

Table XI.2.8 Breakdown of Construction Cost of Rural Water Supply Facilities

(1) Rural Water Supply - Level I

| Work                  | Unit | Q'ty | Foreign Currency (Pesos) | Local Currency (Pesos) |
|-----------------------|------|------|--------------------------|------------------------|
| 1 Sipsipin (Well)     | Nos. | 3    | 889,000                  | 437,000                |
| 2 Bayugo (Well)       | Nos. | 3    | 541,000                  | 266,000                |
| 3 Punta (Well)        | Nos. | 1    | 235,000                  | 116,000                |
| 4 Palay-Palay (Well)  | Nos. | 3    | 704,000                  | 347,000                |
| 5 Pagkalinawan (Well) | Nos. | 2    | 476,000                  | 235,000                |
| 6 Lubo (Well)         | Nos. | 2    | 504,000                  | 248,000                |
| 7 Bagumbong (Well)    | Nos. | 2    | 592,000                  | 292,000                |
| 8 Paalaman (Spring)   | Nos. | 2    | 6,000                    | 8,000                  |
| Total                 |      |      | 3,947,000                | 1,949,000              |

(2) Rural Water Supply - Level II

| Work             | Unit              | Q'ty | Foreign Currency (Pesos) | Local Currency (Pesos) |
|------------------|-------------------|------|--------------------------|------------------------|
| 1 Bayugo         |                   |      |                          |                        |
| 1.1 Pipe works   | Ø 25 - 100 mm     | m    | 2,665                    | 995,000                |
| 1.2 Well works   | Ø 100 mm, 80 m    | No.  | 1                        | 703,000                |
| 1.3 Water tank   | 40 m <sup>3</sup> | No.  | 1                        | 122,000                |
| Sub-total        |                   |      |                          | 1,820,000              |
| 2 Punta          |                   |      |                          |                        |
| 2.1 Pipe works   | Ø 25 - 100 mm     | m    | 1,292                    | 610,000                |
| 2.2 Well works   | Ø 150 mm, 80 m    | No.  | 1                        | 811,000                |
| 2.3 Water tank   | 40 m <sup>3</sup> | No.  | 1                        | 121,000                |
| Sub-total        |                   |      |                          | 1,542,000              |
| 3 Bagumbong No.1 |                   |      |                          |                        |
| 3.1 Pipe works   | Ø 25 - 100 mm     | m    | 2,306                    | 791,000                |
| 3.2 Well works   | Ø 150 mm, 100 m   | No.  | 1                        | 895,000                |
| 3.3 Water tank   | 40 m <sup>3</sup> | No.  | 1                        | 122,000                |
| Sub-total        |                   |      |                          | 1,808,000              |
| 4 Bagumbong No.2 |                   |      |                          |                        |
| 4.1 Pipe works   | Ø 19 - 63 mm      | m    | 1,143                    | 225,000                |
| 4.2 Well works   | Ø 150 mm, 50 m    | No.  | 1                        | 683,000                |
| 4.3 Water tank   | 20 m <sup>3</sup> | No.  | 1                        | 71,000                 |
| Sub-total        |                   |      |                          | 979,000                |
| Total            |                   |      | 6,149,000                | 3,049,000              |

Table XI.2.9 Breakdown of Construction Cost of Power Supply System

| Work                      | Unit | Q'ty | Foreign<br>Currency<br>(Pesos) | Local<br>Currency<br>(Pesos) |
|---------------------------|------|------|--------------------------------|------------------------------|
| 1 Power Transmission Line | Km   | 23.0 | 7,808,000                      | 14,501,000                   |
| 2 Power Distribution Line |      |      |                                |                              |
| 2.1 Pump for Irrigation   | Km   | 4.2  | 1,457,000                      | 2,705,000                    |
| 2.2 pump for Water Supply | Km   | 0.9  | 295,000                        | 547,000                      |
| 2.3 Rural Electrification | Km   | 3.5  | 746,000                        | 1,385,000                    |
| Sub-total                 |      |      | 2,498,000                      | 4,637,000                    |
| Total                     |      |      | 10,306,000                     | 19,138,000                   |

Table XI.2.10 Breakdown of Construction Cost of Fish Port

| Work                            | Unit | Q'ty | Foreign<br>Currency<br>(Pesos) | Local<br>Currency<br>(Pesos) |
|---------------------------------|------|------|--------------------------------|------------------------------|
| <b>1 Bayugo Fish Port</b>       |      |      |                                |                              |
| 1.1 Banking                     | m3   | 1070 | 36,000                         | 32,000                       |
| 1.2 Wet Masonry                 | m3   | 150  | 62,000                         | 152,000                      |
| 1.3 Reinforced Concrete         | m3   | 53   | 91,000                         | 77,000                       |
| 1.4 Concrete Paving             | m2   | 300  | 56,000                         | 47,000                       |
| Sub-total                       |      |      | 245,000                        | 308,000                      |
| <b>2 Punta Fish Port</b>        |      |      |                                |                              |
| 2.1 Banking                     | m3   | 810  | 27,000                         | 24,000                       |
| 2.2 Wet Masonry                 | m3   | 90   | 37,000                         | 92,000                       |
| 2.3 Reinforced Concrete         | m3   | 53   | 91,000                         | 77,000                       |
| 2.4 Concrete Paving             | m2   | 210  | 39,000                         | 33,000                       |
| Sub-total                       |      |      | 194,000                        | 226,000                      |
| <b>3 Pagkalinawan Fish Port</b> |      |      |                                |                              |
| 3.1 Banking                     | m3   | 810  | 27,000                         | 24,000                       |
| 3.2 Wet Masonry                 | m3   | 90   | 37,000                         | 92,000                       |
| 3.3 Reinforced Concrete         | m3   | 53   | 91,000                         | 77,000                       |
| 3.4 Concrete Paving             | m2   | 210  | 39,000                         | 33,000                       |
| Sub-total                       |      |      | 194,000                        | 226,000                      |
| <b>4 Lubo Fish Port</b>         |      |      |                                |                              |
| 4.1 Banking                     | m3   | 1070 | 36,000                         | 32,000                       |
| 4.2 Wet Masonry                 | m3   | 150  | 62,000                         | 153,000                      |
| 4.3 Reinforced Concrete         | m3   | 53   | 91,000                         | 77,000                       |
| 4.4 Concrete Paving             | m2   | 300  | 56,000                         | 47,000                       |
| Sub-total                       |      |      | 245,000                        | 309,000                      |
| <b>5 Bagumbong Fish Port</b>    |      |      |                                |                              |
| 5.1 Banking                     | m3   | 810  | 27,000                         | 24,000                       |
| 5.2 Wet Masonry                 | m3   | 90   | 37,000                         | 92,000                       |
| 5.3 Reinforced Concrete         | m3   | 53   | 91,000                         | 77,000                       |
| 5.4 Concrete Paving             | m2   | 210  | 39,000                         | 33,000                       |
| Sub-total                       |      |      | 194,000                        | 226,000                      |
| Total                           |      |      | 1,072,000                      | 1,295,000                    |

Table XI 2.11 Cost of Supporting Equipments for R.D.C.

| Items                                 | Unit: Peso       |      |            |                |      |            |
|---------------------------------------|------------------|------|------------|----------------|------|------------|
|                                       | Foreign Currency |      |            | Local Currency |      |            |
|                                       | Unit Price       | Nos. | Total Cost | Unit Price     | Nos. | Total Cost |
| I. Farm Machinery                     |                  |      |            |                |      |            |
| Tractor (45 hp)                       | 161,000          | 10   | 1,610,000  | -              | -    | -          |
| II. Supporting Facilities             |                  |      |            |                |      |            |
| 1. Audio-Visual Equipments            | -                | -    | 400,200    | -              | -    | -          |
| Sound System                          | 179,400          | 1    | 179,400    | -              | -    | -          |
| Overhead Projectors                   | 41,400           | 1    | 41,400     | -              | -    | -          |
| Side Projectors                       | 41,400           | 1    | 41,400     | -              | -    | -          |
| Film Projectors                       | 124,200          | 1    | 124,200    | -              | -    | -          |
| Screens                               | 13,800           | 1    | 13,800     | -              | -    | -          |
| 2. Printing Equipment                 | -                | -    | 400,200    | -              | -    | -          |
| Photocopy Machine                     | 55,200           | 1    | 55,200     | -              | -    | -          |
| Scanner                               | 96,600           | 1    | 96,600     | -              | -    | -          |
| Others                                | 248,400          | 1    | 248,400    | -              | -    | -          |
| 3. Office Equipment                   | -                | -    | -          | -              | -    | 248,400    |
| Typewriters (Electric)                | -                | -    | -          | 46,920         | 5    | 234,600    |
| Fans                                  | -                | -    | -          | 13,800         | 1    | 13,800     |
| 4. Computers                          | -                | -    | 48,700     | -              | -    | -          |
| Microcomputer                         | 19,800           | 2    | 39,600     | -              | -    | -          |
| Printer                               | 9,100            | 1    | 9,100      | -              | -    | -          |
| 5. Vehicles                           | -                | -    | 1,640,000  | -              | -    | -          |
| Land Cruiser                          | 460,000          | 2    | 920,000    | -              | -    | -          |
| Motor Cycle                           | 48,000           | 15   | 720,000    | -              | -    | -          |
| Sub-total                             | -                | -    | 2,489,100  | -              | -    | 248,400    |
| II. Training and Extention Equipments |                  |      |            |                |      |            |
| 1. Home Science Equipments            | -                | -    | -          | -              | -    | 828,000    |
| Sewing Machine                        | -                | -    | -          | 34,500         | 20   | 690,000    |
| Working Table                         | -                | -    | -          | 6,900          | 20   | 138,000    |
| Markers, Boards, Sheets               | -                | -    | -          | 5,520          | 20   | 110,400    |
| Hand Tools                            | -                | -    | -          | 8,280          | 20   | 165,600    |
| 2. Library                            | -                | -    | -          | 289,600        | 1    | 289,600    |
| Books and other references            | -                | -    | -          | -              | -    | -          |
| Sub-total                             | -                | -    | -          | -              | -    | 1,117,600  |
| III. Inspection Equipments for Seed   |                  |      |            |                |      |            |
| Farm and Experimental Farm            | 989,000          | L.S. | 989,000    | -              | -    | -          |
| IV. Grand Total                       | -                | -    | 5,088,100  | -              | -    | 1,366,000  |

Table XI.2.12 Breakdown of Land Acquisition Cost

| Work                            | Unit | Q'ty | Local<br>Currency<br>(Pesos) |
|---------------------------------|------|------|------------------------------|
| 1 Irrigation and Drainage Canal |      |      |                              |
| 1.1 Sipsipin                    | ha   | 4.6  | 165,000                      |
| 1.2 Mapakla                     | ha   | 2.6  | 93,000                       |
| 1.3 Manggahan                   | ha   | 2.6  | 93,000                       |
| 1.4 Ba Sub-total                | ha   | 2.4  | 86,000                       |
| 1.5 Llano                       | ha   | 3.5  | 127,000                      |
| 1.6 Punta                       | ha   | 1.7  | 61,000                       |
| 1.7 Palay-Palay                 | ha   | 3.8  | 137,000                      |
| 1.8 Pagkalinawan                | ha   | 2.2  | 78,000                       |
| 1.9 Ik-Ik                       | ha   | 2.6  | 96,000                       |
| 1.10 Lubo                       | ha   | 1.8  | 64,000                       |
| 1.11 Lumang Nayon               | ha   | 1.7  | 63,000                       |
| 1.12 Pulong Ligaya              | ha   | 1.3  | 46,000                       |
| 1.13 Bagumbong No.1             | ha   | 2.7  | 98,000                       |
| 1.14 Bagumbong No.2             | ha   | 1.5  | 54,000                       |
| Sub-total                       |      | 35.0 | 1,261,000                    |
| 2 Palay-Palay Dam               | ha   | 16.0 | 288,000                      |
| 3 Rural Development Center      | ha   | 1.9  | 115,000                      |
| Total                           |      |      | 1,664,000                    |

Table XI.2.13 Cost Estimate of Engineering Services

| Item                        | 1,000 x peso       |                   |        |
|-----------------------------|--------------------|-------------------|--------|
|                             | Foreign<br>Currncy | Local<br>Currency | Total  |
| I. Detailed Design Stage    |                    |                   |        |
| 1. Remuneration             |                    |                   |        |
| 1) Foreign Consultant       | 12,000             | 0                 | 12,000 |
| 2) Local Consultant         | 900                | 0                 | 900    |
| 2. Direct Cost              |                    |                   |        |
| 1) Survey and Investigation | 0                  | 1,600             | 1,600  |
| 2) Air Fare, Documents etc. | 3,900              | 1,200             | 5,100  |
| Sub-total                   | 16,800             | 2,800             | 19,600 |
| II. Construction Stage      |                    |                   |        |
| 1. Remuneration             |                    |                   |        |
| 1) Foreign Consultant       | 28,000             | 0                 | 28,000 |
| 2) Local Consultant         | 1,500              | 0                 | 1,500  |
| 2. Direct Cost              |                    |                   |        |
| 1) Air Fare, Documents etc. | 9,300              | 2,600             | 11,900 |
| Sub-total                   | 38,800             | 2,600             | 41,400 |
| Total                       | 55,600             | 5,400             | 61,000 |

Table XI.2.14 Price List of Basic Construction Materials and Labor Wages

| ITEM                        | UNIT           | UNIT PRICE<br>(PESO) |
|-----------------------------|----------------|----------------------|
| <b>A. MATERIALS</b>         |                |                      |
| 1. Gravel for Concrete      | m <sup>3</sup> | 250                  |
| 2. Sand for Concrete        | m <sup>3</sup> | 188                  |
| 3. Cement (40kg/bag)        | bag            | 116                  |
| 4. Reinforcing Bar          | kg             | 9.5                  |
| 5. Timber                   | bd·ft.         | 9.7                  |
| 6. Plywood                  | pc.            | 213                  |
| 7. Lower Sub-base           | m <sup>3</sup> | 165                  |
| 8. Upper Sub-base           | m <sup>3</sup> | 250                  |
| <b>B. FUELS</b>             |                |                      |
| 1. Diesel Oil               | Liter          | 6.1                  |
| 2. Petrol                   | Liter          | 8.7                  |
| 3. Lubricants               | Liter          | 35                   |
| <b>C. LABOUR WAGES</b>      |                |                      |
| 1. Forman                   | man·day        | 115                  |
| 2. Assistant Forman         | man·day        | 109                  |
| 3. Operator (Heavy Machine) | man·day        | 104                  |
| 4. Operator (Light Machine) | man·day        | 87                   |
| 5. Carpenter                | man·day        | 94                   |
| 6. Mason                    | man·day        | 94                   |
| 7. Steelman                 | man·day        | 94                   |
| 8. Skilled Lavour           | man·day        | 94                   |
| 9. Unskilled Lavour         | man·day        | 63                   |

Table XI.2.15(1) List of Unit Prices of Major Work Items

| WORK ITEM                          | UNIT | FOREIGN CURRENCY (PESO) | LOCAL CURRENCY (PESO) | TOTAL (PESO) |
|------------------------------------|------|-------------------------|-----------------------|--------------|
| <b>1. EARTH WORKS</b>              |      |                         |                       |              |
| - Clearing and Stripping           | m2   | 1.5                     | 1.5                   | 3.0          |
| - Mannual Excavation, Common       | m3   |                         | 31.0                  | 31.0         |
| - Mannual Excavation, Deep         | m3   |                         | 51.7                  | 51.7         |
| - Mechanical Excavation, Bulldozer | m3   | 20.8                    | 17.8                  | 38.7         |
| - Mechanical Excavation, Back hoe  | m3   | 18.4                    | 15.6                  | 34.0         |
| - Mannual Earthfill                | m3   |                         | 25.8                  | 25.8         |
| - Mechanical Earthfill             | m3   | 33.5                    | 29.7                  | 63.2         |
| - Companction of Existing Ground   | m2   | 2.2                     | 2.1                   | 4.3          |
| - below Embankment                 |      |                         |                       |              |
| - Companction of Existing Ground   | m2   | 2.1                     | 1.9                   | 4.0          |
| - below Subgrade in                |      |                         |                       |              |
| - Excavation for Dam               | m3   | 10.4                    | 7.4                   | 17.8         |
| - Embankment for Dam               | m3   | 35.1                    | 26.7                  | 61.8         |
| <b>2. Concrete Works</b>           |      |                         |                       |              |
| - Reinforced Concrete              | m3   | 1,709                   | 1,456                 | 3,165        |
| - Plain Concrete                   | m3   | 1,365                   | 1,162                 | 2,527        |
| - Lean Concrete                    | m3   | 1,023                   | 872                   | 1,895        |
| - Gravel Metalling                 | m3   | 138                     | 127                   | 265          |
| <b>3. Canal Works</b>              |      |                         |                       |              |
| - U-shaped Flume, Type 650         | m    | 464                     | 433                   | 897          |
| - U-shaped Flume, Type 600         | m    | 435                     | 404                   | 839          |
| - U-shaped Flume, Type 500         | m    | 342                     | 320                   | 662          |
| - U-shaped Flume, Type 450         | m    | 314                     | 293                   | 607          |
| - U-shaped Flume, Type 400         | m    | 285                     | 267                   | 552          |
| - U-shaped Flume, Type 350         | m    | 257                     | 240                   | 497          |
| - U-shaped Flume, Type 300         | m    | 228                     | 213                   | 441          |
| <b>4. Paving Works</b>             |      |                         |                       |              |
| - Lower Subbase                    | m3   | 138                     | 127                   | 265          |
| - Upper Subbase                    | m3   | 193                     | 178                   | 371          |
| - Concrete Pavement (t=20cm)       | m2   | 186                     | 158                   | 344          |
| - Gravel Metalling                 | m3   | 138                     | 127                   | 265          |



Table XI.2.15(2) List of Unit Prices of Major Work Items

| WORK ITEM                       | UNIT                    |                       | TOTAL                   |                       |
|---------------------------------|-------------------------|-----------------------|-------------------------|-----------------------|
|                                 | FOREIGN CURRENCY (PESO) | LOCAL CURRENCY (PESO) | FOREIGN CURRENCY (PESO) | LOCAL CURRENCY (PESO) |
| <b>5. Pipe Works</b>            |                         |                       |                         |                       |
| - PVC Pipe. $\phi$ 19mm         | m                       | 105                   | 45                      | 150                   |
| - PVC Pipe. $\phi$ 25mm         | m                       | 147                   | 63                      | 210                   |
| - PVC Pipe. $\phi$ 31mm         | m                       | 196                   | 84                      | 280                   |
| - PVC Pipe. $\phi$ 38mm         | m                       | 224                   | 96                      | 320                   |
| - PVC Pipe. $\phi$ 50mm         | m                       | 308                   | 132                     | 440                   |
| - PVC Pipe. $\phi$ 63mm         | m                       | 441                   | 189                     | 630                   |
| - PVC Pipe. $\phi$ 75mm         | m                       | 483                   | 207                     | 690                   |
| - PVC Pipe. $\phi$ 100mm        | m                       | 686                   | 294                     | 980                   |
| - Steel Pipe. $\phi$ 250mm      | m                       | 1,410                 | 690                     | 2,100                 |
| - Steel Pipe. $\phi$ 300mm      | m                       | 1,740                 | 860                     | 2,600                 |
| - Steel Pipe. $\phi$ 350mm      | m                       | 2,880                 | 1,420                   | 4,300                 |
| - Steel Pipe. $\phi$ 400mm      | m                       | 4,020                 | 1,980                   | 6,000                 |
| - Steel Pipe. $\phi$ 450mm      | m                       | 4,360                 | 2,140                   | 6,500                 |
| - Steel Pipe. $\phi$ 500mm      | m                       | 4,690                 | 2,310                   | 7,000                 |
| - Concrete Pipe. $\phi$ 400mm   | m                       | 308                   | 442                     | 750                   |
| - Concrete Pipe. $\phi$ 600mm   | m                       | 554                   | 796                     | 1,350                 |
| - Concrete Pipe. $\phi$ 910mm   | m                       | 800                   | 1,150                   | 1,950                 |
| - Concrete Pipe. $\phi$ 2,400mm | m                       | 2,097                 | 3,017                   | 5,114                 |
| <b>6. Well Works</b>            |                         |                       |                         |                       |
| - $\phi$ 100mm, Depth 30m       | nos.                    | 180,230               | 88,770                  | 269,000               |
| - $\phi$ 100mm, Depth 40m       | nos.                    | 234,768               | 115,632                 | 350,400               |
| - $\phi$ 100mm, Depth 50m       | nos.                    | 296,140               | 145,860                 | 442,000               |
| - $\phi$ 100mm, Depth 60m       | nos.                    | 324,079               | 159,621                 | 483,700               |
| - $\phi$ 100mm, Depth 80m       | nos.                    | 375,200               | 184,800                 | 560,000               |
| - $\phi$ 150mm, Depth 50m       | nos.                    | 354,430               | 174,570                 | 529,000               |
| - $\phi$ 150mm, Depth 80m       | nos.                    | 482,400               | 237,600                 | 720,000               |
| - $\phi$ 150mm, Depth 100m      | nos.                    | 566,820               | 279,180                 | 846,000               |
| <b>7. Other Works</b>           |                         |                       |                         |                       |
| - Wet Masonry                   | m3                      | 415                   | 1,017                   | 1,432                 |
| - Rubber Sheet for farm pond    | m2                      | 410                   | 6                       | 416                   |

Table XI.2.16 Major Construction Materials

| CONSTRUCTION MATERIALS      | UNIT | RURAL DEVELOPMENT CENTER | RICE MILL CENTER | IRRIGATION & DRAINAGE | ROAD NETWORKS | RURAL WATER SUPPLY SYSTEM | FISH PORT | TOTAL  |
|-----------------------------|------|--------------------------|------------------|-----------------------|---------------|---------------------------|-----------|--------|
| 1. Ordinary portland cement | ton  | 280                      | 170              | 7,760                 | 8,890         | 90                        | 180       | 17,370 |
| 2. Reinforcing steel bar    | ton  |                          |                  | 430                   | 100           | 10                        | 10        | 550    |
| 3. Structural steel         | ton  | 80                       | 80               | 20                    |               |                           |           | 180    |
| 4. Pump equipment           | nos. |                          |                  | 38                    |               |                           |           | 38     |
| 5. Steel gate               | nos. |                          |                  | 12                    |               |                           |           | 12     |
| 6. Sand for concrete        | m3   | 350                      | 220              | 9,700                 | 11,100        | 120                       | 230       | 21,720 |
| 7. Gravel for concrete      | m3   | 700                      | 430              | 19,400                | 22,200        | 230                       | 460       | 43,420 |
| 8. Lower sub-base           | m3   |                          |                  | 5,760                 | 94,210        |                           |           | 99,970 |
| 9. Upper sub-base           | m3   |                          |                  |                       | 64,900        |                           |           | 64,900 |
| 10. Fuel                    | kl   |                          |                  | 350                   | 280           |                           |           | 630    |
| 11. Lubricant               | kl   |                          |                  | 10                    | 10            |                           |           | 20     |

Table XI.2.17 Major Construction Equipment

| EQUIPMENT               | DESCRIPTION     | REQUIRED<br>NUMBER<br>(NOS.) |
|-------------------------|-----------------|------------------------------|
| Bulldozer               | 21 t            | 6                            |
| Back hoe                | 0.6 cu.m.       | 7                            |
| Crawler crane           | 35 t            | 3                            |
| Crawler crane           | 4.9 t           | 3                            |
| Truck crane             | 15 t            | 1                            |
| Wheel loader            | 1.34 cu.m.      | 2                            |
| Tire roller             | 20 t            | 4                            |
| Tire roller             | 8 t             | 1                            |
| Vibratory drum roller   | 10 t            | 2                            |
| Vibratory tandem roller | 11 t            | 1                            |
| Motor grader            | 125 HP          | 2                            |
| Concrete spreader       | 3 - 7.5 m       | 1                            |
| Concrete finisher       | 3 - 7.5 m       | 1                            |
| Concrete facing machine | 3 - 7.5 m       | 1                            |
| Concrete cutter         | 30 cm           | 1                            |
| Dump truck              | 10 t            | 22                           |
| Truck                   | 4 t             | 1                            |
| Water truck             | 3000 gal.       | 3                            |
| Truck mixer             | 3 cu.m.         | 6                            |
| Concrete mixer          | 18 HP           | 8                            |
| Concrete vibrator       | 3.5 HP          | 9                            |
| Concrete pump           | 20 cu.m./hr     | 1                            |
| Concrete plant          | Mixer 0.5 cu.m. | 1                            |
| Rock drill              |                 | 4                            |
| Air compressor          | 5 cu.m./min     | 2                            |
| Generator               | 75 kVA          | 1                            |

Table XI.2.18 Annual Disbursement Schedule

| Item  | 1991    |         | 1992    |       | 1993 |       | 1994 |       | 1995 |       |
|---|---------|---------|---------|-------|------|-------|------|-------|------|-------|
|   | F/C     | Total   | F/C     | Total | F/C  | Total | F/C  | Total | F/C  | Total |
| <b>I. Construction works</b>                        |         |         |         |       |      |       |      |       |      |       |
| 1. Rural development center                         |         |         |         |       |      |       |      |       |      |       |
| Office and residence                                | 17,777  | 13,736  | 31,513  |       |      |       |      |       |      |       |
| 2. Rice mill center                                 |         |         |         |       |      |       |      |       |      |       |
| Building  | 5,852   | 1,998   | 7,850   |       |      |       |      |       |      |       |
| Rice mill equipment                                 | 10,035  | 0       | 10,035  |       |      |       |      |       |      |       |
| Sub-total   | 15,887  | 1,998   | 17,885  |       |      |       |      |       |      |       |
| 3. Irrigation and drainage                          |         |         |         |       |      |       |      |       |      |       |
| Intake  | 6,149   | 5,319   | 11,468  |       |      |       |      |       |      |       |
| Pump station  | 91,668  | 29,115  | 120,783 |       |      |       |      |       |      |       |
| Impound   | 10,447  | 7,570   | 18,017  |       |      |       |      |       |      |       |
| Irrigation canal                                    | 25,711  | 22,647  | 48,358  |       |      |       |      |       |      |       |
| Drainage system                                     | 4,236   | 4,422   | 8,658   |       |      |       |      |       |      |       |
| Farm road   | 1,670   | 1,843   | 3,513   |       |      |       |      |       |      |       |
| On-farm works                                       | 0       | 3,057   | 3,057   |       |      |       |      |       |      |       |
| Sub-total   | 139,881 | 73,973  | 213,854 |       |      |       |      |       |      |       |
| 4. Road networks                                    |         |         |         |       |      |       |      |       |      |       |
| Trunk road  | 44,642  | 39,444  | 84,086  |       |      |       |      |       |      |       |
| Feeder roads  | 14,143  | 12,961  | 27,104  |       |      |       |      |       |      |       |
| Sub-total   | 58,785  | 52,405  | 111,190 |       |      |       |      |       |      |       |
| 5. Rural waters apply                               |         |         |         |       |      |       |      |       |      |       |
| Level-I   | 3,947   | 1,949   | 5,896   |       |      |       |      |       |      |       |
| Level-II  | 6,149   | 3,049   | 9,198   |       |      |       |      |       |      |       |
| Sub-total   | 10,096  | 4,998   | 15,094  |       |      |       |      |       |      |       |
| 6. Power supply system                              |         |         |         |       |      |       |      |       |      |       |
| Power transmission line                             | 7,808   | 14,501  | 22,309  |       |      |       |      |       |      |       |
| Power distribution line                             | 2,498   | 4,637   | 7,135   |       |      |       |      |       |      |       |
| Sub-total   | 10,306  | 19,138  | 29,444  |       |      |       |      |       |      |       |
| 7. Fish port  | 1,072   | 1,295   | 2,367   |       |      |       |      |       |      |       |
| <b>II. Procurement</b>                              |         |         |         |       |      |       |      |       |      |       |
| Sub-total(I to II)                                  | 258,892 | 168,909 | 427,801 |       |      |       |      |       |      |       |
| <b>III. Engineering services and administration</b> |         |         |         |       |      |       |      |       |      |       |
| Engineering services                                | 55,600  | 5,400   | 61,000  |       |      |       |      |       |      |       |
| Administration                                      | 0       | 11,424  | 11,424  |       |      |       |      |       |      |       |
| Sub-total   | 55,600  | 16,824  | 72,424  |       |      |       |      |       |      |       |
| <b>IV. Land Acquisition</b>                         |         |         |         |       |      |       |      |       |      |       |
| Sub-total   | 0       | 1,664   | 1,664   |       |      |       |      |       |      |       |
| <b>V. Physical Contingency</b>                      |         |         |         |       |      |       |      |       |      |       |
| Sub-total(I to V)                                   | 31,449  | 18,741  | 50,190  |       |      |       |      |       |      |       |
| <b>VI. Price contingency</b>                        |         |         |         |       |      |       |      |       |      |       |
| Sub-total(I to V)                                   | 345,941 | 206,138 | 552,079 |       |      |       |      |       |      |       |
| <b>Total</b>  | 379,086 | 252,120 | 631,206 |       |      |       |      |       |      |       |

Table XI.3.1

## Administration Cost

## 1. Construction Stage

| Item                             | Quantity  | Unit Price<br>(Peso) | Amount<br>(Peso) |
|----------------------------------|-----------|----------------------|------------------|
| 1. Staff Salary                  | 1 year    |                      | 2,324            |
| 2. Labor Wage                    | 50 m/m    | 2,400                | 120              |
| 3. Office Expenses               | 12 months | 15,000               | 180              |
| 4. Fuel & Electricity            | 12 months | 17,000               | 240              |
| 5. Equipment                     | L.S.      |                      | 100              |
| 6. Miscellaneous                 | L.S.      |                      | 36               |
| Total                            |           |                      | 3,000            |
| Total amount during construction |           |                      | 11,424           |

## 2. O &amp; M Stage

| Item                  | Quantity  | Unit Price<br>(Peso) | Amount<br>(1,000 x Peso) |
|-----------------------|-----------|----------------------|--------------------------|
| 1. Staff Salary       | 1 year    |                      | 2,552                    |
| 2. Labor Wage         | 265 m/m   | 2,400                | 636                      |
| 3. Office Expenses    | 12 months | 20,000               | 240                      |
| 4. Fuel & Electricity | 12 months | 20,000               | 240                      |
| 5. Equipment          | L.S.      |                      | 120                      |
| 6. Miscellaneous      | L.S.      |                      | 64                       |
| Total                 |           |                      | 3,852                    |

Table XI.3.2

## Annual O&amp;M Cost of Irrigation System

Unit : 1,000 peso

| Item                             | Labor cost<br>Amount | Operation cost<br>Pump<br>kWh | Maint. cost<br>Amount | TOTAL |
|----------------------------------|----------------------|-------------------------------|-----------------------|-------|
| <b>1. INTAKE AND PUMP SYSTEM</b> |                      |                               |                       |       |
| 1) Sipsipin                      | 54                   | 139                           | 194                   | 296   |
| 2) Mapakla                       | 54                   | 92                            | 128                   | 227   |
| 3) Manggahan                     | 27                   | 40                            | 56                    | 96    |
| 4) Ik-Ik                         | 27                   | 31                            | 43                    | 78    |
| 5) Lubo                          | 27                   | 20                            | 28                    | 78    |
| 6) Lumang Nayon                  | 54                   | 92                            | 129                   | 166   |
| 7) Pulong Ligaya                 | 27                   | 20                            | 28                    | 78    |
| 8) Bagumbong (area-1)            | 27                   | 142                           | 199                   | 209   |
| <b>2. PUMP SYSTEM</b>            |                      |                               |                       |       |
| 1) Bayugo                        | 27                   | 73                            | 103                   | 87    |
| 2) Llano                         | 27                   | 99                            | 139                   | 113   |
| 3) Punta                         | 27                   | 36                            | 51                    | 61    |
| 4) Pagkalinawan                  | 27                   | 110                           | 154                   | 96    |
| 5) Bagumbong (area-2)            | 54                   | 106                           | 149                   | 192   |
| <b>3. IMPOUND SYSTEM</b>         |                      |                               |                       |       |
| 1) Palay-Palay                   | 108                  | 122                           | 170                   | 244   |

Table XI.3.3

## Annual O&amp;M Cost of Road Networks

| Item   | Amount<br>(Peso) |
|--|------------------|
| 1. Trunk road                                  |                  |
| 1) Routine maintenance                         |                  |
| Equivalent maintenance kilometrage             | 775,585          |
| 18.1 km x 2.5 = 45.25                          |                  |
| Unit maintenance cost per km : 17,140 peso     |                  |
| 45.25 x 17,140 peso/km = 775,585               |                  |
| 2) Periodic maintenance cost (once in 5 years) | 168,415          |
| 1 % x 1/5 year x initial cost                  |                  |
| Total  | 944,000          |
| 2. Feeder road                                 |                  |
| 1) Routine maintenance                         |                  |
| Equivalent maintenance kilometrage             | 575,904          |
| 46.7 km x 0.72 = 33.6                          |                  |
| Unit maintenance cost per km : 17,140 peso     |                  |
| 33.6 x 17,140 peso/km = 575,904                |                  |
| 2) Periodic maintenance cost (once in 5 years) | 109,096          |
| 2 % x 1/5 year x initial cost                  |                  |
| Total  | 685,000          |
| Grand Total                                    | 1,629,000        |

Table XI.3.4

## Annual O&amp;M Cost of Rural Water Supply System

|   |   | Amount<br>(peso) |
|---|---|------------------|
| Level-I   |   |                  |
| Repair and maintenance cost of pump & well      |   |                  |
| Repair : once in two years                      |   |                  |
| Consumables                                     | 200 peso/yr x 18 wells                      | 3,600            |
| Labor cost                                      | 6 prsns x 2 dys x 0.5/yr x 80 peso x 18 wel | 8,640            |
| Transport.                                      | 2 days x 1,000 peso x 0.5/yr x 18 wells     | 18,000           |
| Tools   | 2 days x 0.5/yr x 100 peso x 18 wells       | 1,800            |
|   | Total                                       | 32,040           |
| Water charge per household of 900               |   |                  |
| peso 32,040/900 = 35.6 /year ; 3.0 peso/month   |   |                  |
| Level-II  |   |                  |
| Repair and maintenance cost of pump             |   |                  |
| Repair : once in ten years                      |   |                  |
| Consumables                                     | 20,000 peso x 0.05/year x 4 wells           | 4,000            |
| Labor cost                                      | 10 prsns x 2 days x 0.1/yr x 80 peso x 4 w  | 640              |
| Transport.                                      | 2 days x 1000 x 0.1/yr x 4 well             | 800              |
| Tools   | 100 peso x 2 days x 0.1 x 4 wells           | 80               |
|   | Sub-total                                   | 5,520            |
| Electric charge                                 |   |                  |
| Operation hour                                  | 12 hr/day                                   |                  |
| Total kW  | 12.6 kW                                     |                  |
| Electric charg                                  | 1.4 peso/kWh                                |                  |
|   | 12 x 12.6 x 1.4 x 365 days                  | 77,263           |
|   | Total                                       | 82,783           |
| Water charge per household of 850               |   |                  |
| peso 104,858/850 = 123.4/year ; 10.3 peso/month |   |                  |
| Grand total                                     |   | 114,823          |



Table XI.4.1 Replacement Cost and Useful Life

| Item  | Usefull<br>Life<br>(year) | Replacement<br>Cost<br>(1,000 Peso) |
|---|---------------------------|-------------------------------------|
| 1. Irrigation System                          |                           |                                     |
| 1) Pumping equipment                          | 20                        | 41,420                              |
| 2) Gate                                       | 20                        | 2,080                               |
| 2. Rural Watre Supply System                  |                           |                                     |
| 1) Pumping equipment                          | 20                        | 2,292                               |
| 3. Rice Mill equipment                        | 20                        | 10,035                              |
| 4. Power Supply system                        | 20                        | 29,444                              |
| 5. Farm machinery and<br>Supporting Equipment | 10                        | 6,454                               |



**ANNEX-XII**

**PROJECT EVALUATION**



## ANNEX- XII

### PROJECT EVALUATION

#### TABLE OF CONTENTS

|  | <u>Page</u> |
|--|-------------|
| 1. GENERAL .....                                 | XII-1       |
| 2. ECONOMIC EVALUATION .....                     | XII-1       |
| 2.1 Basic Condition .....                        | XII-1       |
| 2.2 Economic Price.....                          | XII-1       |
| 2.3 Project Benefit .....                        | XII-2       |
| 2.3.1 Agricultural Benefit .....                 | XII-2       |
| 2.3.2 Benefit of the Road Construction .....     | XII-3       |
| 2.3.3 Benefit of the Rural Electrification ..... | XII-5       |
| 2.3.4 Benefit of the Water Supply .....          | XII-5       |
| 2.4 Economic Cost .....                          | XII-5       |
| 2.4.1 Capital Cost .....                         | XII-5       |
| 2.4.2 Operation and Maintenance Cost .....       | XII-6       |
| 2.4.3 Replacement Cost .....                     | XII-7       |
| 2.5 Result of Economic Evaluation .....          | XII-7       |
| 2.6 Sensitivity Analysis .....                   | XII-9       |
| 3. FINANCIAL EVALUATION .....                    | XII-9       |
| 3.1 Basic Condition .....                        | XII-9       |
| 3.2 Farm Budget and Capacity to Pay .....        | XII-10      |
| 3.2.1 Farm Budget Analysis .....                 | XII-10      |
| 3.2.2 Capacity to Pay .....                      | XII-11      |
| 3.3 Management of the Project Components .....   | XII-12      |
| 3.4 Social Impact of the Project .....           | XII-12      |
| 4. JUSTIFICATION OF THE PROJECT .....            | XII-14      |

## LIST OF TABLES

|         | <u>Page</u>  |
|---------|--|
| XII.2.1 | Component of the Project Benefit..... XII-16   |
| XII.2.2 | Annual Increment Benefit..... XII-17   |
| XII.2.3 | Agricultural Benefit (Whole Area) ..... XII-18                                       |
| XII.2.4 | Individual Traffic Cost ..... XII-19   |
| XII.2.5 | Road Benefit (Transportation Cost Saving for the Agricultural Products) ..... XII-20 |
| XII.2.6 | Capital Cost for the Whole Area..... XII-21  |
| XII.2.7 | Operation and Maintenance Cost in the Whole Area ..... XII-22                        |
| XII.2.8 | Replacement Cost in the Whole Area ..... XII-23                                      |
| XII.2.9 | Economic Cost and Benefit Stream..... XII-24   |
| XII.3.1 | Annual Farm Budget Analysis ..... XII-25   |
| XII.3.2 | Cash Flow Statement ..... XII-26   |

## ANNEX- XII PROJECT EVALUATION

### 1. GENERAL

The project evaluation has been made through an assessment of the project feasibility in view of economic, financial and socio-economic aspects for the Integrated Jala Jala Rural Development Project of 4,930 ha.

The economic feasibility is evaluated by calculating the economic internal rate of return (EIRR), B-C and B/C. Sensitivity analysis has been also made in order to set forth the economic viability of the project against the adverse change in the benefit and/or construction cost.

Financial evaluation has been conducted by analyzing the effect of the project in a typical holding size of farm field, by verifying the ability to bear the expenses of operation and maintenance cost and also by confirming the repayment schedule.

### 2. ECONOMIC EVALUATION

#### 2.1 Basic Condition

- (1) The economic evaluation is studied on the project viability derived from the component of the agricultural development, road construction, rural electrification and water supply system.
- (2) The project construction period is four years including one year of the detailed design and preparation of tender document.
- (3) The usefull project life is 30 years.
- (4) Transfer payment is excluded from the economic cost.
- (6) The economic price and cost is expressed in 1990 constant price.
- (7) Exchange rate among Pesos, US dollar and Japanese Yen used for the economic evaluation is US\$ 1 = ₱ 23 = ¥ 150 as of mid-1990.

#### 2.2 Economic Price

- (1) Economic price of the agro-products and farm inputs

Since the domestic consumption of rice and corn are still supplemented by importation, the economic farm gate prices of these paddy and corn production are estimated at the import substitution on the basis of the international market price forecasted for the year of 2000 by the world bank. For other crops, the economic prices are estimated from the current market price after deduction of transfer payment. The economic price for fertilizer is also estimated at import substitution, based on the international market price projected by the

world bank. The economic prices of agro-chemicals are estimated by applying the conversion rate which is preliminarily set up from economic and current market price on fertilizer.

(2) Economic cost for construction, O&M and replacement

Economic cost comprises 4 items of import material including engineering cost to be applied as technical assistance, domestic material, unskilled labour wage and the amount of the transfer payment. The economic cost is estimated by applying the following conversion factor :

|                       |   |                            |
|-----------------------|---|----------------------------|
| Foreign portion       | : | 1.2 (shadow exchange rate) |
| Local portion         | : | 1.0                        |
| Unskilled labour wage | : | 0.6                        |
| Transfer              | : | 0.0                        |

### 2.3 Project Benefit

Project benefit consists of the tangible and intangible benefits as defined in Table XII.2.1. Tangible benefit (direct benefit) is taken up as the project benefit, while the intangible one (indirect benefit) is assessed as a socio-economic impact.

The project benefit is primarily generated from the agricultural development, road network, rural electrification and water supply system as breakdown in Table XII.2.2 and summarized as follows :

#### 2.3.1 Agricultural Benefit

This benefit is primarily derived from the increased crop production attributable to following conditions :

- (1) Implementation of improved farming practices under irrigation through the year
- (2) Improvement of farming practices and field management in accordance with the reinforced agricultural extension services
- (3) Achievement of crop intensification and diversification
- (4) Improvement of the quality and quantity of farm inputs
- (5) Implementation of the farm mechanization
- (6) Advancement of the farmers cooperatives

The benefit is shown as the balance between with-project and without-project conditions as to the net agricultural production value. It is assumed that the agricultural



benefit will primarily accrue year by year from the establishment stage of the Rural Development Center in 1992. Table XII.2.3 shows the agricultural benefit, which is summarized as follows :

(Unit : ₱ 1,000)

| Crop        | Without project condition | With project condition | Benefit |
|-------------|---------------------------|------------------------|---------|
| Rice        | 2,876                     | 21,286                 | 18,410  |
| Upland crop | 1,409                     | 15,339                 | 13,930  |
| Plantation  | 1,525                     | 5,688                  | 4,163   |
| Livestock   | 457                       | 4,860                  | 4,403   |
| Total       | 6,267                     | 47,173                 | 40,906  |

### 2.3.2 Benefit of the Road Construction

The benefit of the road construction is primarily derived from the saving effect of transportation cost on the agricultural products due to rehabilitation of the road network. The result of the road benefit is summarized as follows :

(Unit : ₱ 1,000)

| Crop                  | Without project | With project | Saving effect |
|-----------------------|-----------------|--------------|---------------|
| Rice and upland crops |                 |              |               |
| Trunk road            | 26,152          | 890          | 25,262        |
| Feeder road           | 8,292           | 2,399        | 5,893         |
| Plantation            |                 |              |               |
| Trunk road            | 112             | 93           | 19            |
| Feeder road           | 864             | 250          | 614           |
| Total                 | 35,420          | 3,632        | 31,788        |

#### (1) Road condition

The road network to be provided in the study area consist of the trunk road and feeder road. The total length of the trunk road developed is paved road of 18.1 km. The condition of the trunk road is bad, for which it is impassible for 12 km out of the whole trunk roads

during the wet season, although it is passible through the whole road during the dry season. Whole trunk road 18.1 km will be rehabilitated with concrete pavement. Total length of feeder road is 43 km which are passible under earth condition through the year. Under with project condition, the feeder road is rehabilitated with the gravel pavement

(2) Transportation of agricultural products

Principal transportation of the agricultural products is jeepny which is a kind of jeep and carabao which is water buffalo in the project area. Transportation by jeepny is widely useful through the year. However, as for about 6.1 km out of 18.1 km of trunk road between Palay-Palay and Lubo, as it is impossible for jeep to pass through the road during the wet season, carabao is mainly availed to ship the agricultural products instead of jeepny.

(3) Individual traffic cost

The transportation cost to assess the saving effect is estimated based on the individual traffic cost, i.e. unit cost per km (Pesos/km), which is calculated by DPWH. Individual traffic cost is defined as the cost which is accrued by the vehicles under the specified road condition. This cost consists of the running cost, fixed cost, time saving cost. The specified cost for the project is shown in Table XII.2.4.

(4) Saving effect of the transportation cost

Saving effect of the transportation cost on the agricultural products is attributed to the difference between with-project and without-project conditions on the transportation cost. The agricultural products which is used in order to calculate the saving transportation cost is the anticipated production of rice, upland crop and fruits. Namely, Transportation cost for the agricultural products is estimated by using the individual traffic cost of vehicles under the road conditions of with-project and without-project conditions. The road condition and transportation to assess the saving effect of the transportation cost is summarized as follows :

| Road              | Road condition   | transportation |
|-------------------|--|----------------|
| Without condition |  |                |
| Trunk road        | Impassible (6.1 km in wet season)                          | Carabao        |
| Trunk road        | Gravel bad (6.1 km in dry season / 12 km through the year) | Jeepny         |
| Feeder road       | Earth very bad   | Jeepny         |
| With condition    |  |                |
| Trunk road        | Paved good/fair  | Jeepny         |
| Feeder road       | Gravel good  | Jeepny         |

The saving effect is estimated at about ₱ 32 million and elaborated in Table XII.2.5.

### 2.3.3 Benefit of the Rural Electrification

The purpose of the rural electrification is the electric supply to the irrigation pump, deep well, post-harvest facilities, the rural development centre and residential consumers in Paalaman. Out of the economic benefit, the benefit generated from the irrigation pump and post-harvest facilities is comprises in the agricultural benefit. The benefit derived from the rural development centre is public cum intangible benefit. Accordingly, the actual economic benefit from the rural electrification is derived from the supply to the residential consumers in Paalaman.

At present, there is no electricity supply system in Paalaman, and then the inhabitants have to consume the kerosene for the lighting. Under with project condition, these inhabitants could use the electricity as a surrogate of the kerosene with the cheaper tariff.

Applying the above concept of the willingness to pay, the benefits of the rural electrification are expected on both of the tariff revenue and the consumers surplus which is the saving cost to be attributed to change the energy source from the kerosene to electricity.

The annual amount of the willingness to pay is provisionally estimated at about ₱ 37,000 as follows.

|   |            |
|---|------------|
| (1) Number of household                     | : 102      |
| (2) Annual electric amount per household    | : 72 kWh   |
| (3) Annual consumers' surplus per household | : ₱ 230    |
| (4) Annual tariff revenue per household     | : ₱ 130    |
| (5) Annual willingness to pay per household | : ₱ 360    |
| (6) Total willingness to pay                | : ₱ 36,700 |

### 2.3.4 Benefit of the Water Supply

Applying the same concept of the willingness to pay to the above rural electrification, the economic benefit of the water supply is estimated from the water fee for the operation and maintenance of the proposed well and supplemental facilities (refer to Table XII.2.7).

The annual economic benefit is estimated at about ₱.97,000.

## 2.4 Economic Cost

### 2.4.1 Capital Cost

The project economic cost consists of (1) cost of the preparatory work, (2) construction cost, (3) procurement cost of operation and maintenance equipment, (3) cost for

the land acquisition, (4) Expenses of engineering services, (5) Administration expenses and (5) physical contingency. Economic project cost is calculated from the financial project cost by applying the conversion factor mentioned in Section.2.2 (2).

Economic project cost is elaborated in Table XII.2.6 and summarized as follows.

(Unit : ₱ 1,000)

| Item                       | Economic cost  |
|----------------------------|----------------|
| Rural Development Center   | 28,933         |
| Rice Mill Center           | 17,782         |
| Irrigation and Drainage    | 196,088        |
| Road Network               | 103,039        |
| Rural Water Supply         | 13,928         |
| Power supply system        | 25,709         |
| Fish Port                  | 2,059          |
| Procurement                | 6,361          |
| <br>Sub-total              | <br>393,939    |
| <br>E/S and Administration | <br>71,012     |
| Land Acquisition           | 1,414          |
| Physical contingency       | 46,639         |
| Price escalation           | -              |
| <b>Total</b>               | <b>513,004</b> |

#### 2.4.2 Operation and Maintenance Cost

The financial operation and maintenance cost is converted into the economic cost applying the conversion factor said above. The result of the calculation is shown in Table XII.2.7 and summarized as follows :

(Unit : ₱ 1,000)

| Item                          | Economic Cost |
|-------------------------------|---------------|
| Administration,Store/Workshop | 2,265         |
| Irrigation/Drainage           | 3,790         |
| Rice Mill Center              | 887           |
| Rural Water Supply System     | 97            |
| Road Network                  | 1,510         |
| Total                         | 8,549         |

### 2.4.3 Replacement Cost

The financial replacement cost is converted into the economic cost applying the conversion factor said above. The result of the calculation is elaborated in Table XII.2.8 and summarized as follows :

(Unit : ₱ 1,000)

| Item                | Useful life | Economic Cost |
|---------------------|-------------|---------------|
| Irrigation/Drainage | 20          | 44,464        |
| Rural Water Supply  | 20          | 2,415         |
| Rice Mill Equipment | 20          | 10,242        |
| Power Supply System | 20          | 31,023        |
| Farm Machinery      | 10          | 6,587         |

### 2.5 Result of Economic Evaluation

Applying all the economic benefit and cost mentioned above, the economic evaluation on Integrated Rural Development Plan ha is made, according to the conventional evaluation method of IRR, B-C and B/C. The result of the evaluation is as shown in Table XII.2.9 and summarized as follows :

|           |   |         |
|-----------|---|---------|
| EIRR      | : | 14.4 %  |
| B-C(15 %) | : | -10,372 |
| B/C(15 %) | : | 0.97    |

As mentioned above, the economic internal rate of return (EIRR) at 14.4% is a little low if compared with that of 15% for viable project as specified by NEDA. However, the result means the feasibility for the whole plan including all the project components, and, in

the project features and principal objectives, it is justified that this project is economically feasible.

Economic evaluation for four items which bear the economic benefit is conducted and gain the following result.

| Item                      | Project<br>financial cost<br>(₱. 1,000) | Present Value <sup>/1</sup>    |                                   | Economic<br>IRR<br>(%) |
|---------------------------|---|--------------------------------|-----------------------------------|------------------------|
|                           |   | Economic<br>Cost<br>(₱. 1,000) | Economic<br>Benefit<br>(₱. 1,000) |                        |
| Irrigation/Drainage       | 334,886                                 | 234,602                        | 214,694                           | 13                     |
| Road Construction         | 141,882                                 | 98,885                         | 177,707                           | 32                     |
| Rural Water Supply System | 2,267                                   | 1,657                          | 160                               | -                      |
| Rural Electrification     | 20,871                                  | 12,586                         | 420                               | -                      |
| Others                    | 52,173                                  | 45,200                         |                                   |                        |
| Total                     | 552,079                                 | 392,930                        | 392,981                           | 14                     |

Remarks)

/1: Present value applying the discount rate of 14 %

Comparative study for 13 CISs is made so as to sound economic viability of each CIS, individually. The result of EIRR is as summarized below :

| CIS         | EIRR(%) | CIS           | EIRR(%) |
|-------------|---------|---------------|---------|
| Sipsipin    | 9       | Pagkalinawan  | 24      |
| Mapakla     | 12      | Ik Ik         | 10      |
| Manggahan   | 15      | Lubo          | 17      |
| Bayugo      | 14      | Lumang Nayon  | 8       |
| Llano       | 17      | Pulong Ligaya | 10      |
| Punta       | 13      | Bagumbong     | 18      |
| Palay Palay | 13      |               |         |
| Total       | 13      |               |         |

EIRR of CIS widely varies ranging between 8 % and 24 % and 13 % for whole CIS. Low EIRR in some CIS is attributed to lower increment of project benefit. This means that considerably high effect of irrigation development has been born.

## 2.6 Sensitivity Analysis

Sensitivity analysis is done under the following condition:

- Case 1 10 % up of the cost
- Case 2 20 % up of the cost
- Case 3 10 % down of the benefit
- Case 4 20 % down of the benefit
- Case 5 Combination in 4 cases mentioned above

The result of the calculation in the cases mentioned above is shown as follows :

| Cost up | Benefit down |      |    |     |     |
|---------|--------------|------|----|-----|-----|
|         | -20%         | -10% | 0% | 10% | 20% |
| -20%    | 26           | 23   | 20 | 17  | 14  |
| -10%    | 22           | 19   | 17 | 14  | 12  |
| 0%      | 19           | 16   | 14 | 12  | 10  |
| 10%     | 16           | 14   | 12 | 11  | 9   |
| 20%     | 14           | 13   | 11 | 9   | 7   |

## 3 FINANCIAL EVALUATION

### 3.1 Basic Condition

Financial evaluation is carried out under the basic condition.

- (1) In financial analysis, farm budget analysis in Integrated rural Development Plan are done in order to set forth the viability of the project and the capacity to pay in the typical farm
- (2) The project construction period is of 4 years including detailed design and preparation of tender document.
- (3) The project life is of 30 years.
- (4) Exchange rate among ₱, US dollar and Japanese Yen is US\$ 1 = ₱ 23 = ¥ 150.

- (5) Price escalation rates of foreign and local portion are 3 % and 7 %, respectively.
- (6) Price of local material for the construction is calculated based on the current price and the result of the interview survey. As for imported matters, the price is computed, based on the CIF price at Manila.
- (7) The prices of the agricultural products and farm inputs are determined according to the information on the current price and the result of the interview survey in the project area.

## 3.2 Farm Budget and Capacity to Pay

### 3.2.1 Farm Budget Analysis

From the standpoint of the farm economy, farm budget analysis under without project and with project conditions is made to sound the financial viability of the project. Net income will increase about 2 to 5 times of the without project condition. The result is elaborated in Table XII.3.1 and summarized as follows :

| Items                    | Paddy Farm |        | Paddy/Upland |        | Upland Farm |        | Plantation |        |
|--------------------------|------------|--------|--------------|--------|-------------|--------|------------|--------|
|                          | Without    | With   | Without      | With   | Without     | With   | Without    | With   |
| Farm Field (ha)          | 1.0        | 1.0    | 0.7          | 0.7    | 0.4         | 0.4    | 0.5        | 0.5    |
| I. Gross Income (Pesos)  |            |        |              |        |             |        |            |        |
| On-Farm                  | 12,960     | 57,400 | 8,624        | 50,388 | 4,300       | 36,570 | 4,800      | 25,000 |
| Off-Farm                 | 2,500      | 4,860  | 3,000        | 4,860  | 4,900       | 4,900  | 4,900      | 4,900  |
| Non-Farm                 | 13,600     | 0      | 13,600       | 0      | 13,600      | 0      | 13,600     | 0      |
| Total                    | 29,060     | 62,260 | 25,224       | 55,248 | 22,800      | 41,470 | 23,300     | 29,900 |
| II. Gross Out-Go (Pesos) |            |        |              |        |             |        |            |        |
| Production Cost          | 2,100      | 9,597  | 1,600        | 11,558 | 1,100       | 10,293 | 1,200      | 5,072  |
| Living Expenses          | 18,800     | 18,800 | 18,800       | 18,800 | 18,800      | 18,800 | 18,800     | 18,800 |
| Total                    | 20,900     | 28,397 | 20,400       | 30,358 | 19,900      | 29,093 | 20,000     | 23,872 |
| III. Net income (Pesos)  |            |        |              |        |             |        |            |        |
|                          | 8,160      | 33,863 | 4,824        | 24,890 | 2,900       | 12,377 | 3,300      | 6,028  |



### 3.2.2 Capacity to Pay

Through the smooth and effective implementation of the project, it is proposed that the farmer as a beneficiary is obliged to meet the cost for the sustenance of operation and maintenance on irrigation, water supply system and rice mill center, as described in Chapter 5 in ANNEX V. Furthermore, it is proposed for the farmer to be obliged to pay the amortization on rice mill and agricultural machinery as well as land.

In this result, the total amount of the payment required under with-project condition is shown as following table :

(Unit : Pesos)

|                                      | Standard Farmer in the typical Farming Category |                              |                         |                        |
|--------------------------------------|---|------------------------------|-------------------------|------------------------|
|                                      | Rice<br>(1.0 ha)                                | Rice/upland crop<br>(0.7 ha) | Upland crop<br>(0.4 ha) | plantation<br>(0.5 ha) |
| I. Farmer's net income               | 33,863  | 24,889                       | 12,377                  | 6,028                  |
| II. Annual fee                       |   |                              |                         |                        |
| - Irrigation fee<br>(O&M cost)       | 3,585   | 2,510                        | 1,434                   | 0                      |
| - Water charge of well<br>(O&M cost) | 66  | 66                           | 66                      | 66                     |
| - Milling charge                     | 1,200   | 480                          | 0                       | 0                      |
| III Amortization                     |   |                              |                         |                        |
| - Land                               | 4,405   | 3,084                        | 1,762                   | 2,203                  |
| - Rice mill                          | 2,760   | 2,760                        | 0                       | 0                      |
| - Agricultural machinery             | 2,484   | 2,484                        | 1,551                   | 375                    |
| Total(II+III)                        | 14,500  | 11,384                       | 4,813                   | 2,644                  |
| IV. Net profit (I-II-III)            | 19,363  | 13,505                       | 7,564                   | 3,384                  |

Per ha due for amortization of the irrigation facilities is estimated at ₱. 3,300 on an average. Each farmer beneficiary is further able to pay the said amortization cost. However, if pay both of irrigation fee (O&M cost) and amortization cost, those due payment become large at almost 20 % of net revenue.

To maintain the farmers incentives for agricultural intensification, it might be request to apply the Government subsidization to capital investment for CIS development especially for pump installation.

### 3.3 Management of the Project Components

As for the management of the project component by the Jala-Jala Project Office, cash flow statement analysis was conducted in order to assess the future implementation situation of each project component, considering the payability of the farmers. Table XII.3.2 shows the result of the cash flow statement analysis.

As mentioned in the tables, the implementation of the irrigation construction and the management of the rice mill center are payable by means of collection of duties and amortization from the farmers beneficiaries, the selling of the by-products of the paddy, etc. On the contrary, in the case of the implementation of the construction of water supply system and farm road network, the project office would be provided the subsidy for O&M and replacement of the equipments.

### 3.4 Social Impact of the Project

In addition to the direct benefits counted in the economic evaluation, various secondary and intangible benefits and/or favourable socio-economic impacts are expected from the implementation of the project. Principal socio-economic impacts are described hereunder :

- (1) Promotion of the living standard according to the increment of farmer's disposal income

According to the implementation of the project, farmer's budget will be improved as follows (refer to Table XII.3.1) :

(Unit : Pesos)

| Items                   | Paddy Farm |        | Paddy/Upland |        | Upland Farm |        | Plantation |        |
|-------------------------|------------|--------|--------------|--------|-------------|--------|------------|--------|
|                         | Without    | With   | Without      | With   | Without     | With   | Without    | With   |
| (1) Gross income        | 26,960     | 52,663 | 23,624       | 43,690 | 21,700      | 31,177 | 22,100     | 24,828 |
| (2) Duties/Amortization | 5,472      | 9,256  | 3,511        | 6,140  | 1,762       | 3,262  | 2,203      | 2,269  |
| (3) Debt repayment      | 0          | 5,244  | 0            | 5,244  | 0           | 1,551  | 0          | 375    |
| (4) Disposal income     | 21,488     | 38,163 | 20,113       | 32,306 | 19,938      | 26,364 | 19,897     | 22,184 |
| (5) Living expenses     | 18,800     | 18,800 | 18,800       | 18,800 | 18,800      | 18,800 | 18,800     | 18,800 |
| (6) Net profit          | 2,688      | 19,363 | 1,313        | 13,506 | 1,138       | 7,564  | 1,097      | 3,384  |

As shown in above table, disposal income (Item no.(4) : (1)-{(2)+(3)}) under with-project condition will be raised up, ranging between 1.7 times of the paddy farmers and 1.1 times of plantation farmers. This means that the farmer's living standard would be advanced due to the successful implementation of the project. Furthermore, should the future level of living expenses be the same as without-project condition, net profit (Item no (6) : (4)-(5)) will increase about 3 to 10 times of the without-project condition, which means the farmer can afford to keep upgraded living standard. Furthermore, disparity of the living standard between urban and rural areas would be more or less improved.

(2) Expansion of the willingness to work

In contrast with low productivity of the current agricultural husbandry, the farmers would find the satisfaction due to the improvement of the living standard through the increment of the crop production in future condition. In result, they will desire to gain more agricultural products and improve the living standard through the expansion of the willingness to work.

(3) Enlargement of the employment opportunity

Employment opportunity to the local people will be increased by the implementation of the Project, and a favourable impacts to the regional economy will be expected through the increased monetary movement. The employee will gain more experience, technical know-how, skillfulness in various working fields. These accumulations of working techniques would be applied to the future development in the region.

Irrigation will improve the present low land productivity and increase crop production in the Project area. The increased crop production will accelerate further development of cottage industries and marketing activities in the surrounding areas. It will also increase the employment opportunity.

(4) Advancement of the farming technology

According to the expansion of the willingness to work, the farmers would try to improve and advance their technology of the farming practices in order to promote the productivity in cooperate with the agricultural supporting services.

(5) Enhancement of the social supporting services

Social supporting services will be enhanced according to rehabilitation of road network and establishment of the rural development center. Road network would provide the easy access to anywhere, due to transmission of the information and activities on supporting services. Furthermore, in accordance with the creation of the close connection between the farmers and the agencies concerning the supporting services, current agricultural activities would be innovated under the future condition.

(6) Enlargement of the regional development activities

The agricultural production value will increase to ₱ 77 million in the full development stage, which is about 2.5 times of present agricultural production value of ₱ 31 million. Furthermore, according to the increment of the agricultural activity, other sectors will activate, resulting enlargement of the regional development activities.

(7) Improvement of the sanitary condition

According to the establishment of deepwell, the quality of drinking water will be improved and the occurrence of water-borne disease depress, following the reduction of morbidity and mortality. Furthermore, higher quality of drinking water would improve the public health of the habitants, reduce the medical and hospitalization costs, increase the effective nutrition, e.g. especially in children due to reduction of intestinal parasites.

(8) Promotion of regional solidarity sense

According to the successful implementation, this project could take the initiative for rural development under the agrarian reform program as a demonstration project. This project will be able to set forth the possibility and ample potentiality of the exploitation in the rural area. Furthermore, this project will create not only the activation of the agricultural husbandry and other industries, but also willingness to work of the habitants. The inhabitants would identify that strongly the project area is their own land. In result, it is convinced for the habitants to aggressively try to improve and advance the condition of the area in cooperation with themselves.

#### 4. JUSTIFICATION OF THE PROJECT

In the study area, the development resources except human resource is quite scarce and marginal for exploitation. Thus, in order to realize activation of the regional economy, consolidation of the basal infrastructure due to upliftment of the agricultural productivity is the essential matter for immediate attention.

It is verified and confirmed that an enlargement of the agricultural production is achieved through promotion of agricultural intensification under supporting of irrigation services.

Agricultural production increase can bring in self-sufficiency of the staple food crop, as well as upgrading the farm economy. Accordingly, the balance of farm budget will have enough capacity to meet an annual due amount of the duties and redemption, such as land amortization cost, water charges for both irrigation and domestic water supply, debt repayment for covering rice mill, farm machinery, etc.

RGDP of about P77 million or corresponding to about P7,000/capita will be generated through project implementation. This RGDP is fully born from the agricultural production. The gross product to be from the off-farm work is not counted in this evaluation though considerably large product could be expected under intensive technical guidance and skilled training of the rural development center. Any ways, large increment of the agricultural production will accelerate further production activities as well as rapid growth of the regional economy.

The economic internal rate of return (EIRR) at 14% is a little low if compared with that of 15% for viable project as specified by NEDA . However, in due consideration of the project features and principal objectives, it could be justified as "viable".



## TABLES





Table XII.2.1 Component of the Project Benefit

| Benefit item                | Component   | Related beneficiaries/benefited area   | Tangible benefit for the project   | Intangible Benefit for the project  |
|-----------------------------|---|--|--|---|
| 1. Agricultural development | - Irrigation<br>- Crop diversification<br>- Mechanization<br>- others | - Integrated rural development area<br>4,930 ha  | - Increment of production value<br>- Increment of unit yield<br>- Execution of double cropping<br>- Increment of harvested area<br>- Qualitative increment in the rice milling | - Advancement of living standard<br>- Promotion of willingness to work<br>- Advancement of farming techniques   |
|                             |   | - Trunk road   | - Saving amount in the transportation cost<br>- Vehicle operation cost saving<br>- Increment of transportation efficiency  | - Reduction of the labour requirement of the farming practices<br>- Reduction of the transportation loss<br>- Reduction of the operation and maintenance cost<br>- Improvement of social condition<br>- Enhancement of the farmers' organization<br>- Improvement of the support services |
|                             |   | - Barangay road  | - Saving amount in the transportation cost<br>- Vehicle operation cost saving<br>- Increment of transportation efficiency  | - Improvement of social infra.<br>- Advancement of the rural industry<br>- Improvement of social condition  |
| 3. Electric supply          | - Residential consumers   | - Barangay Paalaman<br>No. of household = 102  | - Willingness to pay<br>- Increment of tariff revenue<br>- Consumer's surplus  |   |
|                             | - For irrigation pump   | - Irrigated area   | - This benefit is comprised in the irrigation benefit.   |   |
| 4. Well construction        | - Residential consumers   | - Residential consumers<br>No. of household = 850<br>(for level II)<br>No. of household = 900<br>(for level I) | - Amount of the water charge for O&M cost of well constructed, as a surrogate of tariff  | - Improvement of sanitary condition<br>- Reduction of the morbidity of the water-borne disease  |
| 5. Fish port                | - Fish port   | Bayugo<br>Punta<br>Pagkalinawan<br>Ik-Ik<br>Bagumbong  |  | - Improvement of the loading and unloading work in dry season<br>- Improvement of the marketability<br>- Price increment<br>- Qualitative stabilization   |

Table XII.2.2 Annual Incremental Benefit

(Unit : Pesos 1,000)

| No. | Year | Agricultural development | Road network | Rural electrification | Water supply system | Total  |
|-----|------|--------------------------|--------------|-----------------------|---------------------|--------|
| 1   | 1991 |                          |              |                       |                     | 0      |
| 2   | 1992 | 15,266                   | 18,820       |                       |                     | 34,086 |
| 3   | 1993 | 27,348                   | 25,177       |                       |                     | 52,525 |
| 4   | 1994 | 35,529                   | 31,535       | 19                    | 49                  | 67,132 |
| 5   | 1995 | 39,192                   | 31,661       | 37                    | 97                  | 70,987 |
| 6   | 1996 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 7   | 1997 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 8   | 1998 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 9   | 1999 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 10  | 2000 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 11  | 2001 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 12  | 2002 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 13  | 2003 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 14  | 2004 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 15  | 2005 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 16  | 2006 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 17  | 2007 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 18  | 2008 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 19  | 2009 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 20  | 2010 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 21  | 2011 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 22  | 2012 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 23  | 2013 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 24  | 2014 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 25  | 2015 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 26  | 2016 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 27  | 2017 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 28  | 2018 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 29  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 30  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 31  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 32  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 33  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 34  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |
| 35  | 2019 | 40,906                   | 31,788       | 37                    | 97                  | 72,828 |

Note)

- 1) Agricultural benefit consists of the irrigation benefit and the livestock benefit.
- 2) The economic benefit of the road network is derived from the effect of the reduction of the transportation cost for agricultural products.
- 3) The economic benefit of the rural electrification consist of the tariff revenue and consumers' surplus.
- 4) The economic benefit of the water supply system is derived from the tariff revenue for the operation and maintenance cost.

Table XII.2.3 Agricultural Benefit (Whole Area)

| Crops   | Unit<br>Yield<br>(ton/ha) | Unit<br>Price<br>(peso/ton) | Production<br>Value<br>per ha<br>(Peso/ha) | Production<br>Cost<br>per ha<br>(Peso/ha) | Net<br>Production<br>Value per ha<br>(Peso/ha) | Planted<br>Area<br>(ha) | Net<br>Production<br>Value<br>(,000 Peso) |
|---|---------------------------|-----------------------------|--|---|--|-------------------------|---|
| <b>I. Without Project Condition</b>                 |                           |                             |  |   |  |                         |   |
| <b>1. Rice</b>                                      |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (2,876)                                   |
| -Irrigated  | /_1                       | /_2                         | /_3  |   |  |                         | (1,780)                                   |
| Wet Season  | 2.1                       | 6,210                       | 7,825                                      | 4,120                                     | 3,705  | 350                     | 1,297                                     |
| Dry Season  | 3.8                       | 6,210                       | 14,159                                     | 4,509                                     | 9,650  | 50                      | 483                                       |
| -Rainfed  | 1.9                       | 6,210                       | 7,079                                      | 4,120                                     | 2,959  | 370                     | 1,096                                     |
| <b>2. Upland Crop</b>                               |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (1,409)                                   |
| <b>-Irrigated Paddy Field (Dry season)</b>          |                           |                             |  |   |  |                         |   |
| Corn  | 1.0                       | 4,150                       | 4,150                                      | 2,596                                     | 1,554  | 20                      | (31)                                      |
| <b>-Rainfed</b>                                     |                           |                             |  |   |  |                         |   |
| Corn  | 1.0                       | 4,150                       | 4,150                                      | 2,596                                     | 1,554  | 44                      | (1,378)                                   |
| Tomato  | 6.4                       | 3,500                       | 22,400                                     | 6,140                                     | 16,260   | 16                      | 68  |
| Eggplant  | 5.8                       | 12,000                      | 69,600                                     | 6,390                                     | 63,210   | 5                       | 260                                       |
| String bean   | 6.2                       | 5,150                       | 31,930                                     | 10,178                                    | 21,752   | 10                      | 316                                       |
| Bitter gourd  | 6.9                       | 10,000                      | 69,000                                     | 21,204                                    | 47,796   | 5                       | 218                                       |
| Taro  | 3.0                       | 2,850                       | 8,550                                      | 3,013                                     | 5,537  | 5                       | 239                                       |
|   |                           |                             |  |   |  | 50                      | 277                                       |
| <b>3. Plantation</b>                                |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (1,525)                                   |
| Citrus  | 7.0                       | 5,000                       | 35,000                                     | 8,082                                     | 26,918   | 55                      | 1,480                                     |
| Coconuts  | 1.0                       | 3,000                       | 3,000                                      | 1,500                                     | 1,500  | 30                      | 45  |
| <b>4. Livestock</b>                                 |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (457)                                     |
| <b>5. Total (1+2+3+4)</b>                           |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (6,267)                                   |
| <b>II. With Project Condition</b>                   |                           |                             |  |   |  |                         |   |
| <b>1. Rice</b>                                      |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (21,286)                                  |
| -Irrigated  | /_1                       | /_2                         | /_4  |   |  |                         | (21,286)                                  |
| Wet Season  | 5.0                       | 7,500                       | 24,375                                     | 12,743                                    | 11,632   | 950                     | 11,050                                    |
| Dry Season  | 5.0                       | 7,500                       | 24,375                                     | 12,743                                    | 11,632   | 880                     | 10,236                                    |
| <b>2. Upland Crop</b>                               |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (15,339)                                  |
| <b>-Irrigated Paddy Field (Dry season/3rd Crop)</b> |                           |                             |  |   |  |                         |   |
| Cowpea  | 1.5                       | 12,000                      | 18,000                                     | 8,746                                     | 9,254  | 265                     | (4,532)                                   |
| Mungo bean  | 2.0                       | 13,000                      | 26,000                                     | 7,954                                     | 18,046   | 35                      | 2,452                                     |
| Watermelon  | 17.0                      | 3,200                       | 54,400                                     | 13,019                                    | 41,381   | 35                      | 632                                       |
|   |                           |                             |  |   |  |                         | 1,448                                     |
| <b>-Irrigated Upland Field</b>                      |                           |                             |  |   |  |                         |   |
| <b>Wet Season</b>                                   |                           |                             |  |   |  |                         |   |
| Corn  | 2.8                       | 4,150                       | 11,620                                     | 7,887                                     | 3,733  | 32                      | (10,807)                                  |
| Tomato  | 15.0                      | 3,500                       | 52,500                                     | 12,395                                    | 40,105   | 30                      | (6,394)                                   |
| Eggplant  | 12.0                      | 12,000                      | 144,000                                    | 12,293                                    | 131,707  | 30                      | 119                                       |
| Soy bean  | 1.0                       | 20,000                      | 20,000                                     | 10,140                                    | 9,860  | 30                      | 1,203                                     |
| String bean   | 8.0                       | 5,150                       | 41,200                                     | 13,693                                    | 27,507   | 30                      | 3,951                                     |
|   |                           |                             |  |   |  |                         | 296                                       |
| <b>Dry Season</b>                                   |                           |                             |  |   |  |                         |   |
| Bitter gourd  | 14.0                      | 10,000                      | 140,000                                    | 28,101                                    | 111,899  | 30                      | 825                                       |
| Corn  | 2.8                       | 4,150                       | 11,620                                     | 7,887                                     | 3,733  | 98                      | (4,413)                                   |
| Soy bean  | 1.0                       | 20,000                      | 20,000                                     | 10,140                                    | 9,860  | 70                      | 3,357                                     |
|   |                           |                             |  |   |  |                         | 366                                       |
|   |                           |                             |  |   |  |                         | 690                                       |
| <b>3. Plantation</b>                                |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (5,688)                                   |
| <b>-Irrigated Upland Field</b>                      |                           |                             |  |   |  |                         |   |
| Citrus  | 15.0                      | 5,000                       | 75,000                                     | 8,082                                     | 66,918   | 85                      | 5,688                                     |
| <b>4. Livestock</b>                                 |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (4,860)                                   |
| <b>5. Total (1+2+3+4)</b>                           |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (47,173)                                  |
| <b>III. Incremental Benefit (II-I)</b>              |                           |                             |  |   |  |                         |   |
|   |                           |                             |  |   |  |                         | (40,906)                                  |

Note: /\_1: Unit Yield of Paddy.  
/\_2: Unit Price Rice; "Without" includes 10% of Broken Rice, "With" includes 5% of Broken Rice.  
/\_3: Milling Rate=0.6 (Without Project, Kiskisan Type Rice Mill Unit)  
/\_4: Milling Rate=0.65 (With Project, 3.5 ton/hour scale Rice Mill Unit)

Table XII.2.4 Individual Traffic Cost

|         | Surface Condition | (Unit : Pesos/km) |        |
|---------|-------------------|-------------------|--------|
|         |                   | Carabao           | Jeepny |
| Without | Impassible        | 61.00             | -      |
|         | Earth very bad    | -                 | 7.88   |
|         | Gravel bad        | -                 | 3.77   |
| With    | Paved good/fair   | -                 | 2.01   |
|         | Gravel good       | -                 | 2.28   |

Source)

Department of Public Works and Highways

Note)

(1) Individual traffic cost means the sum of running cost, fixed cost and time saving cost.

(2) Loading capacity :

- Passengers carrying
  - Car : 3 persons
  - Jeepny : 11 persons
- Agro-products carrying
  - Carabao : 150 kg
  - Truck : 2 tons
  - Jeepny : 1 ton

(3) Road condition and transport mean

| Road              | Road condition  | Transport mean |
|-------------------|-----------------|----------------|
| Without condition |                 |                |
| Trunk road        | Impassible      | Carabao        |
| Trunk road        | Gravel bad      | Jeepny         |
| Barangay road     | Earth very bad  | Jeepny         |
| With condition    |                 |                |
| Trunk road        | Paved good/fair | Jeepny         |
| Barangay road     | Gravel good     | Jeepny         |

Table XII.2.5 Road Benefit (Transportation Cost Saving for the Agricultural Products)

| Crop              | Component           | Project condition  | Total                |                          |                  | Carabao              |                          |                  | Jeepny               |                          |                  | Total                   |                   |
|-------------------|---------------------|--------------------|----------------------|--------------------------|------------------|----------------------|--------------------------|------------------|----------------------|--------------------------|------------------|-------------------------|-------------------|
|                   |                     |                    | Traffic Amount (ton) | Required Transport (Nos) | Road Length (Km) | Traffic Amount (ton) | Required Transport (Nos) | Road Length (Km) | Traffic Amount (ton) | Required Transport (Nos) | Road Length (Km) | Saving Amount (P.1,000) | Benefit (P.1,000) |
| Paddy Upland crop | Barangay Road       | Without            | 12,237               |                          |                  | 12,237               | 24,474                   | 43.0             | 12,237               | 24,474                   | 43.0             | 8,293                   | 8,293             |
|                   |                     | With               | 12,237               |                          |                  | 12,237               | 24,474                   | 43.0             | 12,237               | 24,474                   | 43.0             | 2,399                   | 2,399             |
|                   | Trunk Road          | Without-Wet season |                      |                          |                  |                      |                          |                  |                      |                          |                  |                         |                   |
|                   |                     | - Improved         | 3,392                |                          |                  |                      |                          |                  |                      |                          |                  |                         | 156               |
| Plantation        | Trunk Road          | - New provided     | 2,623                | 34,973                   | 12.0             | 2,623                |                          |                  |                      |                          |                  | 25,600                  | 25,600            |
|                   |                     | Without-Dry season |                      |                          |                  |                      |                          |                  |                      |                          |                  |                         |                   |
|                   | - Improved          | 3,762              |                      |                          |                  |                      |                          |                  |                      |                          |                  | 173                     |                   |
|                   | - New provided      | 2,460              |                      |                          |                  |                      |                          |                  |                      |                          |                  | 223                     |                   |
|                   | With                | 12,237             |                      |                          |                  |                      |                          |                  |                      |                          |                  | 890                     |                   |
|                   | With                | 1,275              |                      |                          |                  |                      |                          |                  |                      |                          |                  | 864                     |                   |
| Total benefit     | Paddy / Upland crop | Without-Wet season |                      |                          |                  |                      |                          |                  |                      |                          |                  |                         |                   |
|                   |                     | - Improved         | 0                    |                          |                  | 0                    |                          |                  | 0                    |                          |                  | 0                       | 0                 |
|                   | - New provided      | 0                  |                      | 12.0                     | 0                |                      |                          |                  |                      |                          |                  | 0                       |                   |
|                   | Without-Dry season  |                    |                      |                          |                  |                      |                          |                  |                      |                          |                  |                         |                   |
| Plantation        | - Improved          | 75                 |                      |                          |                  |                      |                          |                  |                      |                          |                  | 3                       |                   |
|                   | - New provided      | 1,200              |                      |                          |                  |                      |                          |                  |                      |                          |                  | 109                     |                   |
|                   | With                | 1,275              |                      |                          |                  |                      |                          |                  |                      |                          |                  | 93                      |                   |
|                   |                     |                    |                      |                          |                  |                      |                          |                  |                      |                          |                  | 19                      |                   |
|                   |                     |                    |                      |                          |                  |                      |                          |                  |                      |                          |                  | 31,155                  |                   |
|                   |                     |                    |                      |                          |                  |                      |                          |                  |                      |                          |                  | 633                     |                   |

Note)

1. Project condition for the road benefit is the condition after the road construction.
2. Total traffic amount means the total amount of proposed production under with project condition.
3. Condition of trunk road by season under without project condition

| length (km) | Road condition |            | Transport mean |        | Future condition |              |
|-------------|----------------|------------|----------------|--------|------------------|--------------|
|             | Carabao        | Jeepny     | Carabao        | Jeepny | Carabao          | Jeepny       |
| Wet season  | 12.0           | Impassible |                |        | New provided     | New provided |
| Dryseason   | 6.1            | Passible   |                |        | Improved         | Improved     |
|             | 12.0           | Passible   |                |        | Improved         | Improved     |
|             | 6.1            | Passible   |                |        | Improved         | Improved     |

4. Saving amount = Total length (km) x Individual traffic cost (Peso/km)
5. Jeepny is proposed as a transport mean under with project condition.

Table XII.2.6 Capital Cost for the Whole Area

| Cost component                    | (Unit : Pesos 1,000) |                |
|-----------------------------------|----------------------|----------------|
|                                   | Financial Cost       | Economic Cost  |
| <b>I Construction Cost</b>        |                      |                |
| 1 Rural development center        |                      |                |
| Foreign                           | 15,110               | 18,132         |
| Local (Unskilled)                 | 2,060                | 1,236          |
| Local (Others)                    | 9,615                | 9,615          |
| Transfer                          | 4,728                | 0              |
| Sub-total                         | 31,513               | 28,983         |
| 2 Rice mill center                |                      |                |
| Foreign                           | 13,504               | 16,204         |
| Local (Unskilled)                 | 300                  | 180            |
| Local (Others)                    | 1,398                | 1,398          |
| Transfer                          | 2,683                | 0              |
| Sub-total                         | 17,885               | 17,782         |
| 3 Irrigation and Drainage         |                      |                |
| Foreign                           | 118,899              | 142,679        |
| Local (Unskilled)                 | 23,672               | 14,203         |
| Local (Others)                    | 39,206               | 39,206         |
| Transfer                          | 32,077               | 0              |
| Sub-total                         | 213,854              | 196,088        |
| 4 Road network                    |                      |                |
| Foreign                           | 49,967               | 59,961         |
| Local (Unskilled)                 | 3,669                | 2,202          |
| Local (Others)                    | 40,876               | 40,876         |
| Transfer                          | 16,678               | 0              |
| Sub-total                         | 111,190              | 103,039        |
| 5 Rural water supply              |                      |                |
| Foreign                           | 8,583                | 10,299         |
| Local (Unskilled)                 | 1,550                | 930            |
| Local (Others)                    | 2,699                | 2,699          |
| Transfer                          | 2,262                | 0              |
| Sub-total                         | 15,094               | 13,928         |
| 6 Power supply system             |                      |                |
| Foreign                           | 8,761                | 10,514         |
| Local (Unskilled)                 | 2,680                | 1,608          |
| Local (Others)                    | 13,587               | 13,587         |
| Transfer                          | 4,416                | 0              |
| Sub-total                         | 29,444               | 25,709         |
| 7 Fish Port                       |                      |                |
| Foreign                           | 911                  | 1,093          |
| Local (Unskilled)                 | 337                  | 202            |
| Local (Others)                    | 764                  | 764            |
| Transfer                          | 355                  | 0              |
| Sub-total                         | 2,367                | 2,059          |
| <b>II Procurement</b>             |                      |                |
| Foreign                           | 4,325                | 5,190          |
| Local (Unskilled)                 | 0                    | 0              |
| Local (Others)                    | 1,161                | 1,161          |
| Transfer                          | 968                  | 0              |
|                                   | 6,454                | 6,351          |
| <b>Total (I+II)</b>               | <b>427,801</b>       | <b>393,939</b> |
| <b>III E/S and Administration</b> |                      |                |
| Foreign                           | 47,260               | 56,711         |
| Local (Unskilled)                 | 0                    | 0              |
| Local (Others)                    | 14,301               | 14,301         |
| Transfer                          | 10,863               | 0              |
| Sub-total (III)                   | 72,424               | 71,012         |
| <b>IV Land acquisition</b>        |                      |                |
| Foreign                           | 0                    | 0              |
| Local (Unskilled)                 | 0                    | 0              |
| Local (Others)                    | 1,414                | 1,414          |
| Transfer                          | 250                  | 0              |
| Sub-total (IV)                    | 1,664                | 1,414          |
| <b>V Physical contingences</b>    | <b>50,190</b>        | <b>46,639</b>  |
| <b>Total (I - V)</b>              | <b>552,079</b>       | <b>513,004</b> |
| <b>VI Price Escalation</b>        | <b>79,127</b>        | <b>0</b>       |
| <b>Total (I - VI)</b>             | <b>631,206</b>       | <b>513,004</b> |

Table XII.2.7 Operation and Maintenance Cost in the Whole Area

| Cost component                         | (Unit : Pesos 1,000) |               |
|--|----------------------|---------------|
|  | Financial Cost       | Economic Cost |
| Administration with store and workshop | 2,687                | 2,265         |
| Irrigation                             | 4,159                | 3,790         |
| Rice mill                              | 1,165                | 887           |
| Rural water supply                     | 115                  | 97            |
| Road network                           | 1,629                | 1,510         |
| Total                                  | 9,755                | 8,549         |

Note) Breakdown of each component is elaborated as follows :

| Administration    |                      |               |
|-------------------|----------------------|---------------|
| Cost component    | (Unit : Pesos 1,000) |               |
|                   | Financial Cost       | Economic Cost |
| Foreign           | 85                   | 102           |
| Local (Others)    | 2,034                | 2,034         |
| Local (Unskilled) | 0                    | 0             |
| Transfer          | 374                  | 0             |
| Sub-total         | 2,493                | 2,136         |

| Irrigation        |                      |               |
|-------------------|----------------------|---------------|
| Cost component    | (Unit : Pesos 1,000) |               |
|                   | Financial Cost       | Economic Cost |
| Foreign           | 1,984                | 2,381         |
| Local (Others)    | 1,069                | 1,069         |
| Local (Unskilled) | 567                  | 340           |
| Transfer          | 539                  | 0             |
| Sub-total         | 4,159                | 3,790         |

| Rice mill ceater  |                      |               |
|-------------------|----------------------|---------------|
| Cost component    | (Unit : Pesos 1,000) |               |
|                   | Financial Cost       | Economic Cost |
| Foreign           | 85                   | 102           |
| Local (Others)    | 497                  | 497           |
| Local (Unskilled) | 480                  | 288           |
| Transfer          | 103                  | 0             |
| Sub-total         | 1,165                | 887           |

| Store             |                      |               |
|-------------------|----------------------|---------------|
| Cost component    | (Unit : Pesos 1,000) |               |
|                   | Financial Cost       | Economic Cost |
| Foreign           | 0                    | 0             |
| Local (Others)    | 2                    | 2             |
| Local (Unskilled) | 45                   | 27            |
| Transfer          | 0                    | 0             |
| Sub-total         | 47                   | 29            |

| Workshop          |                      |               |
|-------------------|----------------------|---------------|
| Cost component    | (Unit : Pesos 1,000) |               |
|                   | Financial Cost       | Economic Cost |
| Foreign           | 13                   | 16            |
| Local (Others)    | 17                   | 17            |
| Local (Unskilled) | 112                  | 67            |
| Transfer          | 5                    | 0             |
| Sub-total         | 147                  | 100           |

| Rural water supply |                |               |
|--------------------|----------------|---------------|
| Cost component     | (Unit : Pesos) |               |
|                    | Financial Cost | Economic Cost |
| Foreign            | 6,460          | 7,752         |
| Local (Others)     | 83,252         | 83,252        |
| Local (Unskilled)  | 9,280          | 5,568         |
| Transfer           | 15,831         | 0             |
| Sub-total          | 114,823        | 96,572        |

| Road network      |                |               |
|-------------------|----------------|---------------|
| Cost component    | (Unit : Pesos) |               |
|                   | Financial Cost | Economic Cost |
| Foreign           | 733,865        | 880,638       |
| Local (Others)    | 597,191        | 597,191       |
| Local (Unskilled) | 53,594         | 32,156        |
| Transfer          | 244,350        | 0             |
| Sub-total         | 1,629,000      | 1,509,985     |

Table XII.2.8 Replacement Cost in the Whole Area

| Irrigation system |                |               | (Unit : Pesos 1,000) |
|-------------------|----------------|---------------|----------------------|
| Cost component    | Financial Cost | Economic Cost |                      |
| Pumping equipment |                |               |                      |
| Foreign           | 33,177         |               | 39,812               |
| Local (Unskilled) | 4,101          |               | 2,461                |
| Transfer          | 4,142          |               | 0                    |
| Sub-total         | 41,420         |               | 42,273               |
| Gate              |                |               |                      |
| Foreign           | 1,666          |               | 1,999                |
| Local (Others)    | 172            |               | 172                  |
| Local (Unskilled) | 34             |               | 20                   |
| Transfer          | 208            |               | 0                    |
| Sub-total         | 2,080          |               | 2,191                |
| <b>Total</b>      | <b>43,500</b>  |               | <b>44,464</b>        |

| Rural water supply system (pumping equipment) |                |               | (Unit : Pesos 1,000) |
|---|----------------|---------------|----------------------|
| Cost component                                | Financial Cost | Economic Cost |                      |
| Foreign                                       | 1,836          |               | 2,203                |
| Local (Others)                                | 189            |               | 189                  |
| Local (Unskilled)                             | 38             |               | 23                   |
| Transfer                                      | 229            |               | 0                    |
| <b>Total</b>                                  | <b>2,292</b>   |               | <b>2,415</b>         |

| Rice mill equipment |                |               | (Unit : Pesos 1,000) |
|---------------------|----------------|---------------|----------------------|
| Cost component      | Financial Cost | Economic Cost |                      |
| Foreign             | 8,038          |               | 9,646                |
| Local (Unskilled)   | 993            |               | 596                  |
| Transfer            | 1,004          |               | 0                    |
| <b>Sub-total</b>    | <b>10,035</b>  |               | <b>10,242</b>        |

| Power supply system |                |               | (Unit : Pesos 1,000) |
|---------------------|----------------|---------------|----------------------|
| Cost component      | Financial Cost | Economic Cost |                      |
| Foreign             | 23,585         |               | 28,302               |
| Local (Others)      | 2,429          |               | 2,429                |
| Local (Unskilled)   | 486            |               | 292                  |
| Transfer            | 2,944          |               | 0                    |
| <b>Total</b>        | <b>29,444</b>  |               | <b>31,023</b>        |

| Farm machinery and supporting equipment |                |               | (Unit : Pesos 1,000) |
|---|----------------|---------------|----------------------|
| Cost component                          | Financial Cost | Economic Cost |                      |
| Foreign                                 | 5,170          |               | 6,204                |
| Local (Unskilled)                       | 639            |               | 383                  |
| Transfer                                | 645            |               | 0                    |
| <b>Total</b>                            | <b>6,454</b>   |               | <b>6,587</b>         |



Table XII.2.9 Economic Cost and Benefit Stream

(Unit : Pesos 1,000)

| No | Year | Costs   |       |             | Total<br>(C) | Gross<br>Benefit<br>(B) | Balance<br>(B-C) |
|----|------|---------|-------|-------------|--------------|-------------------------|------------------|
|    |      | Capital | O&M   | Replacement |              |                         |                  |
| 1  | 1991 | 22,464  | 0     |             | 22,464       | 0                       | -22,464          |
| 2  | 1992 | 152,803 | 0     |             | 152,803      | 34,086                  | -118,717         |
| 3  | 1993 | 160,136 | 3,627 |             | 163,763      | 52,525                  | -111,238         |
| 4  | 1994 | 140,571 | 6,505 |             | 147,076      | 67,132                  | -79,944          |
| 5  | 1995 | 37,030  | 8,549 |             | 45,579       | 70,987                  | 25,408           |
| 6  | 1996 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 7  | 1997 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 8  | 1998 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 9  | 1999 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 10 | 2000 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 11 | 2001 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 12 | 2002 |         | 8,549 | 6,587       | 15,136       | 72,828                  | 57,692           |
| 13 | 2003 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 14 | 2004 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 15 | 2005 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 16 | 2006 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 17 | 2007 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 18 | 2008 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 19 | 2009 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 20 | 2010 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 21 | 2011 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 22 | 2012 |         | 8,549 | 6,587       | 15,136       | 72,828                  | 57,692           |
| 23 | 2013 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 24 | 2014 |         | 8,549 | 88,144      | 96,693       | 72,828                  | -23,865          |
| 25 | 2015 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 26 | 2016 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 27 | 2017 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 28 | 2018 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 29 | 2019 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 30 | 2020 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 31 | 2021 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 32 | 2022 |         | 8,549 | 6,587       | 15,136       | 72,828                  | 57,692           |
| 33 | 2023 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 34 | 2024 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |
| 35 | 2025 |         | 8,549 |             | 8,549        | 72,828                  | 64,279           |

NPV of Cost (14 %) = 389,754    B-C(15 %) = -10,372  
 NPV of Benefit (14 %) = 389,754    B/C(15 %) = 0.97

Sensitivity data:

| ITEM            | (%)   | Cost up<br>(%) | Benefit Down (%) |     |     |     |     |
|-----------------|-------|----------------|------------------|-----|-----|-----|-----|
|                 |       |                | -20              | -10 | 0   | 10  | 20  |
| Cost<br>UP      | 0     | -20            | 26%              | 23% | 20% | 17% | 14% |
|                 |       | -10            | 22%              | 19% | 17% | 14% | 12% |
| Benefit<br>DOWN | 0     | 0              | 19%              | 16% | 14% | 12% | 10% |
|                 |       | 10             | 16%              | 14% | 12% | 11% | 9%  |
|                 |       | 20             | 14%              | 13% | 11% | 9%  | 7%  |
| EIRR            | 14.4% |                |                  |     |     |     |     |

Table XII. 3.1 Annual Farm Budget Analysis

| Items                                     | Paddy Farm |        | Paddy/Upland |        | Upland Farm |        | Plantation |        |
|---|------------|--------|--------------|--------|-------------|--------|------------|--------|
|   | Without    | With   | Without      | With   | Without     | With   | Without    | With   |
| Farm Field (ha)                           |            |        |              |        |             |        |            |        |
| Paddy Field                               | 1.0        | 1.0    | 0.4          | 0.4    | 0.0         | 0.0    | 0.0        | 0.0    |
| Upland Field                              | 0.0        | 0.0    | 0.3          | 0.3    | 0.4         | 0.4    | 0.0        | 0.0    |
| Plantation                                | 0.0        | 0.0    | 0.0          | 0.0    | 0.0         | 0.0    | 0.5        | 0.5    |
| sub-total                                 | 1.0        | 1.0    | 0.7          | 0.7    | 0.4         | 0.4    | 0.5        | 0.5    |
| I. Gross Income (peso)                    |            |        |              |        |             |        |            |        |
| On-Farm                                   | 12,960     | 57,400 | 8,624        | 50,388 | 4,300       | 36,570 | 4,800      | 25,000 |
| Off-Farm                                  | 2,500      | 4,860  | 3,000        | 4,860  | 4,900       | 4,900  | 4,900      | 4,900  |
| Non-Farm                                  | 13,600     | 0      | 13,600       | 0      | 13,600      | 0      | 13,600     | 0      |
| Total                                     | 29,060     | 62,260 | 25,224       | 55,248 | 22,800      | 41,470 | 23,300     | 29,900 |
| II. Gross Out-Go (peso)                   |            |        |              |        |             |        |            |        |
| Production Cost                           | 2,100      | 9,597  | 1,600        | 11,558 | 1,100       | 10,293 | 1,200      | 5,072  |
| Living Expenses                           | 18,800     | 18,800 | 18,800       | 18,800 | 18,800      | 18,800 | 18,800     | 18,800 |
| Total                                     | 20,900     | 28,397 | 20,400       | 30,358 | 19,900      | 29,093 | 20,000     | 23,872 |
| III. Capacity to Pay (I-II, peso/annual)  | 8,160      | 33,863 | 4,824        | 24,889 | 2,900       | 12,377 | 3,300      | 6,028  |
| IV. Duties and Amortization (peso/annual) |            |        |              |        |             |        |            |        |
| 1. Land Amortization<1                    | 4,405      | 4,405  | 3,084        | 3,084  | 1,762       | 1,762  | 2,203      | 2,203  |
| 2. Irrigation Fee<2                       | 743        | 3,585  | 297          | 2,510  | 0           | 1,434  | 0          | 0      |
| 3. Water Charge<3                         | 0          | 66     | 0            | 66     | 0           | 66     | 0          | 66     |
| 4. Milling Charge                         | 324        | 1,200  | 130          | 480    | 0           | 0      | 0          | 0      |
| Total                                     | 5,472      | 9,256  | 3,511        | 6,140  | 1,762       | 3,262  | 2,203      | 2,269  |
| V. Debt Repayment (peso/annual)           |            |        |              |        |             |        |            |        |
| 1. Rice Mill<4                            | 0          | 2,760  | 0            | 2,760  | 0           | 0      | 0          | 0      |
| 2. Machinery<5                            | 0          | 2,484  | 0            | 2,484  | 0           | 1,551  | 0          | 375    |
| Total                                     | 0          | 5,244  | 0            | 5,244  | 0           | 1,551  | 0          | 375    |
| VI. Annual Net Profit (peso/annual)       | 2,688      | 19,363 | 1,313        | 13,505 | 1,138       | 7,564  | 1,097      | 3,384  |

<1: Land Amortization Cost for Land Reform, 30,000 peso/ha, Annual Interest=12%, Repayment Period=15 years.

<2: Based on the total O&M cost of 4,159,000 peso for Irrigation facilities including pump.

<3: Based on total O&M cost of 115,000 peso for deep well.

<4: Annual Repayment for Rice Mill Center/Facility.

<5: Annual Repayment for Machinery.

Table XII.3.2 Cash Flow Statement (1/4) - Irrigation Facilities

(Unit: '000 peso)

| Year<br>in<br>Order | Cash Inflow |                   |                        |        | Cash Outflow          |          |          |                   |                  |        | Annual<br>Balance | Accumulated<br>Amount |
|---------------------|-------------|-------------------|------------------------|--------|-----------------------|----------|----------|-------------------|------------------|--------|-------------------|-----------------------|
|                     | Budget      | Irrigation<br>Fee | Amortiza-<br>tion cost | Total  | Capital<br>Investment | O&M Cost |          |                   | Repla-<br>cement | Total  |                   |                       |
|                     |             |                   |                        |        |                       | Labour   | Electric | Repair/<br>Maint. |                  |        |                   |                       |
| 1                   | 44,629      | 0                 | 0                      | 44,629 | 44,629                |          |          |                   | 0                | 44,629 | 0                 | 0                     |
| 2                   | 79,560      | 4,159             | 3,794                  | 87,513 | 79,560                | 567      | 1,571    | 2,021             | 0                | 83,719 | 3,794             | 3,794                 |
| 3                   | 63,061      | 4,159             | 3,794                  | 71,014 | 63,061                | 567      | 1,571    | 2,021             | 0                | 67,220 | 3,794             | 7,588                 |
| 4                   | 26,604      | 4,159             | 3,794                  | 34,557 | 26,604                | 567      | 1,571    | 2,021             | 0                | 30,763 | 3,794             | 11,382                |
| 5                   | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 15,176                |
| 6                   | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 18,970                |
| 7                   | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 22,764                |
| 8                   | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 26,558                |
| 9                   | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 30,352                |
| 10                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 34,146                |
| 11                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 37,940                |
| 12                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 41,734                |
| 13                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 45,528                |
| 14                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 49,322                |
| 15                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 53,116                |
| 16                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 56,910                |
| 17                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 60,704                |
| 18                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 64,498                |
| 19                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 68,292                |
| 20                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 72,086                |
| 21                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 75,880                |
| 22                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 43,500           | 47,659 | -39,706           | 36,174                |
| 23                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 39,968                |
| 24                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 43,762                |
| 25                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 47,556                |
| 26                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 51,350                |
| 27                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 55,144                |
| 28                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 58,938                |
| 29                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 62,732                |
| 30                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 66,526                |
| 31                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 70,320                |
| 32                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 74,114                |
| 33                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 77,908                |
| 34                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 81,702                |
| 35                  | 0           | 4,159             | 3,794                  | 7,953  | 0                     | 567      | 1,571    | 2,021             | 0                | 4,159  | 3,794             | 85,496                |

## Remarks)

(1) Budget for irrigation facilities : Assuming the cost of the construction works

(Table XI.2.18 of ANNEX XI)

(2) Amortization cost: The cost to be amortized by the farmers is estimated at 90 % of total construction cost excluding the cost for on-farm works, provisionally.

(3) Amortization peri: Amortization period is 50 years, provisionally.

(4) Irrigation fee : Amount proportionate to annual O&amp;M cost

(5) O&amp;M cost : See Table XII.2.7 of ANNEX XII

(6) Replacement cost: Replacement cost for pumping equipment and gate  
(see Table XII.2.8 of ANNEX XII)

Table XII.3.2 Cash Flow Statement (2/4) - Rice Mill Center

(Unit: '000 peso)

| Year<br>in<br>Order | Cash Inflow |                   |                   |                            | Cash Outflow |                            |          |                   |                  |        | Annual<br>Balance | Accumulated<br>Amount |        |
|---------------------|-------------|-------------------|-------------------|----------------------------|--------------|----------------------------|----------|-------------------|------------------|--------|-------------------|-----------------------|--------|
|                     | Budget      | Milling<br>Charge | Amorti-<br>zation | Selling<br>of Rice<br>Bran | Total        | Capital<br>Invest-<br>ment | O&M Cost |                   | Repla-<br>cement | Total  |                   |                       |        |
|                     |             |                   |                   |                            |              | Operation                  | Electric | Repair/<br>Maint. |                  |        |                   |                       |        |
| 1                   | 785         | 0                 | 0                 | 0                          | 785          | 785                        | 0        | 0                 | 0                | 0      | 785               | 0                     | 0      |
| 2                   | 17,100      | 784               | 2,180             | 725                        | 20,789       | 17,100                     | 660      | 350               | 55               | 0      | 18,165            | 2,624                 | 2,624  |
| 3                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 5,452  |
| 4                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 8,281  |
| 5                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 11,109 |
| 6                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 13,938 |
| 7                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 16,766 |
| 8                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 19,595 |
| 9                   | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 22,423 |
| 10                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 25,252 |
| 11                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 28,080 |
| 12                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 30,909 |
| 13                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 33,737 |
| 14                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 36,566 |
| 15                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 39,394 |
| 16                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 42,223 |
| 17                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 45,051 |
| 18                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 47,880 |
| 19                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 50,708 |
| 20                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 53,537 |
| 21                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 56,365 |
| 22                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 10,035 | 11,100            | -7,207                | 49,159 |
| 23                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 51,987 |
| 24                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 54,816 |
| 25                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 57,644 |
| 26                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 60,473 |
| 27                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 63,301 |
| 28                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 66,130 |
| 29                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 68,958 |
| 30                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 71,787 |
| 31                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 74,615 |
| 32                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 77,444 |
| 33                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 80,272 |
| 34                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 83,101 |
| 35                  | 0           | 890               | 2,180             | 824                        | 3,894        | 0                          | 660      | 350               | 55               | 0      | 1,065             | 2,829                 | 85,929 |

## Remarks)

- (1) Budget of rice mill center : Assuming the construction works (Table XI.2.18 of ANNEX XI)
- (2) Milling charge : 1,200 Pesos/ha  
(Unit yield at 1st year : 4.4 ton/ha, Unit yield from 2nd year : 5 ton/ha)
- (3) Amortization cost : 2,760 Pesos/famer (Section 2.4 of ANNEX IX)
- (4) Selling of rice bran : Price of rice bran = 0.5 Pesos/ton,  
Weight ratio of rice bran in paddy = 18 %
- (5) O&M cost : (Section 2.3 of ANNEX VIII)
- (6) Replacement cost : Replacement period = 20 years  
Replacement amount = Pesos 10,035 of rice mill equipment  
(Table XI.2.18 of ANNEX XI)

Table XII.3.2 Cash Flow Statement (3/4) - Farm Road

(Unit: '000 peso)

| Year<br>in<br>Order | Cash Inflow | Cash Outflow         |               |        | Balance |
|---------------------|-------------|----------------------|---------------|--------|---------|
|                     | Budget      | Capital<br>investmer | O & M<br>Cost | Total  |         |
| 1                   | 36,028      | 36,028               | 0             | 36,028 | 0       |
| 2                   | 43,207      | 43,207               | 0             | 43,207 | 0       |
| 3                   | 28,781      | 28,781               | 1,629         | 30,410 | -1,629  |
| 4                   | 3,174       | 3,174                | 1,629         | 4,803  | -1,629  |
| 5                   | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 6                   | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 7                   | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 8                   | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 9                   | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 10                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 11                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 12                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 13                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 14                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 15                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 16                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 17                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 18                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 19                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 20                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 21                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 22                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 23                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 24                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 25                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 26                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 27                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 28                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 29                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 30                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 31                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 32                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 33                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 34                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |
| 35                  | 0           | 0                    | 1,629         | 1,629  | -1,629  |

## Remarks)

- (1) Budget of farm road : Assuming the construction works  
(TABLE XI.2.18 OF ANNEX XI)
- (2) O&M cost : Table XII.2.7 of ANNEX XII

Table XII.3.2 Cash Flow Statement (4/4) - Water Supply System

(Unit: '000 peso)

| Year<br>in<br>Order | Cash Inflow |                 |       | Cash Outflow         |               |                       | Total | Balance |
|---------------------|-------------|-----------------|-------|----------------------|---------------|-----------------------|-------|---------|
|                     | Budget      | Water<br>Charge | Total | Capital<br>investmer | O & M<br>Cost | Replace-<br>ment cost |       |         |
| 1                   | 1,109       |                 | 1,109 | 1,109                | 0             | 0                     | 1,109 | 0       |
| 2                   | 5,518       |                 | 5,518 | 5,518                | 0             | 0                     | 5,518 | 0       |
| 3                   | 4,324       | 115             | 4,439 | 4,324                | 115           | 0                     | 4,439 | 0       |
| 4                   | 4,143       | 115             | 4,258 | 4,143                | 115           | 0                     | 4,258 | 0       |
| 5                   | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 6                   | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 7                   | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 8                   | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 9                   | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 10                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 11                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 12                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 13                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 14                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 15                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 16                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 17                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 18                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 19                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 20                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 21                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 22                  | 0           | 115             | 115   | 0                    | 115           | 2,292                 | 2,407 | -2,292  |
| 23                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 24                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 25                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 26                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 27                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 28                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 29                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 30                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 31                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 32                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 33                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 34                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |
| 35                  | 0           | 115             | 115   | 0                    | 115           | 0                     | 115   | 0       |

## Remarks)

- (1) Budget of water supply : Assuming the construction works  
(TABLE XI.2.18 OF ANNEX XI)
- (2) Water charge : Assuming the O&M cost  
(Table XII.2.7 of ANNEX XII)
- (3) Replacement cost : Assuming the cost for the pumping equipment  
(Table XII.2.8 of ANNEX XII)



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