Pump Station</td>
<td>Tam Loc, Tam Dan, Tam Phuoc, Tam Thanh, Tam An, Toam Ky Town, Binh An (Thang Binh district)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Main North canal</td>
<td>Management of main North canal from K0 - K33 &amp; Tu Yen auxiliary weir, North sewer</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tam Dan</td>
<td>N6, N8, Tam D©n Pump Station</td>
<td>Tan Thanh ward, communes of Tam Vinh, Tam Dan, Tam Dan (Tam Ky town), and Tien Phong (Tien Phuoc district)</td>
<td></td>
</tr>
</tbody>
</table>

"main North canal management cluster", belonging to Phu Ninh irrigation enterprise. The remaining clusters manage irrigation area, with the smallest area of 550 ha (Tam Anh irrigation cluster with office at Tam An commune, Nui Thanh district), and the biggest area of 2,480 ha (Cam Khe irrigation cluster with office at Tam An, Tam Ky town). Each cluster is in charge of leading water to canal grade 3 and manage, distribute water to some communes. Besides, the irrigation clusters have to protect projects on canal, sign contracts on irrigation and collect irrigation fee according to yearly plan.

3 According to IMC, canal grade 1 here is equal to grade 2 as called by WB experts. Therefore, hereunder it will be referred to as "canal grade 2"
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II

<table>
<thead>
<tr>
<th>Enterprise for exploitation of Thang Binh irrigation project</th>
<th>Binh Trung</th>
<th>N14, N14A, An Xa Dong Station</th>
<th>Binh Que, Binh Trung, Binh An and Binh Trung Seed Farm (Thang Binh district).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binh Tu</td>
<td>N16, N18</td>
<td>Binh Tus, Ha Lam townlet, Binh Phuc (Thang Binh district)</td>
<td></td>
</tr>
</tbody>
</table>

III

<table>
<thead>
<tr>
<th>Enterprise for exploitation of Nui Thanh irrigation project</th>
<th>South Phu Ninh</th>
<th>Main South Canal, N4, N6.</th>
<th>Tam Xuan, Tam Anh, Tam Hoa, Tam Tien (Nui Thanh district).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tam Anh</td>
<td>N2, N2-9</td>
<td>Tam Anh, Tam Ho (Noi Thanh district)</td>
<td></td>
</tr>
</tbody>
</table>

IV

| Que Son Irr. proj. exploitation | Que Cuong | Main North Canal (k33-K47), N24, N26, N28, P. ChO Pump Station | Que Xuan, Que Phu, Que Cuong, Phu Tho (Que Son Dst.), Duy Trung (Duy Xuyen Dst.), Binh Dinh, Binh Quy (Tang Binh Dst.). |

2. SOCIAL IMPACT ASSESSMENT

2.1. Beneficiaries and their Main Source of Income

7. The beneficiary area of the Sub-project includes 43 communes/wards belonging to the area of 5 districts/town: Tam Ky town (17 communes/wards), districts of Nui Thanh (5 communes), Que Son (4 communes), Duy Xuyen (1 commune), Thang Binh (15 communes and townlet of Ha Lam) and Th\'i\'n Ph-ic (1 commune), with a total of 411,550 people (year 2001), as shown in table 1 above.

8. All the 411,568 beneficiaries as well as the possibly affected people of the sub-project, belong to the main ethnic group, the Kinh people. There is no ethnic minority in the area. There are 4 religions in the Sub-project area: Buddhism, Christianity, Protestantism and Cao Dai. Tam Ky town has 14,601 believers, making up 8.4% of the total population of town, of which: Buddhist make up 47%, Christian 19.9%, Protestant 25%, Cao Dai 8.1%. Over 90% of the remaining citizens of the town are non-religious.

9. Over 83% of the people are farmers mainly living in rural area, with their work on paddy fields, in vegetable gardens, or occupied with animal breeding on a small family scale to supplement cash income to meet their daily living expenses and farm input such as fertilizer, insecticide, and seeds. At the townlets (apart from the wards of Tam Ky town) over half of the

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4 The figures referred to in this SIA is the ones valid in June 2003 and they differ slightly from later ones.
5 Ha Lam townlet (Th\’ing B-\nh district) is regarded as a beneficiary unit equal to 1 commune/ward.
6 A religious sect draws upon ethical precepts from Confucianism, occult practices from Taoism, theories of karma and rebirth from Buddhism, and a hierarchical organization (including a pope) from Roman Catholicism.
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population live of agriculture as shown in table 2 below. Even in Hµ Lam townlet, Thang Binh
district, agricultural households make up 55%. The birth rate varies between 1.6 in Thang Binh
district and the highest 2.14 in Que Son district. The population growth rate was 1.01 in 2001.

Table 2: Characteristics of the Population in the Subproject Areas

<table>
<thead>
<tr>
<th>Items</th>
<th>Tam Ky town</th>
<th>Nui Thanh</th>
<th>Que Son</th>
<th>Duy Xuyen</th>
<th>Thang Binh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Population (people)</td>
<td>14879</td>
<td>15225</td>
<td>57812</td>
<td>58358</td>
<td>40673</td>
<td>41612</td>
</tr>
<tr>
<td>- Of which: ethnic minority</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. Male (people)</td>
<td>72225</td>
<td>72547</td>
<td>28361</td>
<td>28642</td>
<td>19088</td>
<td>18309</td>
</tr>
<tr>
<td>- Male at working age (18-60)</td>
<td>33941</td>
<td>12261</td>
<td>12307</td>
<td>6632</td>
<td>7166</td>
<td>2245</td>
</tr>
<tr>
<td>3. Female (people)</td>
<td>76567</td>
<td>79707</td>
<td>29451</td>
<td>29716</td>
<td>21585</td>
<td>23303</td>
</tr>
<tr>
<td>- Female at working age (18-55)</td>
<td>38666</td>
<td>38743</td>
<td>14959</td>
<td>15173</td>
<td>9790</td>
<td>9122</td>
</tr>
<tr>
<td>4. Birth rate (%)</td>
<td>1.86</td>
<td>1.73</td>
<td>1.97</td>
<td>1.85</td>
<td>2.14</td>
<td>1.93</td>
</tr>
<tr>
<td>5. Population growth rate (%)</td>
<td>1.02</td>
<td>1.01</td>
<td>1.02</td>
<td>1.02</td>
<td>1.01</td>
<td>1.00</td>
</tr>
<tr>
<td>6. Non-agriculture households (household)</td>
<td>5820</td>
<td>5892</td>
<td>3102</td>
<td>4406</td>
<td>1244</td>
<td>1227</td>
</tr>
<tr>
<td>7. Agriculture households (household)</td>
<td>30015</td>
<td>30072</td>
<td>10851</td>
<td>9354</td>
<td>9070</td>
<td>9726</td>
</tr>
<tr>
<td>8. Average number of people of one household</td>
<td>4.2</td>
<td>4.2</td>
<td>4.1</td>
<td>4.2</td>
<td>3.9</td>
<td>3.8</td>
</tr>
<tr>
<td>9. Agriculture household rate (%)</td>
<td>83.8</td>
<td>83.6</td>
<td>77.8</td>
<td>68.0</td>
<td>87.9</td>
<td>88.8</td>
</tr>
</tbody>
</table>

Note: (*) Excluding Tí'n Phong commune, Tí'n Ph-ic district (the only commune of the district irrigated by Phu Ninh system) as there is no detailed statistics from the area. The number of people of Tí'n Ph-ic commune is over 4,000.

10. Population density of the beneficiary area of Subproject was 369 people/km2 which is over 2.7 times higher than the common density of the whole province. Although the population density is high the average household is relatively small for a farming population and varies between 3.9 and 4.3 persons per household as shown in table 2.

Table 3: Population Density in Subproject Area
2.2. Standard of Living

A. Food Security:

11. The average food grain has gone down in recent years, which is to be expected with the deterioration of the irrigation system. However, in two districts, Que Son and Thang Binh, food security has actually improved between 1999 and 2001. Although that may partly be due to external circumstances such as the weather conditions, it does not correspond to the increase in poverty rates for the same districts as shown in part 2.4. below and table 5. Other social variable(s) may be at work here.

<table>
<thead>
<tr>
<th>Year</th>
<th>Tam Ky</th>
<th>Nui Thanh</th>
<th>Que Son</th>
<th>Duy Xuyen</th>
<th>Thang Binh</th>
<th>Average of whole area</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>502</td>
<td>261</td>
<td>178</td>
<td>423</td>
<td>479</td>
<td>369</td>
</tr>
</tbody>
</table>

Table 4: Average Food per Capita in Subproject Areas
(Unit: kg/people/year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tam Ky town</th>
<th>Nui Thanh</th>
<th>Que Son</th>
<th>Duy Xuyen</th>
<th>Thang Binh</th>
<th>Average of whole area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>254.70</td>
<td>176.10</td>
<td>284.00</td>
<td>375.10</td>
<td>263.30</td>
<td>270.64</td>
</tr>
<tr>
<td>2000</td>
<td>255.40</td>
<td>167.90</td>
<td>302.30</td>
<td>335.90</td>
<td>260.00</td>
<td>264.30</td>
</tr>
<tr>
<td>2001</td>
<td>247.00</td>
<td>159.70</td>
<td>301.80</td>
<td>324.80</td>
<td>274.00</td>
<td>261.46</td>
</tr>
</tbody>
</table>

B. Health Conditions:

12. Main diseases of the Subproject areas were cold, gynaecological diseases of women, cancers (stomach, liver, bronchus), mental illness, and tuberculosis. In Binh Tu commune only, 12 people died of cancers in 2002; 25 people got mental illness (age from 30-60). Gynaecological diseases of women are resulting from unsafe water for domestic use and the living conditions in rural areas are not hygienical according to the women’s association.

13. Clean water: The ratio of rural household using clean water from stone or concrete built wells was 100%, with the average depth of water well of 6 m, of which 90% of households have private family wells. The rest (10%) share a well between 2-3 households. However, at some communes/wards in low area water is often affected by alum during the rainy season, and not so clear as when it doesn’t rain.

14. Toilets: In the rural area, about 50% of households use 2 compartment latrines, 45% of households use 1 compartment latrines, and only 5% of households use septic tank or semi-septic tank toilets. There is almost no toilet model built on water surface for combination with fish raising. In the urban area as townlets, about 25% of households use 2 compartment latrines and 75% of households use septic tank or semi-septic tank toilets. In the inner town over 90% of
households used septic tank or semi-septic tank toilets. The remaining households, mainly living in the outskirts of town, or newcomers to town, use 2 compartment latrines or live in difficulties with no toilet at all.

2.3. Land Holdings

15. Beneficiaries’ average agricultural cultivation area was 753 m²/person of which the yearly cultivation area was 571 m²/person (making up 75.8% of the total cultivation land area). Paddy cultivation was 425 m²/person (56% of the total cultivation land area). The average agricultural cultivation land area per household of the Subproject area was: 3,162 m²/household, of which the yearly plant cultivation land was 2397 m²/household (Paddy cultivation land: 1,771 m²/household, equal to 3.5 Central VN poles’ length).

16. Average cultivation land area of poor households was 450m²/person, while that of the whole commune was 720 m²/person as in Tam Thanh commune, Tam Ky town. Thus poverty of the people was also caused by structural inadequacies with small landholdings, limited human resource development in the form of education and training, and lack of alternative sources of income.

2.4. Poverty and Gender

17. Poverty varies between districts with the lowest of 7% of households in Tam Ky town and the highest 22.4% in Quue Son in 2001. However, what may be more disturbing than the absolute number is the increase in poverty from 2000 to 2001 particularly in 3 districts as shown in Table 5.

<table>
<thead>
<tr>
<th>Tam Ky</th>
<th>Nui Thanh</th>
<th>Quue Son</th>
<th>Duy Xuyen</th>
<th>Thang Binh</th>
<th>Average of whole area</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.7</td>
<td>7.0</td>
<td>11.2</td>
<td>20.7</td>
<td>23.0</td>
<td>19.4</td>
</tr>
</tbody>
</table>

18. The average poverty rate increased from 15.4 in 2000 to 18.1 in 2001, but in Nui Thanh the poverty rate was 11.2 in 2000 but jumped to 20.7 in 2001. Likewise in Quue Son the poverty rate was 20.4% in 2000 and 22.4 in 2001, and in Thang Binh it was 11.5 in 2000 but jumped to 19.4 in 2001. Figures may reflect differences in weather conditions between the two years, but whatever the reason the increased poverty rates reflect the vulnerability of the people in the area. With poverty rate of around one fifth of the population careful attention should be paid to resettlement policy effects, particularly when Phu Ninh previously have experienced relocation of people, who have not benefited from the reservoir and are still in need of water and infrastructure improvements. This is documented in the Resettlement Legacy Issues Annex 1 to the Summary of SIA, August 2003, and again raised by the administration in Phu Ninh, see part 3.1.
19. According to the survey undertaken in June-July 2003 the people saw the reason for their poverty as: (i) shortage of capital (making up 47.6% of total poor households) resulting in the incapability of investment in cultivation, leading to low productivity; (ii) sick people in their families (35.7%); (iii) having to feed many people (6.4%); (iii) shortage of labor (4.6%); (iv) shortage of production experience (2.2%), and (v) shortage of production land (2.6%).

<table>
<thead>
<tr>
<th>Table 6: Reasons for Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Canal N12 and N16 – N18)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reasons of poverty</th>
<th>Total household</th>
<th>Total of PH</th>
<th>% PH/ total</th>
<th>Lack of experiece</th>
<th>Lack of labor</th>
<th>Large family</th>
<th>Lack of capital</th>
<th>Lack of product ion land</th>
<th>Lazy to work</th>
<th>Accident</th>
<th>Sick,dis-eases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ha Lam townlet</td>
<td>3,713</td>
<td>678</td>
<td>18.3</td>
<td>2</td>
<td>8</td>
<td>24</td>
<td>347</td>
<td>17</td>
<td>2</td>
<td>3</td>
<td>275</td>
</tr>
<tr>
<td>Of which: a) head of household is women</td>
<td>203</td>
<td>30.0</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>104</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>83</td>
</tr>
<tr>
<td>b) Poverty reasons (%):</td>
<td>100</td>
<td>0</td>
<td>1.2</td>
<td>3.5</td>
<td>51.2</td>
<td>2.5</td>
<td>0.3</td>
<td>0.4</td>
<td></td>
<td></td>
<td>40.6</td>
</tr>
<tr>
<td>2. Binh Tu</td>
<td>2,931</td>
<td>549</td>
<td>18.7</td>
<td>32</td>
<td>25</td>
<td>17</td>
<td>152</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>300</td>
</tr>
<tr>
<td>Of which: a) head of household is women</td>
<td>192</td>
<td>35.0</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>53</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>b) Poverty reasons (%):</td>
<td>100</td>
<td>5.8</td>
<td>4.6</td>
<td>3.1</td>
<td>27.7</td>
<td>3.6</td>
<td>0.2</td>
<td>0.4</td>
<td></td>
<td></td>
<td>54.6</td>
</tr>
<tr>
<td>3. Binh Quy</td>
<td>2970</td>
<td>907</td>
<td>30.5</td>
<td>0</td>
<td>51</td>
<td>96</td>
<td>598</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>152</td>
</tr>
<tr>
<td>Of which: a) head of household is women</td>
<td>322</td>
<td>35.5</td>
<td>0</td>
<td>5.6</td>
<td>10.6</td>
<td>65.9</td>
<td>0.8</td>
<td>0.1</td>
<td>0.2</td>
<td></td>
<td>16.8</td>
</tr>
<tr>
<td>b) Poverty reasons (%):</td>
<td>100</td>
<td>0</td>
<td>5.6</td>
<td>10.6</td>
<td>65.9</td>
<td>0.8</td>
<td>0.1</td>
<td>0.2</td>
<td></td>
<td></td>
<td>16.8</td>
</tr>
<tr>
<td>4. Tam Thanh commune</td>
<td>2114</td>
<td>221</td>
<td>10.5</td>
<td>18</td>
<td>24</td>
<td>14</td>
<td>23</td>
<td>17</td>
<td>3</td>
<td>9</td>
<td>113</td>
</tr>
<tr>
<td>(Tam Ky town)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Of which: a) head of household is women</td>
<td>65</td>
<td>29.4</td>
<td>18</td>
<td>24</td>
<td>14</td>
<td>23</td>
<td>17</td>
<td>3</td>
<td>9</td>
<td></td>
<td>113</td>
</tr>
<tr>
<td>b) Poverty reasons (%):</td>
<td>100</td>
<td>8.1</td>
<td>10.9</td>
<td>6.3</td>
<td>10.4</td>
<td>7.7</td>
<td>1.4</td>
<td>4.1</td>
<td></td>
<td></td>
<td>51.1</td>
</tr>
<tr>
<td>4) total</td>
<td>11728</td>
<td>2355</td>
<td>20.1</td>
<td>52</td>
<td>108</td>
<td>151</td>
<td>1120</td>
<td>61</td>
<td>7</td>
<td>16</td>
<td>840</td>
</tr>
<tr>
<td>Of which: a) head of household is women</td>
<td>718</td>
<td>30.5</td>
<td>52</td>
<td>108</td>
<td>151</td>
<td>1120</td>
<td>61</td>
<td>7</td>
<td>16</td>
<td></td>
<td>840</td>
</tr>
<tr>
<td>b) Poverty reasons (%):</td>
<td>100</td>
<td>2.2</td>
<td>4.6</td>
<td>6.4</td>
<td>47.6</td>
<td>2.6</td>
<td>0.3</td>
<td>0.7</td>
<td></td>
<td></td>
<td>35.7</td>
</tr>
</tbody>
</table>

20. Aspirations of poor households headed by women were in agreement with their perception of the reason for their poverty. They wanted: (i) jobs, especially jobs bringing cash income, (ii) capital for production development: pig, poultry, cattle breeding, purchase of fertilizer, insecticide; (iii) being allowed to take part in the project equally to men; (iv) being provided with guidance on agricultural cultivation technique and be able to process water operation and take part in water management and distribution to community. Although data do not provide for an analysis of the difference between poor male and poor female headed households the answers the women provided indicated that they perceive their situation more restricted than the one of males.

21. Most of the poor households were headed by single women or were households having a disable and unwell member. They have to borrow money to buy food, fertilizer and pesticide for production. After harvesting, they have to sell part of the modest food to pay their debt. As such
they are in the vicious circle of penuriousness. Most of the poor households at the pilot schemes areas still owe agricultural tax to the government of the years before the tax was lifted. According to the commune authority, their debt would be written off since they are unable to pay it. Consultation with a poor group in Tam Thanh commune (Tam Ky town) shows that 6 out of 10 poor households still owe the agricultural tax. The highest indebted amount was 1,300 kg of paddy, the lowest was 800 kg. 4 out of 5 households headed by poor and single women still owed the agricultural tax. The poor households all wanted to borrow money at a soft rate. However, consultation with poor and women headed households showed that those households who are short of manpower want to get relief aid rather than loan for production since they do not know what to do with the loan.

22. The women participate in most of the socio-economic development programs in the area and played an important role in the social life of the community, especially the campaign for “Good and strong children”, "Hunger eradication and poverty alleviation and employment generation." Other programs include the "For the advancement of the women", "Gender equality", "Reproduction health", and "Care to teenagers".

23. The women are not treated discriminately in the family or in the society. However, the general division of labor works against women, particularly when it comes to income. In the field men do the agricultural work such as preparation of land, sowing, weeding, spraying of pesticide, harvesting, drying, storing whereas the women do harvesting, drying, selling the products, keep the money. The ratio of doing fieldwork (time spent in the field) between women and men was 30%/70%. When it comes to raising castle and poultry it was mainly women’ work and they were in charge of 70% of the work, while men did 30%. Caring for children and keeping the houses were almost exclusively done by women, while decision-making was left for the men. In urban areas the division of labor was more equal shared between men and women, but income for a days work was VND 10,000 for women and VND 15,000 for men.

2.5. Challenges Facing the Community in Development

24. The communities' development concern can be summaries as follows:

i) Most of the subproject areas is rice mono-cultured and do not have supplementary work, hence the risk is high;

ii) Areas at the down stream often have water problem. Cultivated areas, which did not receive any irrigated water accounts for 20% of the total land, and could have 1 crop only;

iii) Water for domestic use depended on the level of water in canals. If the canal water level was low or there was no water in the canal, domestic water would be contaminated with alum;

iv) High price of input whilst the average rice productivity of the 2 crops of Winter-Spring and Summer-Fall was only 35.5 – 38.5 quintals/ha, hence benefit per ha was low and the people proposed the government lower the price for farm input;

v) Though the areas are merely agricultural, the renumeration for agricultural products was difficult and the price was often compelled by traders causing losses to farmers;

vi) There had not been a consolidated and specified livestock and crop patterns in the community (commune), but was mainly depending on the spontaneity of each household;
vi) Difficulties in access to new high yield varieties and technological advanced agricultural methods;

viii) Lack sources for cash income, the prices of agricultural products was cheap and income low;

ix) Weak and inactive in discharging waterlog and mainly depending on natural condition. Discharging canal system is inadequate.

2.6. Development Priorities

25. Within the Subproject area renovation and modernization of canal system had become one of the development priorities particularly among farmers. The present irrigation area only covered 80% of the total cultivation area. Other priorities were: (i) Agriculture: stabilizing plants structure and increasing rice yield. (ii) Development of small and medium scale industries to attract capital investment, and (iii) to concentrate on exploitation of internal forces by taking the advantages of land such as changing land for infrastructure including rural communications.

26. Development priorities of the community included: (a) increase rice productivity and cultivation land for 2 crops; (b) find sources of input of reasonable and stable price acceptable to farmers; (c) find stable markets for agricultural products to avoid prices fixed by traders; (d) develop household husbandry, especially new pig breed of high meat quality and productivity to meet increased market demand.

2.7. Conclusion: A Social Impact Assessment

27. Poverty is widespread in the Subproject area with around one in every fifth person being poor and in some commune poverty has even increased between the year 2000 and 2001. Most of the people in the Subproject areas are living of farming output without supplementary income. Farm output has also decreased in some areas but the Subproject is expected to reverse the negative trend. The Government has provided sufficient infrastructure between communes and villages as well as rural roads leading to the commune center. Infrastructure facilities such as electricity, telephone system, school, clinic, and commune’s Peoples’ Committee (PC) headquarters are newly built or will be re-built.

28. However, there are two major concerns: one relates to the resettlement legacy from the building of the Phu Ninh reservoir, and the second is related to the resettlement policy of the present Phu Ninh Subproject. (1) Although the living standard of most of the previously relocated 1212 households have been restored to their pre-project levels, there are still people, who had been moved to remote areas in the province and who have not benefited from the water resources of the Phu Ninh irrigation system. The initiatives taken to solve their water problems are far from sufficient and these people should be helped to improve their living standard. The people and the local administration have requested the Subproject to improve their water-and infrastructure situation, but a more comprehensive social development program should also be considered for these people within the VWRAP.

29. (2) Data on landholding of affected people shows that the landholdings of the poor are on average 425m²/person compared to the average of 720m²/person for the area, which makes the poor more vulnerable in case of land requisition requirements. Because of the loose management
of canal embankment and safe corridor of local authorities, some households have built toilets or plant annual crops, even perennial crops very close to the canals. Further, some parts of canal's safe corridor were allocated to households for long-term use (only 0.5 m from the foot of the embankment) and other parts were temporarily allocated (or not allocated) but all used by the farmers for annual crops such as rice. The resettlement policy of the World Bank require full compensation for all people (irrespective of their legal status) and relocation if the landholding will no longer be sufficient to sustain the family at their present standard of living. However, the distinction between legal and illegal settlers and particular the difference between long-term and short-term land user right might contribute to increased poverty for some families when land, in cases of land-for-land compensation, is expected to come from the reserved 5% land. Some are already cultivating this land. The Detailed Measurement Survey (DMS) should find out if the poor are among those cultivating the reserved land (which is to be expected because their poverty might have given them this temporary right). The Subproject should avoid contributing to poverty escalation because the praxis in Vietnam has been that illegal settlers are not fully compensated.

30. Farmers’ perception of project impact and mitigation measures is documented in part 3.9.

3. CONSULTATION, INFORMATION DISSIMINATION, AND PARTICIPATION

31. The communes selected for community consultation are: Tam Thanh (Tam Ky town) and Binh Quy, Binh Tu and Ha Lam townlet (Thang Binh district). Besides the above-mentioned communities, consultations were also carried out at the People’s Committee (PC) of Quang Nam province, PC of Tam Ky town and PC of Thang Binh district, with the attendance of leaders of PC, Women’s Association and the related specialized Boards, Branches (Water resource, Cadastral, Department/Office of Agriculture & Rural Development, War Invalids and social affairs)

3.1. Commitments to Implement the Project According to World Bank Policy.

32. Consultations with local authorities were carried out separately at each PC of the province, district and commune levels\(^7\). Before consultation, the administrations were informed of; (i) the contents of the Project at national scale and the Subproject of Phu Ninh irrigation system modernization and (ii) the policy of the WB on Resettlement and Ethnic minorities. Participants at the consultations were leaders of PC (normally Vice Chairman and Chief/Assistant Chief of Office) as well as leaders of some staff offices of provincial PC as Department of Agriculture and Rural Development (A&RD), of district PC as offices of Communications – Irrigation, A&RD, Cadastral, of commune PC as cadres in charge of Communications – Irrigation and Cadastral.

\(^7\) Consultations with PC at all levels were carried out at: PC of Quang Nam province (with the attendance of leaders of Department of Agriculture and Rural Development); PC of Tam Ky town and Thang Binh district (with the attendance of representatives of related specialized offices of the district as Communications, Water resource /Agriculture and rural Development, cadastral officials...); PC of some communes at 2 model canal area as: Tam Thanh (Tam Ky town) and communes of Binh Quy, Binh Tu, and Ha Lam townlet (Thang Binh dist.), with the attendance of their cadres of cadastral and communication-irrigation.
Results of consultation showed that all leaders of the local governments at all levels as well as the staff offices of the PCs totally support and were committed to implement the Sub-project in accordance with the policy of the WB.

A. Consultation with the PC of the Province;

Right after being informed of the contents of the Project, the provincial PC gave direction to the PCs at levels of districts/town to the PCs of communes/wards, townlet in the Subproject area, the Department of A&RD, and to Phu Ninh IMC, which created a favourable atmosphere and provided good co-operation from the beginning. The staff wanted to bring the Sub-project quickly to life. The authorities found that the modernization of this irrigation system was very necessary, appropriate to the people’s aspiration, and to the socio-economic development targets and the development direction of the year 2010 of Quang Nam province. At present, the canal and ditch system were seriously down-graded, the dam system was not very safe, especially after the historical flood of 1999 and, therefore, it is necessary to renovate and increase irrigation capacity of the system as early as possible.

The provincial peoples’ life are still difficult, living standard is low, the capability of investment in big projects is limited due to lack of capital, and the Subproject thanks to the attention of the Government and WB to the locality is very welcome. The provincial PC is ready to receive the Sub-project and is committed to implement correctly the WB policy, and create the best conditions for the implementation of the Subproject. The province have had their experience and obtained good results in the implementation of Projects using loans from international organizations, including WB and ADB, especially concerning compensation, site clearance, and resettlement, and, therefore, they will definitely be able to fulfill their commitments. To make it suitable to the Resettlement Policy of WB, the provincial PC will decide on new compensation unit price applied specifically to this Subproject.

The provincial PC mentioned that: (i) although WB policy has some points different from the policy of the Government, it is still easy to be implemented if the Government issues timely documents suitable to WB policy. This experience has been drawn from the actual site clearance to develop projects using loan capital from international organizations in the provincial area. (ii) To request the Project to consider the assistance for the building of some works (as small irrigation, rural communications) for communities of high area communes in the province where the resettlement people have moved in to live for the construction of Phu Ninh lake project, but they are not benefited from Phu Ninh irrigation system. At present, the people of this area are meeting with a lot of difficulties in their life and in production.8

B. Consultation with the PC of District/town:

At the two pilot areas leaders of PCs of Thang Binh district and Tam Ky town completely supported the Subproject and wish to get the project, as it is very useful for the socio-economic

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8 This request is similar to the conclusion of the Resettlement Legacy documented in the Annex to the Summary of SIAs in VWRAP, August 2003.
development of the locality, especially for agricultural production, and to improve people's lives. The district also agreed to implementation of the Subproject according to WB policy.

38. In case of land compensation, the locality still has the land fund of 5% (reserved land) for compensation without any difficulty. Regarding canal grade 3/ on farm and the people's contributions for restoration, new construction, the PC of the district/town hold that at present, the Program for the fortification of canals, ditches of province, districts/towns with the people's contribution has repaired, upgraded and fortified some canal lines belonging to the Phu Ninh irrigation system. As for Tam Ky town, from 2000 – 2002, 27.44 km of canal, ditch of all types were fortified with the total expense of VND 18,5 billion, including: 12.75 km of canal grade 2, and 44.69 km canal grade 3/on farm.

39. With experience from the implementation of the above-mentioned Program for canal fortification, leaders of PC of district/town believe that with the financial assistance from the State, the attention of local authorities at all levels, the people and community are totally able to carry out the renovation and new construction of canals grade 3/on farm.

40. Leaders of PC of Thang Binh district and Office of A&RD hold that the selection of two pilot canal lines N16 and N18 was very reasonable, however, some matters should be paid attention to during the implementation of the works after modernization:

(i) the flow will be bigger, therefore, irrigation effectiveness will not be high if there is no weir for water rising;

(ii) there will be moss on the banks of the canal line running through population areas, easily making children and women slip and fall down. Therefore, it is necessary to renovate the steps at canal banks to avoid this phenomenon. Further

(iii) it is necessary to pay attention to the designs of canal line N22-4 (belonging to Binh Trieu commune) to overcome the situation that the end of the canal is bigger than the beginning of the canal;

(iv) canal N22-6 (belonging to Binh Dao commune) the height level at the end of the canal is higher than the beginning of the canal.

(v) As for the sandy soil of the Eastern part of the district, water retaining capability of soil is bad as much water is absorbed, and, therefore, the district proposed that if concrete was used according to 'concrete joining' style, it would easily be broken by flow at conjunction lines.

(vi) It would be necessary to combine information dissemination in rural areas concerning canal grade 2 and above.

(vii) Trees planting on canal banks are strictly forbidden.

41. Regarding the compensation for property affected during the process of renovation or new construction of canal lines grade 3/on farm, the district PC proposed:

(viii) It is advisable to raise the matter of compensation to newly built canals. As for the existed canals, which only need renovation, upgrading, it is unnecessary for
compensation, according to the district administration. They also found that if compensation was made, there may be the occurrence of unfairness between households who will implement the protection of canal and its rights of way warned by the PC of commune, and households who, due to their occupation, did not implement the protection well.

42. As for the Project, the PC of districts/town proposed:

(ix) Phó Ninh Lake was built in the state-subsidy time, though the people who had to move away for the construction of the lake and canal system were assisted and paid compensation by the State, they are the most affected people, especially in property. Moreover, after the completion of the irrigation system, they are not direct beneficiary (as they had to move to the high area), therefore, the Project is expected to pay attention to them and make ways to support them, by investment in the construction of pump stations to create source of irrigation water for those high areas.

(x) Bridges over canals were not built previously, or unreasonably built, inconvenient for the people's usage, especially for women and children (as access to the bridge is sloping, bridge is too high), the Project is expected to renovate and build new bridges.

(xi) As to the renovation, restoration and new construction of canal lines grade 3/on farm, it is necessary for the State to invest and support, but there should be contributions of the people and community in order to highly raise their responsibility in their use and protection of the works later.

(xii) Right in the implementation, as well as after the completion of the Sub-project, it is necessary to provide guidance on irrigation technique to farmers, irrigation teams and community leaders (from head of production teams/ and head of hamlets and above). To make plans to make the people use water economically.

(xiii) It is necessary to carry out training courses for irrigation cadres who are farmers, including women, so that they would be qualified for water management and distribution.

(xiv) Regarding the drain canal system when the Phu Ninh irrigation system was previously built, due to shortage of investment capital, the drain canal system did not pay enough attention and it was not synchronously built, therefore, some areas has often been flooded as a result of bad drainage capability, water even overflows into houses. Therefore, the Project is requested to pay attention to the renovation of the drainage system together with the irrigation system. Besides, it is also necessary to attend to the renovation of drainage system of the areas not benefited from the Sub-project, as at the communes of Tam An, Tam Thanh, Tam Phó (with cultivation area of about 300 ha).

(xv) Regarding technical design, it is necessary to pay enough attention to water distribution sewers.

C. Consultation with the Commune PC in Subproject Areas

43. Wards' and communes' PCs were committed to implement the project in consistance with WB policies. The implementation of the subproject activities coincides with local planning. Wards' and communes' PCs agree to use the 5% unallocated land to compensate the PAFs who
lose land if they want land compensation according to WB policy. If, for some reasons the project affected people (PAP) who lose land do not want to take the given lot of land, the PC will negotiate with owner of the lot next to it for exchange or transfer. The commune had the following wishes for the Subproject:

(i) Improve the leaking of water and thereby enhance irrigation capacity. This would result in decline of water shortage and disputes between production teams and areas;

(ii) Enlarge actively irrigated areas and provide water to areas where there are still no water;

(iii) Save land for cultivation thanks to smaller canal-bed as design;

(iv) Save budget for dredging;

(v) Improve sanitation.

D. Consultation with farmers

44. Community meetings were held in communes Tam Thanh (Tam Ky town), Binh Tu, Binh Quy and Ha Lam town (Thang Binh district) of 2 sample areas N12 and N16 - N18 in which local households and representatives of social organizations were gathered. All the participants supported and welcomed the subproject. They were committed to implement the subproject in accordance with WB policy. They believed that the commitments would be carried out since communes’ reserve land funds of 4-5% were available. However, communities in the pilot areas had the following recommendations for a good implementation of the Subproject:

(i) Affected assets would merely need to be compensated and assisted in accordance with decision on compensation rates and allowances promulgated by PPC and WB policy, then resettlement/land clearance would meet no obstacles/or difficulties.

(ii) Local people should be widely informed prior to the time of water closure for the subproject construction (as already proposed by local population and their communities) so that they could initiatively store water and prepare adequate plans on harvesting and cultivating for example commune Tam Thanh - Tam Ky town could implement an earlier tobacco cultivation to have sufficient water during the first growing stage).

(iii) If communes’ rural transport routes and other communities’ properties such as electricity lines, civil crossing-canal bridges etc would be either used for transporting construction materials or damaged during the subproject construction, they should be promptly repaired after the subproject completion.

(iv) Construction materials/equipment should covered during transportation to ensure a lowest impact to living environment of local population.

(v) Attention should be given during transportation to passing school areas.

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9 Including representatives of social organizations: 1) President of the National Front; 2) Veteran Association; 3) Women’s Union; 4) Farmer Association; 5) Agricultural Expansion Union; 6) Elderly People Organization; 7) Youth Union; (no ethnic minority living in the subproject’s area), and representatives of local authorities and professional staff: 1) Secretary/Vice-Secretary; 2) President/or Vice-President of CPC; 3) Head/or Vice-head of hamlet; 4) Commune’s Cadastral staff; 5) Head of Cooperative; 6) Heads of Commune’s Agriculture-Irrigation Groups (no ethnic minorities living in the subproject’s area).

10 By responding to the World Bank resettlement policy farmers and the administration mentioned the availability of the land, but the investigation showed the land to be occupied by present users.
(vi) If the subproject planned to build cross-canal bridges replacing temporary local-made bridges, new bridges should be placed at the most convenient locations. Cases of new bridges build at high cost to the State's budget but providing low efficiency because of unconvenient positions, should be avoided.

3.2. Farmers' Participation in Water Management

45. Local population showed aspirations to be able to participate in the subproject's implementation, since this participation could give them cash income, important especially to poor households and households with surplus labours as well as woman. In 4 consulted communes and town, local population in Binh Quy commune showed most ardently their expectation to participate in the subproject implementation, because it was the poorest commune in Quang Nam province and the subproject's area. 

46. The local population were willing to contribute part of their affected assets (deepened on level of impacts to income sources and living conditions) to repairment and new establishment of tertiary canals and they could participate in: (i) Simple works (earth filling and digging, transporting, pouring concrete, building, guarding etc); (ii) Water managing and distribution, through Irrigational Team and Agricultural Service Cooperative later on. (iii) With guidance from technical staff of IMC or the subproject, they could build and repair and do some construction works of simple technical requirements. (iv) Daily constructing of the subproject works. v) Monitoring the construction of subproject's works. (vi) Maintaining and protecting canal routes after the subproject's completion. (vii) Woman could participate in water management and distribution in tertiary canal systems after the subproject's completion, if they were guided and trained.

3.3. Farmer's Recommendation Concerning Water Closing Management

A. Farming season structure:

47. Before 2000, local farmers in the subproject's area did cultivation with 3 rice harvests (winter-spring harvest, summer-autumn harvest and harvest 3) and 1 vegetable harvest called winter harvest. Since 2000 climate conditions had only made 2 rice harvest possible (winter-spring and summer-autumn ones) and 1 winter vegetable and crop harvest. Only in Nui Thanh district 3 rice harmones remained as shown in tabale 6 below.

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11 According to reports of CPCs within sample canal area, in 2002, Binh Quy had 907 poor households (making up 30.5% of total commune's households); Binh Tu - 549 poor households (18.7%); Ha Lam Town - 678 poor households (18.3%); Tam Thanh (Tam Ky town) - 221 poor households (10.5%) - classified by new criteria on poor households issued by the Vietnamese Government.
# Table 7: Farming Season Structure within the Subproject Area

<table>
<thead>
<tr>
<th>Item</th>
<th>Tam Ky</th>
<th>Nui Thanh</th>
<th>Que Son</th>
<th>Duy Xuyen</th>
<th>Thang Binh</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. total cultivated area (ha):</td>
<td>11103.4</td>
<td>11415.1</td>
<td>4639.5</td>
<td>4034.0</td>
<td>5250.0</td>
<td>4312.7</td>
</tr>
<tr>
<td>I. watering:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Rice:</td>
<td>8940.9</td>
<td>9251.8</td>
<td>3580.5</td>
<td>2975.0</td>
<td>2846.6</td>
<td>2846.6</td>
</tr>
<tr>
<td>a) Winter-Spring (rice)</td>
<td>4150.2</td>
<td>4142.2</td>
<td>840.6</td>
<td>1365.0</td>
<td>1423.3</td>
<td>1423.3</td>
</tr>
<tr>
<td>b) Summer-Autumn (rice)</td>
<td>3940.2</td>
<td>4296.2</td>
<td>1381.4</td>
<td>1610.0</td>
<td>1423.3</td>
<td>1423.3</td>
</tr>
<tr>
<td>c) Harvest 3 (rice)</td>
<td>1358.5</td>
<td>1358.5</td>
<td>0.0</td>
<td>0.0</td>
<td>3766.0</td>
<td>3688.0</td>
</tr>
<tr>
<td>II. Not watering:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Crops (Winter harvest):</td>
<td>850.5</td>
<td>813.4</td>
<td>1610.0</td>
<td>1498.0</td>
<td>2460.5</td>
<td>2311.4</td>
</tr>
<tr>
<td>a) Peanut</td>
<td>372.3</td>
<td>399.0</td>
<td>515.0</td>
<td>563.0</td>
<td>887.3</td>
<td>962.0</td>
</tr>
<tr>
<td>b) Popcorn</td>
<td>91.2</td>
<td>110.4</td>
<td>29.0</td>
<td>65.0</td>
<td>120.2</td>
<td>175.4</td>
</tr>
<tr>
<td>c) Potato</td>
<td>387.0</td>
<td>304.0</td>
<td>1066.0</td>
<td>870.0</td>
<td>1453.0</td>
<td>1174.0</td>
</tr>
<tr>
<td>III. Not watering:</td>
<td>2162.5</td>
<td>2163.3</td>
<td>1059.0</td>
<td>1059.0</td>
<td>2403.4</td>
<td>1461.1</td>
</tr>
<tr>
<td>1. Rice:</td>
<td>650.6</td>
<td>653.6</td>
<td>0.0</td>
<td>0.0</td>
<td>1156.4</td>
<td>555.4</td>
</tr>
<tr>
<td>a) Winter-Spring (rice)</td>
<td>329.8</td>
<td>431.8</td>
<td>578.2</td>
<td>277.7</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>b) Summer-Autumn (rice)</td>
<td>320.8</td>
<td>221.8</td>
<td>578.2</td>
<td>277.7</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>c) Harvest 3 (rice)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>186.0</td>
<td>186.0</td>
</tr>
<tr>
<td>2. Crops (Winter harvest):</td>
<td>1511.9</td>
<td>1509.7</td>
<td>1059.0</td>
<td>1059.0</td>
<td>1247.0</td>
<td>910.7</td>
</tr>
<tr>
<td>a) Peanut</td>
<td>699.6</td>
<td>739.0</td>
<td>424.0</td>
<td>424.0</td>
<td>660.0</td>
<td>408.0</td>
</tr>
<tr>
<td>b) Popcorn</td>
<td>146.3</td>
<td>190.7</td>
<td>14.0</td>
<td>14.0</td>
<td>146.0</td>
<td>145.0</td>
</tr>
<tr>
<td>c) Potato</td>
<td>666.0</td>
<td>580.0</td>
<td>621.0</td>
<td>621.0</td>
<td>441.0</td>
<td>357.7</td>
</tr>
</tbody>
</table>

B. farm-season structure (%): | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| a) Winter-Spring (rice) | 40.3 | 40.1 | 18.1 | 33.8 | 38.1 | 39.4 | 38.6 | 38.6 | 32.4 | 33.4 | 33.9 | 36.3 |
| b) Summer-Autumn (rice) | 38.4 | 39.6 | 29.8 | 39.9 | 38.1 | 39.4 | 38.6 | 38.6 | 35.3 | 35.3 | 36.0 | 37.7 |
| c) Harvest 3 (rice) | 0.0 | 0.0 | 29.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 | 0.0 |
| d) Winter harvest (vegetables, crops): | 21.3 | 20.4 | 22.8 | 26.3 | 23.8 | 21.1 | 22.8 | 22.8 | 32.3 | 31.3 | 26.5 | 26.0 |
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B. Farming-season schedule

Winter-Spring rice harvest: late December - late April (solar calendar)
Summer-Autumn rice harvest: middle May - middle September (solar calendar)
Winter harvest (vegetables and crops): late November - early March (solar calendar)

Winter harvest was for peanut, corn, potato, vegetables and tobacco etc and watering was mainly based on natural water source. Rice was applied chiefly method of cultivating without transplanting (accounting for 85-90% of cultivated area); the remaining area of 10-15% was applied method of transplant cultivation.

48. The best times for water closure for the subproject’s construction were:
   - Phase 1: from 10 April to 10 May of solar calendar (1 month).
   - Phase 2: from 1 September to 15 December (3.5 months)

49. During the time of water closure for the subproject’s construction, there would be some negative impacts: (i) Phase 1 of water closure could cause difficulties for peanut cultivation. (ii) Phase 2 would cause no impacts on cultivation of vegetables, crops and tobacco since it would be in rainy season. Therefore, water opening would not be needed. (iii) There would be impacts on water sources for daily activities of local population, because, in addition to taking canal water directly for washing purpose, the level of well water in some areas did depend on canals’ water level. In many places of Thang Binh district, if water closure lasted 45 days in a row, almost all water-wells would be dried out, except for some close to Truong Giang river, where well-water level was not depending by canal water level.

50. Measures to mitigate negative impacts during water closure periods:
   - Water should be opened 1-2 times during water closure periods, 5-10 days each time. Water could reach to cultivation fields within this opening period.
   - Tobacco should be planted 1 week earlier than normal.
   - People should be encouraged to store water in ponds and lakes, and asked to economize their use of water.

51. However, local people considered these negative impacts insignificant. Moreover, there were no impacts to their main crop: rice.

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Prior to 2000, schedule for 3 rice harvests and 1 winter harvest as follows:
- Winter-Spring rice harvest: late November – late March (Solar calendar);
- Summer-Autumn rice harvest: early April – late July (Solar Calendar)
- Rice harvest 3: late July – late October (Solar Calendar)
- Winter harvest (vegetables and crops): late November - early March (Solar Calendar)

Because of climate characters: i) frequently-occurred floods in late October and early November caused various unprofitableness for first stage of winter-spring harvest; ii) strong rainstorms in late March caused rice death which negatively impacted on rice production; iii) to avoid floods in late October, harvest 3 could use short-lifetime seed but it usually got insectival diseases which decreased rice productivity. In adaptation to above climate characters, from 2000 on, the PPC implemented policy on cultivating 2 rice harvests Winter-Spring and Summer-Autumn and 1 winter harvest as do presently. Actually the present 2 rice harvests provided a higher productivity than that of previous 3 rice harvests.
3.4. Farmers’ Capacity to Restore and Build New Tertiary Canals.

52. In all the consultation with communities the local population and communities leaders expressed their expectation to have tertiary canals repaired, restored, even newly built. It would first of all help to overcome existing water shortage, water disputed and difficulties in water regulation between fields. Local people agreed to contribute their labour and part of their assets for the restoring and building of new tertiary canals. They found that the communities were fully capable of managing and distributing tertiary canal water, as well as maintaining and protecting the canal system after the subproject’s completion. According to the local population lining of existing canals did not cause occupation of land and structures and in many cases, this could provide more land and other benefits in regards to landscape, environment and more convenience for canal-side households in daily water use. Moreover, it was an important factor protesting against the encroachment on canal sides as it presently happened.

53. However, local people asserted that the repairment, restoration and new construction of some canal routes of tertiary canal system were a difficult work, which they could not do themselves (especially in new constructions). Although they would be the future beneficiaries and users they could not afford it because of their low income, especially low cash income, and they proposed a combination of their contribution (in the form of labor) and State assistance (in the form of material and technical guidance).

54. Regarding contribution of land for repairing and new building of tertiary canals local people can consecrate land and in special cases with large area of land that caused impacts to income sources the commune’s authority would make compensation for the lost households by 5% unallocated land (the reserve land presently was under CPC management).

55. Regarding management, distributing water and maintaining/repairing canals, local people and their communities were fully capable of implementation because such work presently were under implementation of Agricultural Service Cooperative, which was lead by a production team elected by local people. The people who would be assigned as managers on water distribution should be guided and trained on the use of technical equipment and modern watering model that would be applied after the subproject completion.

3.5. Present Models of Water Management and Distribution

56. There are 3 models of water management and distribution in the subproject area and the difference depended on the existence of Agricultural Service Cooperative or not. The three

\[13\] Presently, the provincial program on canal lining were being implemented in the subproject’s localities, under a mode of cooperation between the State and the local people. The province invested 40% of total estimate budget of the construction work (by cash). Local people contributed 60% by their workdays or by cash equal to compulsorily contributed workdays. In fact, according to opinions of local authorities and IMC, this Program caused almost no impacts to assets of local population since they did the lining on existing canal routes. Thus, it met no land clearance requirements. From 2001 up to now, the province’s contribution by cash for 40% of estimate budget was not enough for purchasing construction materials, whilst local people contribution was mainly by workdays. Money shortage became worse and worse. To solve this status, local authorities decided to use local-made construction materials as a replacement for 60% contribution of local population. This replacement reduced the cost, created jobs and facilitated local people to contribute their workdays, especially the poor.
models were: 1. "Model of Agricultural Service Cooperative, inter-hamlet/or commune scale as the representative" found in communities where Agricultural Service Cooperative did exist.\(^4\) 2. "Model of Head of hamlet were the representative" which was found in communities where Agricultural Service Cooperative did not exist, and 3. "Model of Commune Economic Board as the representative" where the representatives were the ones signing direct contracts with Regional Irrigation Enterprises, which were entrusted by the IMC\(^5\).

1. **Model of Agricultural Service Cooperative, inter-hamlet/or commune scale as the representative:**

57. This was the model applied in communities where Agricultural Service Cooperative of inter-hamlet/or commune scale existed (such as in Tam Thanh commune, canal N12, Tam Ky town with 10 hamlets in 2 Cooperatives).

58. Head of the Cooperative was the representative for water-users to sign direct contract with IMC, through a regional irrigation enterprise (Irrigation Enterprise was entrusted by IMC). The Cooperative collected payment for irrigation fee from its water users and then delivered it to the enterprise. The Cooperative was responsible for managing, distributing water from head of 3-class canals to cultivation field and informing each household-user to lead water into their own fields.

59. To fulfil these functions, the Cooperative formed an irrigation team, headed by Vice-head of the Cooperative. Team members were heads of the Cooperative's production teams (for example in Tam Thanh commune: Cooperative 1 had 15 production teams and Irrigation team had 15 members; Cooperative 2 had 19 production teams and its Irrigation Team had 19 members). Irrigation teams were responsible for distributing water from the head to the end of tertiary canals, then each household-users would be informed about the water schedule so that

\(^4\) For example: Tam Thanh commune (Tam Ky district) which was located in N12 sample area had 2,209 households with 4,486 people and 10 hamlets (hamlet names were numbered from 1 to 10). It had 2 Agricultural Service Cooperatives: Cooperative 1 covered 4 hamlets and Cooperative 2 covered 6 hamlets. Each Cooperative had its Administrative Section (including the Head, Vice-head and Bookkeeper) and Control Board (with 1 controller). In addition to providing agricultural services (watering and agricultural materials and techniques), the Cooperatives as well had advisory responsibility for local people about production plans to seasonal and technical aspects. Besides, the Cooperative was in charge of implementing some other services such as management and distribution of electricity to civil household-users and handicraft production (rattan). These Agricultural Service Cooperatives were a reform of previous Agricultural Cooperatives, by changing functions and responsibilities from planning, managing and organizing production under collective mode (land was under the Cooperative management) to providing services (including consultation service) to farmers (land was under management and long-term use of households). Therefore, although the model of production teams was still in existence as they were previously during the time of Agricultural Cooperatives, but the previous functions on managing and organizing scheduled production was no longer at work. Production team presently was considered an administrative unit at hamlet level, although it as well participated in the Cooperative's activities as providing agricultural services.

\(^5\) Organizational structure of Phu Ninh IMC; IMC consisted of Irrigation Enterprises. Each Irrigation Enterprise belonged to an Irrigation Branch. For example: Tam Thanh commune was under Cam Khe Irrigation Branch. Irrigation Enterprise was in charge of leading water to the end of 2-class canal (Canal N12 for example) or head of 3-class canals (such as canals N12-6, N12-8, N12-125b, N12-125a). Agricultural Service Cooperative was responsible for managing and distributing water from the head of 3-class canal to each cultivation fields to household-user level.
Under the hamlet head (the general chief) were self-management groups, who were responsible for irrigation service and informing household-users to lead water into their own fields, collecting irrigation fee, as well being responsible for administrative matters. Self-management group had 2-3 members, elected by local people. Each hamlet had at least 2 and at most 6 self-management groups. CPC did not participate in water management and distribution, but only in solving civil disputes or grievances related to its function. Water household-users paid irrigation fee to hamlet head. Hamlet head delivered the collected fee to IMC through regional irrigation enterprise.

63. **Advantages of the model:** If each hamlet had established one irrigation group to manage and distribute water to household level, it would have created a smooth cooperation with IMC and other hamlets, but that was not the case. Concurrently, collection of irrigation fees would have been more convenient and erased doubts of household-users, if the contract was not signed only by the hamlet head. Self-management groups, elected by local people encouraged the initiative and ownership spirits among local population in regards to public works (including managing and distributing water). Members of self-management groups regularly gave information about water source, distribution schedule, and use schedule. The model was on a small scale that was suited to actual capacity in water management and distribution of the farmers, and it was convenient to cooperate with CPC in solving water disputes due to the participation of hamlet head in water management and distribution.

64. **Disadvantages of the model:** Since the water contract was signed between Irrigation Enterprise and hamlet head solely it happen that there was a difference between actual watering area and the signed area. Therefore, there could be possibility of losing the different amount of irrigation fees.

1. **Model of Commune Economic Board as the representative.**

65. This model worked through Commune Economic Board and the commune authority gave direct guidance in water management and distribution. This was the model applied to communities where Agricultural Service Cooperative did not exist. Commune Economic Board, on behalf of water household-users, signed direct contract with Irrigation Enterprise, which was entrusted by IMC. Then, hamlet heads signed supplement contracts with Commune Economic Board. Hamlet head was assigned to be in charge of her/his hamlet irrigation group. Depending on the number of production teams of each hamlet and cultivation area and population of each area. Each production team could have 3-5 persons who participated in irrigation services. Commune Economic Board had 5-6 members. 2 would be assigned to be responsible for irrigation issue under the leadership of the Board’s Head. Thus, if a commune had 8 hamlet with 35 production teams such as in Binh Tu commune (Thang Binh district), number of persons participating in water management and distribution got to 140 (in case each production team had average 4 people).

66. **Advantages of the model:** Under the direct leadership of CPC, it was convenient in solving water disputes. With the participation of members of each production team in the process of water management and distribution, information about water source, distribution schedule and use schedule were regularly updated.
67. **Disadvantages of the model:** This model showed similar disadvantages with the one taking CPC as the representative for water household-users to sign direct contract with IMC because in its essence, Commune Economic Board was the same as the CPC. These disadvantages were there often was a difference between actual watering area and the contract area signed with Irrigation Enterprise. This disadvantage could lead to mismanagement and cause a loss of revenue for IMC, and negatively impact the repair and maintenance of canal system by IMC. Too many people participating in water management and distribution required high budget for their salary so household-users had to pay a high non-irrigation expense. This payment was usually of 4-8 kg of rice/sao\(^{17}\)/harvest (or equal to 8 – 16 kg of rice/sao/year, or 160 – 320 kg of rice/ha).

68. In short, next to disadvantages of each existing model of water management and distribution, there were also ones related to quality of service provided by IMC, which was: (i) quantity of provided water had not yet meet requirement because of the degraded canal systems. (ii) sections at the end of canals often suffered watering destitute or delays. (iii) It took a lot of farmers’ time to lead water into their fields. Although water distribution timetable of IMC was accepted with watering managers and and the community responsible had informed the people at household-user level, there were many cases of disputes between localities because waterhead users showed an excessive use of water at the same time as waterbottom users were in lack of water.

**Measures to improve the present model of water distribution and management**

69.
- First of all, the canal system needs to be rehabilitated, upgraded and modernized. Only by doing so the improvement of the present model of water distribution and management can take place;
- Make known to water users the irrigating areas indicated in the contract signed with IMC and the balance between the contracted and actual per each field of each household. Only by doing so the farmers can exercise their rights of monitoring the implementation of the contract and the performance of the those who distribute and manage the irrigation;
- While waiting for the application of a new model, there should be a consistent management from top to down levels on all types of canals, including the tertiary ones to avoid disputes amongst areas. Those who take part in water distribution and management will be paid by the government (cash or in kinds) as currently applied to IMC so that these persons will pay more attention to the work;
- Establish the association of water users to facilitate the systematic and continuous regulation of water based on canal network and not by administrative areas as at present.

3.6. **Irrigation Fees**

70. According to DARD reports, the irrigation fee, which has to be paid to IMC, is calculated based on crop productivity. The payment is required in cash based on the local market rate at the time of payment to be certified by the PPC in writing.

\(^{17}\) 1 sao = 500 m\(^2\).
71. Consultation with the community at the two pilot schemes showed that there were different irrigation fee amongst communes, implying differences in crop productivity. Payment for irrigation services were composed of two parts: irrigation fee paid to IMC according the PPC’s decision, and irrigation service paid to the water service cooperative to pay the irrigation team, which looked after the distribution and management of water and repaired the tertiary canals. The later payment was usually decided by the cooperative after discussion and agreement among its members.

72. In Tam Thanh commune (Tam Ky town): Irrigation fee paid to IMC per household were 6.5 kgs of paddy/500m2 per Winter-Spring g crop and 9 kgs of paddy/500m2 per Summer-Fall crop in addition to irrigation service cost paid to the service cooperation: 4 kgs of paddy/500m2/crop (equivalent to 160 kgs of paddy/ha/year). The total payment for irrigation service per household was 23.5 kgs of paddy/500m2/year (2 crops), or 470 kgs/ha/year (equivalent to VND 1,034,000/ha/year).

**Willingness to pay for irrigation services after completion of the subproject**

73. The water users affirm that they are willing to pay higher irrigation fee as compared to the present level, provided that they were provided adequate irrigated water, especially for the cultivation areas, which was still using rainfed water. The rationale for being able to pay higher irrigation fee was that the provision of adequate irrigated water would save the time they used to intake water to their field, and after completion they would have time to do other work. The cultivation areas for 2 rice crops would be increased by regular irrigationed, and thereby increase productivity. Hence, income per cultivated area would be higher than at present.

3.7. *Farmers Proposed Water Management Model*

74. The farmers fully support the application of market principles in providing irrigation service by IMC, i.e. they will pay only for the amount they buy based on the levels of service and to which extend water was meeting their crop requirements. In order to improve the present models of water distribution and management, the water users agree to establish the association by themselves with representatives selected by them to be responsible for water distribution and management and sign the contract with IMC on their behalf.

75. While the canal systems have not been modernized, initial priority for institutional improvement of water distribution and management includes making known of the contents of the contract signed between village head, or board of director of the agricultural service cooperative, with IMC so that the water users know the total areas to be irrigated per each crop, level of irrigation (active or semi-active irrigating) and the allocation of the contracted areas for each household. That would improve control of management and secure the IMC get the amount for repair.

76. Two models of water distribution and management was proposed by the farmers and community for selection:

*Model 1*: If the canal system is good and provide enough water, the model of “the agricultural service cooperative of inter-village level is the representative” with a full time irrigation team with 1-2 farmers from each production group” would be suitable. The establishment of the
association of water users should be based on the existing cooperative in the areas (inter-villages or commune scale), whereby it could take the combined advantages of resources of the cooperative including the experiences, facilities and staff, and the new regime of the association.

**Model 2:** Establish an association in each community. This model was preferred more than model 1. In this model the water users would select their representatives for water distribution and management and sign the contract with IMC. All association’s activities would be agreed upon by its members in their regular and irregular meetings and made transparent especially concerning financial matters.

77. Although the model of association would make use of good experiences of the former agricultural cooperative at commune or village levels or the present agricultural service cooperatives, the farmers propose that: (i) the association should be of the initial size of the village as it is suitable with the management ability of the farmers who are still less experienced with this work; and (ii) establishment of this model should only be suitable after the irrigation system has been modernized.

78. The community proposed the following to ensure participation and effectiveness of the Subproject: (i) To disseminate the technical procedures for the operation, distribution and management of water in a modern irrigation system during the implementation or after the completion of the subproject. (ii) The institutions of water distribution and management be set up based on the establishment of the association of those water users of the same area/canal so that they can chose a suitable association to take part as well as a suitable person to sign the contract with IMC on their behalf. (iii) The association should hold regular meetings to hear report on the implementation of the contract from the representatives and recommendations of its members. (iv) In the case the water users are no longer in favor of their elected representative it should be possible to make a new selection. (v) Train the women so that they are able to participate in the management and distribution of water. The participation of women for this process will fill the gap caused by men’s bad doings; such as (a) less careful in working as some time they are busy with drinking; (b) less fair and bias treatment; and (c) easy going and have low responsibility.

3.8. **Consultation with Community on Mitigation Measures**

79. Farmers perceived the Subproject would have an impact during construction for which mitigating measures should be taken. (i) The big gathering of workers for construction can have impacts to the security and order of the community, and make prices at local market increase. (ii) The closing of water for construction will have impacts not only to irrigation of crops but also to water for domestic use since most of the well levels depend on canal water levels, except areas along the river. (iii) After the construction is completed, transportation is still affected because earth left over from the dredging and excavating of canals, which should be used for strengthening embankment access road will affect the environment of the community both socially and environmentally. (iv) There will possibly be impact on transportation of people because the construction will affect canal bridge and power grid. (v) Possible impact to the environment due to dust from the road where there is the transportation of construction materials.

80. **Recommendations and mitigation measures**

- Disseminate widely and adequately to the people and community of the project content and policy as well as the construction plan and water closing and opening schedules;
- Mobilize strength of the community for contribution to the works and share the losses with affected households;
- The PPC should issue new cost norms to be applied to this subproject to make it consistent with the WB policies;
- Those who are responsible for the management and implementation of the subproject should be qualified and experienced and know the policies of the WB and the government well. This will help not to cause more losses to the people due to wrong implementation of these policies;
- Compensation should be at the rate acceptable to the people and help the affected households to rehabilitate;
- Use the 5% unallocated land for compensation to those who do not want compensation in cash;
- There must be representatives of the people to participate in the monitoring of the process of compensation, resettlement, and construction in consistent with the WB policy;
- Commune authority and village have to coordinate with the project implementation units to implement the subproject in their area. First of all, the commune cadastral officials have to define clearly the boundary of land which has been allocated long term to households to facilitate the inventory of project affected people, which will take place latter on;
- Rehabilitation and upgrade of canal embankment should also aimed at making it an access road;
- Rehabilitation of canal should be made within the existing line. Tertiary canals built by farmers themselves has taken a lot of land and need to be re-shaped;
- Construction should be carried out at the time when there is less production activities with appropriate construction method;
- Contractors have to commit, with legal enforcement, to repair the roads and other infrastructure they use for construction activities and have measures to reduce dust from the transportation;
- Find a suitable place for construction materials;
- Find the best roads for transportation;
- Strengthen the management and monitoring of the process of canal construction.