



EXECUTIVE SUMMARY  
RURAL WORKS II IN INDONESIA  
PROJECT IMPACT EVALUATION



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## EXECUTIVE SUMMARY

### I. P R E F A C E

If a project is defined as an organization of factor input, to produce output, with a purpose of solving the problem of society; then an evaluation of a project could be defined as an activity of gathering facts to depict how far the input and output of the project have solved the problem of the society.

The society may have economic, socio-cultural or other aspects of problem. When the current condition of the society differs from the favoured condition we say that the society is having problem.

PKGB is a project designed and financed by US-AID and other donor instituties, to aim at solving part of the unemployment and low income of the many rural areas of Indonesia. Unemployment and low per capita income are economic problems. Since most people of that rural Indonesia work or farmers, the employment and income are mostly earned from farming; and since of the PKGB sub projects are typically farming development projects, which affects the income of farmers in general; like rice field terracing, irrigation, flood control, fish pond, reservoir of water, and road projects; so the evaluation activity was also considering the economic and farming aspect, or economy of farming.

The PKGB projects are also designed to draw peoples participation. As participation is based on the current socio-cultural values, so the evaluation activity consider also the socio-cultural aspects.

The three aspects, namely socio-cultural, farming-economic, and economic aspects, have been chosen as aspects of this evaluation activity as promised in the technical proposal.

The goal of the evaluation activity is to improve the project design. A better project design shall solve the problem more efficiently than the worse one. Same input of a project may produce more output, which further serves more purpose and achieve higher goal if the project is designed better.

In doing this we surveyed the various projects samples to collect data which indicated the input, output, purpose and goal of the PKGB projects. We interviewed 405 respondents in 6 Provinces, 11 Regencies, 21 Districts in the island of Java, Sumatera and Kalimantan, by means of questionnaire. The respondents are farmers, local leaders "government officers, common society members" and PKGB-laborers.

Using the GPOI (Goal, Purpose, Output, Input) as logical framework we tabulated the data to denote their quantitative project impacts with their respective quantity of inputs and output.

We will report this finding by each kind of project being evaluated, covering the three aspects, namely socio-cultural, farming and economic aspects.

## I. THE ROAD PROJECT

There are 13 project locations chosen as samples to collect the data on the input, output, purpose and goal of the road projects. The data are meant to indicate each aspect of problem, namely the socio-cultural, farming and economic aspect.

### A. Socio-cultural aspect

The data showed that people participated in the PKGB-road project on the basis of income earning. This money-motive participation differs from the established "gotong-royong" value of participation in developing public construction. This change of value, however, was temporary, because the old cooperative or "doing together" is performed again in the maintenance of the project.

We conclude, from the data analysis, that the road-project had brought a little change of value system, to a tolerable or even favourable level. Better living environment, however small, have been favoured by the people surrounding the project.

Since no cultural shock was then from the road project, the project is recommended to be continued, without forgetting the established value system.

### B. Agricultural Aspect

73% of the road project costs were in the form of wages, 21% were material costs. This data shows the labour intensive type of the project.

The road project was expected to increase the net benefit of the farmers in the surrounding area, by means of reducing transport cost to and from the market place. The number of motor bike and trucks were increasing after the road project. But the data on the net benefit on farming did not visibly show the increasing net benefit due to better transport system.

C. ECONOMIC ASPECT

From the data on the road presented above an analysis is made as follows :

1. Efficiency :

a. Wages per Manday :

The average wages per manday for worker is Rp.711.-, for Foreman Rp.945.- and skilled worker Rp.1,311.- are relatively cheap, because the wages per manday is much lower than their daily average income.

The comparison between wages per manday with daily income is shown on the table 47.

Table: 47. Wages/manday and daily income ( in Rupiah ) :

	Worker	Foreman	Skilled-worker
IP / MD	711	946	1,311
I n c o m e	1,680	2,320	1,980

Source: 1. Table 30.

2. Table 44.

Wages per manday is not only lower than their daily income, but also lower than their daily need, except skilled worker as shown on the table 20.

Table : 48. Wages/manday and daily need ( in Rupiah ) :

	Worker	Foreman	Skilledworker
IP / MD	711	946	1,311
N e e d	1,200	1,400	1,300

Source : 1. Table 30

2. Table 46.

They will work with a low wages, because perhaps they realise that the maintenance of the road is for the necessity of the society at large, and they need enjoy it because they were originated from the project surrounding.

b. Total wages :

Wages for worker, foreman and skilled worker is relatively cheap enough, therefore the total incentive payment for every meter of road is low too, that is Rp.2,275.- average (table 31). While the maximum is Rp.2,799.- is still cheap enough too, because the road is not merely of soil but with a layer upon it.

c. Total Mandyas :

The road project needs the total Man Days work of average 3,8 MD for every meter length of road. While the average width of the road is 6 meter. So that an average MD of 3,8 is for the 6 square meter of the road. Thus for every square meter needs 0,63 MD, it is a labor that can be said as efficient enough.

d. Materials :

The average value of the needed materials for every meter of road is Rp.622.-. The maximum material cost is Rp.814.-. Those materials are in the form of gravels, cement, sand, etc., for the upper layer of the road. Therefore it is said cheap enough too.

e. T o o l s :

The average cost of tools used for every meter length of road is Rp.184.-. This is reasonable and fair too.

f. Total Cost :

The total cost of road project in average for every meter is shown in table 49 as follow :

District	Length of road	Total Cost	Total Cost/m
Awayar	5,700 m	29,475,000	5,171
Astambul	7,025 m	13,848,000	1,971
Secanggang	4,300 m	15,952,000	3,709
Rawa Merta	3,000 m	15,305,000	5,101
Pujon	4,000 m	13,824,000	3,456
Tanjung Pura	4,700 m	17,269,000	3,674
Tinggi Moncong	6,000 m	11,957,000	1,992
M. Bombang	7,000 m	12,095,000	1,727
B.Kanaya	5,000 m	17,134,000	3,426
Kelara	5,000 m	17,178,000	3,435
P.Bangkeng	7,000 m	12,515,000	1,787
Selesai	5,100 m	15,952,000	3,127
Tamalatea	7,000 m	19,703,000	2,814

Total	=	41,390
Average	=	3,183
Sx	=	1,134
Tx	=	314
Minimum	=	2,555
Maximum	=	3,811

Source : 1. Table 31.

2. Table 34.

3. Consultant calculation.

The average total project cost is Rp.3,183, --/m , while this project cost is fairly cheap too.

## 2. Effectivities :

The aim of the project are :

The fluency of traffic

To accelerate suburban economy

Works opportunity

To open the isolated zone.

a. Traffic Fluency.

The aim of project for the fluency of traffic has met its goal with the change of transportation way, that is from being carried by carrying pools or on human back, by bicycles and wheel barrow altered to be with motor cycles, trucks and pickups. (table 42). And also their cruising speed has been increased.

The time required for several transportation before and after the project are by bicycles less 30%, motor car 27% less and mobile/pick up 30% less (table 43).

b. To accelerate the suburban economy:

- Place to obtain or purchasing materials.

From the interview is known that society surrounding the project is obtaining or purchasing materials 65% from the suburb and 35% outside the suburb. It means that with the presence of the road materials come from the village to the suburb. Therefore grow in the village the places where materials can be bought for example shops or small stores. Although the following materials from the village to the suburb will grow the economy outside the suburb, in the suburb itself will grow economy like the presence of shops and kiosks as mentioned above.

- The increase of rice production.

From the interview is known that rice production raised from 1,532 ton to 2,235 ton it was an increase of 702 ton or 46%. From field survey it has got the data that the increase of agriculture product as rice, rubber etc. is because being opened the transportation facilities. With an increase of rice production therefore there is growth in suburban economy.

- Increase of business varieties.

Survey has only got six project zones that can show the increase of business. Shop business raise from 56 shops to 130. Thus the increase is 74 shops or 132%. Beside shops business, trade business is raising too from 62 trade business to 164 ones, thus an increase of 102 trade business or 164%. Beside that the bigger shop business is raising too from 27 to 69, an increase of 42 bigger shop or 155%.

c. Works opportunity.

With the raise of rice production, shops business, bigger shops as well as trade business, the works opportunity is raising of it self. The increase of workers opportunity can receive manpower as shown in table 50.

Table 50. Increase of workers opportunity.

Business varieties	Total increase	Manpower	Total manpower
Agricultural	702 ton	2,63	1.847
Shops	74 ea	2	148
Tokos (bigger shops)	42 ea	2	84
Trades	102 trd.	1	102

The increase of business can receive the works opportunity ca. 2,181 manpower. While the whole population in the district of the whole project is 565,566 peoples. Thus the project can create occupation field 0,38%.

d. To open an isolated zone.

The 70,525 metres or 70 km long project has its effects to its surrounding zone of 115,807 hectares of 30 villages.

3. Intensities

Those 13 project has the amount of total cost Rp 212,207,000,-- If a national multiplier is 2,85 therefore that investation mentioned above can raise the income the amount of  $2,85 \times \text{Rp } 212 \text{ million} = \text{Rp } 604 \text{ million}$ . In the survey conclusion got no data to check the increase of income of Rp 604 million mentioned above.

D. CONCLUSION AND SUGGESTION

It has been discussed in the analysis that the improvement of roads in 13 districts has been done efficiently except in Rawamerta district where the road is often damaged.

1. Efficiency :

Formerly the road width in Rawamerta is 2 meter widened to 3 meter with a hardening layer of 15 thick. That 3,000 m long road has been charged with an expense of Rp.15,305,000,- or Rp.5,101 per meter run. This budget is bigger than the maximum cost Rp.3,811,-- (table 49). With the cost that high the condition of the road must be good enough, but as a matter of fact the road is often damaged. With the damage that often it means that the betterment of the road in Rawamerta is less good.

2. Effectivities :

From the analysis has been known that the road project causes 2,151 peoples as man-power in act. The presence of road betterment, therefore the communication from one region to another is opened. Thus the effectivities is increased with suburban economy acceleration that its products can be marketed to town.

The suburban economical activities will be more accelerated with the presence of consultations among others a consultation for agriculture and people handy crafts. With the presence of consultations; soil, manpower and time can be used efficiently in order to produce products that can be marketed to other region. With the increase of products the work opportunities is opened that has a multiplier effect.

3. Intensities :

It has been said above that consultations will raise effectivities. With this consultation will result a raising productivities. With the raise of productivities the increase value of articles in the suburb will be raising too, this means to raise the suburban societies income. The consultant believes that without information or consultation: social income will be raising too but with leisurely procedure.

## II. IRRIGATION PROJECT

In observing the impact of this irrigation project as one of the PKGB project, we have taken two project as samples. One is irrigation project of subdistrict (Kecamatan) of Jabung and the other one is at the subdistrict of Ploso. Both are situated in the Regency (Kabupaten) Malang. They were taken at Random.

The subdistrict of Jabung is an area of 126,80 square kilometres wide with, in 1980 covered 49.924 population in which consists of 11,222 families. Most of the inhabitants of Jabung are farmers with rice as their main product. It is hoped that this irrigation project will effect to the surrounding farmers seen in the map.

As for the subdistrict of Ploso, it is an area or 75,75 square kilometres wide, with, in 1980 population by 49,924 people. Most of them are farmers. This irrigation project are situated in the village of Tasik Malaya + Kepuharjo and it is hoped that it will give its impact to the areas as seen in the map.

To evaluate this project we collected the data concerning INPUT, OUTPUT PURPOSE and GOAL of each project.

As a presupposition, the sub project will have influence to the socio-economic as well as agriculture. As a matter of fact, this report will give its result from the basis of socio-cultural, socio-economic as agriculture with the succession as follows:

- The presentation of the data;
- Analysis;

Conclusion.

The socio-cultural aspect will be first presented, and followed by agricultural aspect and then economic aspect.

#### A. SOCIO-CULTURAL ASPECT

There has been various changes concerning cultural values adhered by people under the bases of mutual help. It is caused by people's perspectives toward the project. They consider it to be economic activities, in which they participate in the project to get salary.

Despite of the mentioned perspectives, the project was supposed to serve to increase farm product which encouraged people to improve their standard of livings in abroad sense. More over there has been changes in transferring information which covers environment and scientific discoveries.

As a consequence of value system changes, the solidarity among people is weakened in which there has been a competition among the people to get socio-political status or resources domination. But such competition might have been solved through friendliness, togetherness, consensus.

On the other hand value changes have brought about (generated) a positive impact which integrated people to formulate activities. This causes social organizations to emerge in which they do activities under the bases of mutual help.

Instead of negative impacts, we see that the project has given positive impacts to social condition. Value changes arise as to the project implementation but it has not damaged whole-social condition. Social conflicts might have been solved by kinship, friendliness, togetherness. This is a fact that social problems can be well coped.

Economically as well as agriculturally this project has increased farm product which causes income of community to raise in which people are supposed to suffice their basic needs economically and socio-culturally.

#### Conclusion and Recommendation

Based on the previous discussion we may draw a conclusion that irrigation project implemented at two sub districts has given impacts to social intercourses. It is apparent that social conflicts have emerged as the project implemented, but it does not shake whole value system adhered by community.

In other words PKGP project does not shake the stability of community lives.

As a matter of fact, the PKGB project implementation is coincident with social prosperity improved. To intensify project effectiveness needs following up programs. The activities covers guidance and consultation to solve problems, which deal with politics, law and socio-cultural aspect as well economics. New values may be simultaneously introduced with its utilization. By so doing, people will be encouraged to accept new values without damaging cultural value systems adhered by community.

Pertaining with those efforts, people's participation is required. To encourage people to participate in this project, people's involvement in planning a project is necessary, since their involvement will arise self responsibilities. On the other hand this enables people to adjust to new cultural values without any restless.

#### B. AGRICULTURAL ASPECT

In this section, we want to see whether or not the irrigation project will be able to increase the average yield per hectare, and whether it will be able to increase the efficiency of the farming system.

As shown in table 27 the average yield per hectare of paddy of with project's farming increase from 14 tons/ha to 22.5 ton/ha, an increment of about 60 percent, while that without project has increased about 2 percent only. The increment a Jabung, is about 14 percent compare to around 7 percent of the without project farming.

Table: 27. The average yield per hectare of paddy in Karang Ploso and Jabung.

I t e m s	Before PKGB (ton / ha)	After PKGB ( ton /Ha)	Growth rate (%)
<u>Karang Plos:</u>			
Farms with project	14.0	22.5	60.7
Farms without project	14.8	15.0	1.7
Farms with project	15.7	17.8	13.8
Farms without project	6.1	6.5	6.6

The see whether the irrigation project could increase the efficiency, a crude B/C-ratio will be the crude B/C-ratio of farming with project is found at 4.9, while of that without project is 1.8. From figures, we can see that the irrigation project is able to increase the efficiency of the farming system in the project area.

Table : 28. Crude B/C-ratio in irrigation sub project.

Farming type	Mean benefits (Rp. '000)	Means costs (Rp. '000)	C r u d e B/L
With project farming	2,934.4	603.8	4.9
Without project	775 1	430.2	1.8

#### The Goal

From the GPOI logical framework it is indicated that the goal of irrigation project is to increase the welfare of the farmers in the project area. The objectively verifiable indicator was the income of the farmers. As shown in Table 9, the net benefits of the farmer with project is more than seven times of the farmers without project.

Table : 29. The net benefits of the farmers irrigation sub project

I t e m s	Benefit (Rp. '000)	Costs (Rp. '000)	Net benefits (Rp. '000)
With project farming	2,934.4	603.8	2,330.6
Without project farming	755.1	430.2	334.9

The GDP per capita of the people in the project area is shown in Table 30. It is shown that except for Sidorejo, the income per capita of the people in the project area has increased. Especially in Kecamatan Karang Ploso, the income has increased considerably.

Using the means-end analysis by means of GPOI logical framework mentioned in the previous chapter, we can see that .

Table: 30. Gros domestic products per capita of the people in the project area.

I t e m s	Before PKGB (RP)	After PKGB (RP)	% increase
Karang Ploso:			
1. Kepuharjo	979.67	4,910.60	401.2
2. Tasikmadu	1,194.10	1,561.67	30.8
Jabung:			
1. Sidorejo	2,816.47	1,636.34	-41.9
2. Sukapuro	3,123.88	3,224.72	3.2

Investment planted in the irrigation subproject is worthwhile, and benefited not only the people who work for the project, but also the farmers in the project area. Although lack of water is not really a problem for the farmers, as can be seen from the B/C-ratio without the project which is more than one-, the irrigation project constructed in the project area has increased the area harvested, the production of agricultural products, and last but not least, the income of the people in the project area.

## C. ECONOMIC ASPECT

Those data lead us to analyze the efficiency of the project, the effectivity as well as the intensity of it. The efficiency will be measured through the comparison between the input and output. The effectivity will be observed from its indicator of purpose which is planned and its realization. While the intensity reflected by the amount of problem solved by the project, society in comparison with the problems faced by all the members of the society throughout the sub-district area.

### 1. Efficiency :

To observe the efficiency of the implementation of the project, there will be a comparison between the input and the output of the project. The input among others are : total cost, incentive money for workers materials and tools. While the output is a kind of length of the canal reconstructed.

#### a. Total Cost.

The total cost of Karang Ploso project came to Rp.30.635.000 for 4.000 meters length of canal or Rp. 5.158.000/1.000 meters or 5.158/meters length of canal.

While the total cost of Jabung project comes to Rp. 24.045.000,- for 7.845 meters length of canal or Rp. 3.065.000/1.000 meters or Rp. 3.065/meter length of canal.

If the two project are compared there will be found out that irrigation canal project in Jabung is more efficient than the project irrigation canal in Karang Ploso, as a matter of fact the canal which is in Jabung is wider and deeper (see table 7).

#### b. W a g e s

Total UPK in Karang Ploso comes to Rp.14.182.000,- for 4.000 meters length of canal or Rp. 3.345/meters length of canal.

It can be seen that UPK in Jabung is more efficient in comparison with UPK in Karang Ploso, although the UPK/HOK in Jabung for each group of working is higher compared with the UPK/HOK of each of the same working group in Karang Ploso (see table 32). The total of UPK in Karang Ploso was Rp. 3.545/meters length of canal, higher than the total cost of project in Jabung Rp. 3.065/meters length of canal, from this fact

b). Increasing

The aims at mounting production is said to be successful enough with the increasing number of harvests and the mounting the production of rice field/hectare becomes 7 tons/hectare in Jabung.

c). Opening job Opportunity.

The increasing number of harvest from twice a year to three times practically the project has impact of opening job opportunity.

This impact is also seen in the growing of enterprise in the fields of stores, ojek, factory, handicraft storage battery charge, etc.

3. Intensity.

The project of Karang Ploso promotes the period of cultivation from twice a year to three times per year to the rice field of 50 hectare wide. With the assumption that the better the watering system, the project of rice field will promote to 7 tons per hectare. So the increasing amount of production from 50 hectare of rice field per year is  $50 \times 7 \text{ tons} = 350 \text{ tons}$ .

The project in Jabung promotes agriculture production to 7 tons per hectare per harvest time in which there are 135 hectare wide of rice field. With the assumption of 3,8 ton per year (means of rice field product per hectare), the mounting of agriculture product is as it was seen in table 39.

Table 39 : The increase of Agriculture Product (in rupiah)

	Mounting product/year	Price/ton	Total Price (Rp)
- Karang Ploso	350 tons	100.000	35.000.000,-
- Jabung	883 tons	100.000	88.300.000,--
Total			123.300.000,--

If the multiplier is 2,85 the estimation of mounting income because of the investment is Rp. 127.337.000,- (table 8). While the calculation in table 9 the mounting of agriculture product is estimated to be Rp. 123.300.000,- So the project of irrigation canal both in Karang Ploso and in Jabung has the multiplier of 2,85

it can be concluded that there is a real possibility the employees of Karang Ploso worked inefficiently.

Canal project of Karang Ploso demanded the total of HOK 26.516 HOK for the 4.000 meters length of canal or 6.629 HOK/meters length of canal. While the total of HOK in Jabung were 27.825/7.845 meters or 3,546 HOK/meters length of canal.

It is found out that the recruitment of employee in Karang Ploso is multiplied twice compared with that of in Jabung.

c. Materials.

The cost of materials in Karang Ploso was Rp. 5.123.000/4.000 meters length of canal or Rp. 1.280/meters. While the cost of materials in Jabung was Rp. 703/meters length of canal although there are 52 check - dum used in Jabung. As a result, the cost of materials in Karang Ploso is less efficient. (see table 35).

d. Tools.

The cost tools in Karang Ploso was Rp. 270/meters length of canal. While in Jabung was Rp. 45/meters length of canal. The cost of tools in Karang Ploso is also higher, in comparison with, than that of in Jabung.

2. Effectivity.

The project aims at :

- a. Promoting watering system.
- b. Mounting production
- c. Opening job opportunity.

a). Promoting watering system.

The aims at promoting watering system is said to be succesful because the project is able to water rice field of 50 hectare wide and can be cultivated three times a year in Karang Ploso. Before the project the cultivation of the rice field only twice a year.

The project of Karang Ploso is also able to control flood so as to make the subdistrict prevent from being flooded. While the project in Jabung is able to water the rice field of 138 hectare widewell that it can produce 7 tons per hectare.

CONCLUSION AND RECOMENDATION.

1. Efficiency:

There has been observed in the analysis that the irrigation canal in Karang Ploso is not so efficient. If the project in Karang Ploso implemented as efficiently as in Jabung, there will be cost saving such as in table 40.

Table 40 : The saving of cost KARang Ploso Project (in rupiah).

	Cost/ind	Total Cost	Realization	Savings
- Survey	-	139.000	139.200	-
- Survey design	-	110.000	110.000	-
- UPK	2.191 .	8.764.000	14.182.000	5.418.000
- Materials	703	2.812.000	5.123.000	2.371.000
- Tools	45	180.000	1.080.000	900.000
T O T A L		12.006.000	20.635.000	8.629.000

It is estimated in table 10 that total cost of project in Karang Ploso if the activities had been implemented effeciently there would have been Rp. 8.629.000,-- of saving.

If table 1 is observed in which it is impossible to equalize the cost realized and the cost planned to be the same, the consultant estimated that implementation of the project tend to use up all the budget. This was something that strengthened the consultant's idea that the cost of the project can be saved approximately Rp. 8.629.000,- as mentioned above. The effeciency can be achieved by accurate and deliberate planning, especially in calculating the project budget.

2. Effectivity :

In the irrigation canal project in Karang Ploso there seem to be a positive impact in promoting production of 50 hectares of rice field owned by 102 head of families, while the irrigation canal project in Jabung in promoting production of 135 hectares of rice field owned by 236 head of

families. As a matter of fact it can be estimated that each of head of family own only 0,5 hectare, the 0,5 hectare rice field do not need working employee instead of the family of the owner itself.

If the rice field is cultivated to grow rice two or three times a year. The maintenance of irrigation canal will cause the canal containing the water all year.

As a result it makes the rice field be irrigated all time and cultivated during the year.

If the rice field is always cultivated and grown with combined crops the owner needs 10 assistances to cultivate each hectare of the rice field.

Supposing the system works, there will be  $(124 + 50) \times 10 = 1.850$  person employed.

### 3. Intensity.

With the cultivation of rice field all time and growing combined crops, besides it opens job opportunity for around 1.850 person, the owner's income is also mounting so the estimated multiplier of 2,85 will rise without any investment.

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### III. FLOOD CONTROL PROJECT

Three sub project samples were taken to represent output, input purpose and goals of this flood control project. By chance these areas are, Kali Terong located in the Semarang regency, Kali Galeh located in the Semarang regency also, and Kali Daha in the Kandangan regency. The samples were chosen at random.

The Kali Terong project is located in the Ambarawa district in the Semarang regency. From the attached charts it is seen that these projects take place relatively near city areas. The population of the Ambarawa district according to the census taken in 1980 is 71,342 and the district area covers a total of 142 km<sup>2</sup>. In the rainy season which is relatively heavy, usually a part of the area is covered with stagnant water. This stagnant area usually covers 1.21 km<sup>2</sup> or 2,860 people.

The project in Kali Galeh is in the Ambarawa district in the regency of Semarang. This district is also in the vicinity of a city with a population of 71,342 people. (1980). It is hoped the project will include the surrounding area as seen on the chart. According to available statistics about 6.5 km<sup>2</sup> of this area is hit by floods.

This will present the results of the research from the social and cultural aspects, the agricultural aspect and the economic aspect. From each aspect will be forwarded the data that has been collected, the analysis and then the conclusion.

#### A. THE SOCIO CULTURAL ASPECT

At the beginning it was assumed that the PKGB Project would change the social and cultural values held by the local population. But from the research results of the local residents around the PKGB there were basically no signs of any changes. The data which reflects no change will be presented in the first part of this report.

## 1. ANALYSIS OF THE FINDING

Looking at the finding, we can see that basically the flood prevention project using the PKGB did not bring about any cultural change to the local residents. They still held the same cultural values that they had always had, this came about because the making of the flood prevention channel did not contain any new cultural values that could take the place of the old ones.

The only change that came about due to the direct influence of the flood prevention project is the physical improvement in their living conditions which means that the project gave a positive effect to the area where the project was carried out. The local people now have a better economic life making it easier for them to earn more money. The growth of this new economic life is the logical consequence from their better physical life. Other positive influences that can be seen in the local surrounding include the determination of the people to send their children to school to the highest level possible. Looking at these facts it can be seen that the PKGB project has helped to solve some of the problems faced by the local people, the problems that they raced for a brighter future.

## 2. CONCLUSION AND RECOMMENDATION

With all the above findings it can be concluded that the existence of the PKGB flood prevention project was very meaningful for the local people where the project was carried out, especially in the fact that it improved their physical and economic life therefore helping them to a better and brighter, future. Even though these changes are very meaningful they did not in any way affect the cultural values of the local people or affect the way they lived (socially) this project did not "rock" the local people.

With these kinds of facts this project was seen to be a way of raising the prosperous life of the people, in accordance with the aims of the project itself. For the project to be even more productive a follow up action is needed. This involves the maintenance of the project, including intensive understanding of the usage and maintenance of the channel for flood prevention.

Activity to make the more succesful, the participation of all the local people is required. To raise the participation level of the local people must be allowed to join the planning of the project that will be carried out in their area. This is an important point because with their full participation in planning the project they will feel a real part of the project and there will not use any force to get the people work on the project, and no need to get people from outside their area to come in and do the work. In the planning frocess it must be remembered the social stratification of the society and they should not be left behind.

#### B. AGRICULTURAL ASPECT

In this section, as well as in the same section of the irrigation project we want to see also whether the flood control scheme will be able to increase the average yield per hectare and agricultural production, and whether it will be able to increase the efficiency of the farming system in the project area.

As shown in Table 26, the average yield per hectare of paddy of with project's farming system in Ambarawa increased from about 2.3 ton/Ha to 5.2 ton/Ha, an increment of about 130 percent, while that of without project one has increased about 11 percent only. The situation in Daha Utara was the other way round. The with project farms has decreased instead of increased. It has been revealed that the flood control instalation has destroyed by flash flood right after the completion of the subproject. In addition, during the flash flood there were many wild Carabao which incidently occupied the instalation. These in turn was suspected reducing the yield of paddy, and as the result the increment of paddy production in the with project's farms was not significantly different with that of without project's farms (see Table 27).

Table : 26. The average yield per hectare of paddy Flood Control scheme subproject.

I t e m s	Before PKGB (ton / ha)	After PKGB (ton / ha)	Growth rate ( % )
<u>Ambarawa :</u>			
with/project farms	2.265	5.250	131.8
without/project farms	10.450	11.575	10.8
<u>Daha Utara :</u>			
with/project farms	1.833	1.800	-1.8
without/project farms	1.750	1.750	0

Table : 27. The production of paddy Flood Control scheme subproject.

I t e m s	Before PKGB (ton)	After PKGB (ton)	Growth rate ( % )
<u>Ambarawa :</u>			
with/project farms	2.165	6.000	177.1
without/project farms	2.370	6.000	153.2
<u>Daha Utara :</u>			
with/project farms	2.033	3.652	79.6
without/project farms	1.750	3.500	100.0

The Goal :

Although the production of paddy was not significantly improved, the net benefits of the with project farming system has increased considerably.

As shown in Table 28, the net benefits of the with project farming system is about seven times bigger than that of the without project one. Aside from that, it was revealed that.

Table : 28 . The net benefits of the farmers Flood Control project

I t e m s	Benefits (Rp'000)	Costs (Rp'000)	Net benefits (Rp'000)
with/project farms	385.3	265.7	119.6
without/project farms	426.3	409.2	17.1

the subproject has increased employment not only for the farmers but also for the trade people, and in general it has improved the economy of the project area.

#### Analysis

To see whether the flood control scheme could increase the efficiency of the farming system in the project area, a crude B/C-ratio is used to verify this aspect as shown in Table 29, the crude B/C-ratio of the with project farming system is somewhat a little higher than that of the without project one, which means that the flood control scheme is not significantly improved the production of paddy.

Table : 29 . The crude B/C-ratio in the flood control project.

I t e m s	Mean benefits (Rp'000)	Mean costs (Rp'000)	Crude B/C
with/project farms	385.3	265.7	1.45
without/project farms	426.3	409.2	1.04

Through the above-mentioned GPOI logical framework, we can see that the money invested by PKGB project in the flood control scheme subproject is worthwhile to be continued and developed, and benefited not only the people who work for the project, bu also the farmers in the project area, especially with a little more care of the inexpected intruder as occurred in Daha Utara.

Table 30. Total wages paid to laborers for flood control scheme project :

Location	Unskilled labor (%)	Skilled labor, (%)	Group leader (%)	Total (Rp'000)
Kali Terong	88.9	6.0	5.1	17,909.2
Kali Galeh	89.3	4.9	5.7	11,306.8
Daha Utara	94.5	-	5.8	18,864.0
T o t a l :	90.9	3.6	5.5	48,080.0

The total labor involved in the project was 788 persons, of which about 90 percent as unskilled labors, and about four and six percent as skilled labors and group leaders respectively.

The costs for purchasing materials amounted to about Rp. 1.3 million, of which about 65 percent used at Kaliterong, and the other 35 percent at Daha Utama. The costs for survey design and survey was incurred for the subproject at Daha Utara only, of which about 80 percent used for.

Table 31. Costs for purchasing materials in flood control project

K e c a m a t a n	Target (Rp)	Actual (Rp)
Kaliterong .....	836,500	836,500
Laligaleh .....	-	-
Daha Utara .....	435,800	436,800

C. ECONOMIC ASPECT

From the data, the following analysis was made :

1. Efficiency :

a. Total cost :

After counting one by one the survey results the total amount needed for the flood prevention channel can be found, as in the table 30. This table will be compared with the planned total amount as seen in table 37.

Table : 37. The realisation, planned and devaluation total  
(in rp.)

	Realization	P l a n	Deviation
- Kali Terong	35,613,000	35,613,000	0 ( % )
- Kali Galeh	12,592,850	12,592,000	0 ( % )
- North Kali Daha	26,140,000	20,300,000	5,840,000 ( 28 % )

Source : 1. Table 30. 2. D U R P.

From the table we can see something peculiar where the deviation is as large as minus 5,840,000 rp. Whereas the project was paid by the PKGB 100%. The budget for the project was 20,300,000 rp.

The question is where did such a large deficit appear (Rp.5,840,000.-) be covered.

Many of the data differs for the North Kali Daha project, the data was collected in a survey and the results is an table 38.

Table: 38. Total amount for the North Kali Daha :

	Survey	C.T.	Dir.Gen.Office	Sub Dep.
Survey costs	50,000	50,000	50,000	50,000
Design survey	250,000	250,000	250,000	250,000
Physical amount	25,840,000	15,963,000	17,000,000	16,400,000

Source: 1. Table 30. 2. C.T. 3. Office of the Gen.Directorate (Kanditjen). 4. District Office.

From table 38 the total cost for the completion of the project differs from office to office. With this the lowest amount is from the head project office (CT) their figure is 16,263,000rp. Meanwhile the other offices tried to finish the budget amount totalling 20,300,000 (table 37).

If all this is right then the amount to pay for each 1,000 metres is 2,323,000 rp.

Looking at this, the consultants decided that the approximate amount needed for each channel are as follows:

Table 39. Approximate channel payment and economising (in 000 rupiah).

	Survey	amount	Economising
- Kali Terong	35,613	18,584	17,029
- Kali Galeh	12,592	9,292	3,300
- North Daha	26,140	16,261	9,819

Source: 1. Table 30.

2. Amount needed for each 1,000 metres; 2,323,000 rp.

3. Consultants evaluation.

b. Work Force

From table 31 and 32 the insentive amount that was used for the reparation of the flood prevention channel are seen in the following table.

Table 40. Total insentive payment (in rupiah).

	Workers	Foremen	Skilled labour
Kali Terong	12,540	1,201	900
Kali Galeh	16,835	865	463
North Kali Daha	24,360	1,044	-
Total :	28,647	18,163	25,404

Source: 1. Table 31.

2. Table 32.

3. Consultants evaluation..

From table 40 it can be assumed that Kali Terong needs 3.6 rp. insentive payment for every metres of channel, Kali Galeh 4.5 rp. in insentive payment per metres and the North Kali Dana needs 3.6 rp. for each channel metres. Kali Galeh needs the larges insentive amount that is 4.5 rp.

The consultants decided that the incentive payment should be about 300 per metres of the channel. Whereas the payment of 600 rp. to 1,000 rp. per day was held as fair enough.

c. Tools.

The amount paid out for each metres length of the channel in Kali Terong was 105 rp., in Kali Galeh 218 rp., and in the North Kali Daha in came to 62 rp. Even though the amount paid out for tools in the Kali Galeh area was the most at 218rp. for each metres length this is still though to be cheap enough.

2. Effectiveness

The aims of repairing the flood prevention channel are; 1. To smoothen the flow of the water 43%, 2. to improve prosperity 43%, and to control flooding.

a. Smoothening the flow of water.

The smoothening of the flow of water results were considered good. This point is proved by the results of the interviews carried out with the local population and the officials.

b. Improving Prosperity :

The aims of the project to improve the prosperity in the area is proved by :

1) The flood free rice fields in Kali Terong which cover an area of 62 hectares. This results in the raising of harvest by 65 tons a year.

2) The now flood free rice fields in Kali Daha North which cover an area of 750 hectares.

3) The sowing times being improved from once to twice a year.

c. Flood control.

The aims of the project to control flooding in fact were successful and this resulted in the need to repair the roads fell from 5 times a year to 3 times a year in Kali Galeh. Also in Kali Terong the floods were less and the roads became smooth.

### 3. Intensification

From the results of the analysis above it can be said that the hopes of the project to control flooding, smoothen the water flow and improve the income of the local people were successful. And the results of the survey shows an improvement of the harvest in the Kali Terong area as much as 65 tons a year. And in North Kali Daha fields covering 750 hectares were flood free. If each hectares produces 3.8 ton every harvest (national approximate data) then this means an overall improvement of unhulled rice of 2.850 tons.

So the two areas will have additional farming results of 65 tons + 2.850 tons = 2.915 tons.

If the price of the unhulled rice is 100,00 rp. per tons then the resulting income will total 291,000,000 rupiah.

This balance is in line with the estimated improved income of 211,000,000 rupiah as in table 36. So the mutiple figure of 2.85 is seen as fitting.

### Conclusions and recommendation

#### a. Efficiency

From the outcome of the analysis above it is assumed that the insentive fee per metres lenght of the chanel should be between 3.6 and 4.4 per metres lenght of the chanel.

May be the insentive fee needs to be lessened to 3 per metres length of the chanel, by cutting back the workers in each group from 20 people to only 15 people so that the control will be more effective.

Apart from all this the head of each group must be given a target so that time wasting will not be so big.

#### b. Effectiveness

From the outcome of the analysis is can be seen that all the aims of the project were reached. The benefit from the chanel will be enjoyed longer by the local people if the chanel is well looked after. With good maintenance the users of the land will think about

other things that can be beneficial to them from the chanel. Even though there are no investments noticable from the mutiple 2.85 that is the improvement in their income they will still get an additional 211,000,000 rupiah every year.

In another meaning the maintenance of the chanel would be less than 74,000,000 rupiah they will still get an improved 211,000,000 rupiah. The multiple will be greater than 2.85.

c. Intensity

With the positive and useful affects of the chanel the usage of the land will give an overal increase in the income of the farmers that use the land. With this overall improvement every level of the land will give maximum benefits, the usage of the land will increase ; giving an increase in income too. An increase in the income of the agricultural business will also increase the income in other levels such as trade, transport.

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#### IV. FISH POND CANAL PROJECT

Evaluation report of fish pond canal sub project will be similiarly reported as the other. The sequence of the reports will be the social aspect followed by agricultural and economic aspects.

The stress of social analysis will be put on the impacts to value system adhered by people that live around the project. It was supposed that value system adhered by people was motivation of people participation in the project.

Agricultural analysis will be focused to the project's impacts on farm product increased which was benefitted by community. Income increased and employment utility are used to see the economic impacts of the fish pond canal project.

##### A. SOCIO-CULTURAL ASPECT

Data obtained state that fish pond canal project of PKGB did not bring about any changes to the values adhered by community. Since the project did not cover a new value system, some changes in technical system of resource utilization had caused fish production improved.

Culturally, fish pond sub project did not bring about impacats to community, but it had given a good impact to physical condition that caused economic standard of living to raise. It means that this sub project was supposed to cope with social problems.

##### Conclusion and Recommendation

Based on the discussion above, we may draw a conclusion that fish pond canal project of PKGB has improved physical as well as economic condition of the village. The impacts might not have caused socio-cultural values adhered by people to change. There is no cultural deviation within the project areas and the village as a whole.

This is the fact that new style of intensive labour project might be a means to increase social prosperity as stated on the project mission. The following up program, maintenance, is worthwhile. Guidance on fish pond canal utilization and maintenance is required which is particularly related to social lives.

This may be done as people participate in the sub project, maintenance. Such a participation is required to plan the projects which will be implemented within an area. This will encourage people to be self belonging and responsible as to avoid being enforced. It should be born in mind that several aspects should be considered to stimulate people to participate.

#### B. AGRICULTURAL ASPECT

The outputs of the fish-pond canal sub project can be seen as the canal itself. The length of the canal which has been constructed or rehabilitated is about 6,300 meters, about five percent longer than targetted. It was recorded from our survey, that the width of the canal is about three meters, while the depth is about 3.15 meters, and the drainage canal is about 100 meters.

As the result of this work, the area of fish pond has increased from 60 hectare to 80 hectare, an increment of about 30 percent. In addition, it has also increased the intensity of the fish-pond raising. It was revealed, that after the project the intensity has been increased twice.

##### 1. The Purpose

As indicated in the previous sub-sections, the fish-pond area has been increased due to the construction or rehabilitation of the fish-pond canal. Hence, we can see that the PKGB project particularly in this sub project, was able to achieve its purpose, i.e. to increase the area of the fish-pond in the project area. However, it was revealed from our survey that the canal, which has quite beneficial impact on the fish-pond operators, on the contrary have some kind of negative impact on the other farmers.

It was reported that because of the canal, there were many rice-field destroyed by sea-water. This situation, in turn create such kind of social conflict of "cold war", between farmers and the fish-pond operators.

Even though some sort of quasi-social conflict exist, farmers who owned both rice field and fish pond are yet benefitted from the project

From three respondents who has been interviewed, it was revealed that the average net benefit obtained by the formers was amounted to about Rp. 864 thousands, of which about 90 percent derived from rice field, and the rest from fish-pond and because of the relatively low cost of operation, the efficiency of the forming cum fish-pond system in the project area, which is estimated as the crude B/C-ratio, is quite high, i.e., about 3.4. Unfortunately, the data from those without project forms were not available, so that we could not see whether the figure is better than that the without project.

### 3. The Goal

The goal of this sub project is similar to the other sub project of PKGB project, i.e. to increase the income of the formers, or in general, to increase the income of the people in the project area.

As indicated in the previous sub-section, the net benefit of the sample formers mostly derived from rice-field assuming that rice-field.

## C. THE ECONOMIC ASPECT

The survey had revealed several facts indicating the inputs, outputs, purpose and goal of the fish-pond efficiency, intensivement and effectiveness of follows:

### 1. Efficiency

#### a. Total Costs

Total costs to rehabilitate fish pond canal is Rp 17,530,000/ 8,300 meters, or Rp 2,783,000 /1,000 meters. The length of fish canal equivalent Rp 2,783/meters it does not likely cost too much. The distribution of cost covers survey design, incentives (HPK), material, equipment and seeds costs.

#### b. Incentives

Total incentives is Rp 13,845,000 or Rp 2,197/incentive per meters. Total Manday is 24,780 mandays (HOK) (labors), day is Rp 523,-

c. Materials

Total materials costs is Rp 260,000 or Rp 41/m of canal length. The costs is lower but feasible, because fish-pond rehabilitation does not require more materials.

d. Equipment

Total of equipment costs is Rp 825,000 or Rp. 130/m canal length. This cost is feasible.

e. Seeds

Total seed cost is Rp 2,000,000 or Rp 20/one seed. Total seeds required is 100,000. 7,000 seeds are required to insert for 0,5 ha. So there are 21 hectares inserted, the area of fish-ponds is 60 hectares or 36% out of the total fish-ponds.

2. Effectiveness

The goal of this project is to utilize land (40%) dry fish-pond areas (40%) and to facilitate watering/irrigation (20%).

a. Land utilization

The target was achieved as the fish-ponds extended (as the over target). The areas of fish pond before PKGB project 60 hectares, after PKGB project is 80 hectares.

b. Dry fish-pond utilization

The target was achieved to the times harvest, before PKGB project time harvest is once year, after PKGB is twice/year.

c. Watering facilitated

The flow of water is running as the observation was conducted.

3. Intensity

Seeing the target project, 6,000 meters of fish-pond canal, the project realization is over target (6,300 meters). So the utilization of land, dry fish-ponds and irrigation were realized. It cause the income of fish-pond sector to raise vize the increamental income Rp. 189

million. The ratio of former income and and the current income is Rp. 212 million: Rp 294 millions (see table 8), equipment to multiplier 2.85. This multiplier is feasible.

### Conclusion and Recommendation

#### 1. Efficiency

Based on the previous discussion we way draw a conclusion that total mandays (HOK) is less feasible, 4.13 manday/m of canal length. Total manday might have been lowered by reducing the total labor 20 labors to be 15 labors per a head group.

#### 2. Effectiveness

This projects is benefitted by the majority of people, particularly fishery farmers, on one hand. On the hand it did not give an effect to increase farm product. So there sould be an effort to raise the effectiveness under the bases of public interest.

#### 3. Intensity

Seeing the effectiveness, it was expected that increamental investment will be raised.

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## V. RICE TERRACING PROJECT

This rice terracing project was organized with the aims of giving positive elements in the social, economic and agricultural aspects to the local residents around the project site.

In an effort to see the degree of influence of this project to the above mentioned aspects, data was collected from the cultural and social, economic and agricultural effects on the local residents around the project site. The logistic results will be shown in the following paragraphs.

The data collected from this project sample was taken at Random. And by chance the chosen sample was the rice terracing project in the Desa Marga Kaya, Desa Kota Mekar and the Desa Marga Mulya in the district of Teluk Jambe.

The population of the Teluk Jambe district in 1980 was about 81,834. The area covers 2,298.60 Ha.

The first report that will be presented is the social aspect, after that the reported project effects on the socio cultural aspects, the agricultural aspect and finally the economic effects.

### A. SOCIO CULTURAL ASPECT

#### 1. Analysis of the finding :

Looking at the results of the socio cultural mentioned facts it can be seen that the PKGB project for the making of rice terraces did not in any way change the cultural values of the local people. The same values were still held by the people and the ability to keep hold of these values came about because in the making of the rice terraces no new cultural values were introduced. If there was any newness brought about by the project it had something to do with technical methods to till the land in a better way, these methods did not contain any new cultural values.

Even though it did not change any of the cultural values in the local surroundings, the rice terracing project brought about a better physical life for the people. This means that the PKGB project brought with it a positive affect in the area where it was carried out. Other positive elements of the project included the improvement in the villages economical life, which is a direct consequence from the improved physical life style, and this means that the project has solved one of the problems of the local people and that is the bringing about of a better economical life style for the local people.

2. Conclusions and recommendations :

In accordance with the above mentioned facts it can be assumed that the rice terrace project looks as though it brought something meaningful in the area that it was carried out, especially in the improvement of the villages physical life and economic life. Even though these changes were very important for the local people the project never changed the cultural values which the basic way of life for the people in their social activities, until it can be said that the project in no way "rocked" the life of the local people.

With these kinds of facts the PKGB project can be seen as something that improved the prosperity of the local people, in accordance with the aims of the project itself. So that this project could be even more successful, there was a follow up of the project needed.

Including the need to maintain and look after the rice terraces. Including in this intensive study is the maintenance and benefits of the rice terracing project.

So that the above mentioned conditions could be upheld the participation of all the local people is needed. To improve the act of participation of the local people to join the project then they

must have a say in the planning of the project that will be carried out within their area. This is important because as they joint in the planning of the project they will feel that the project is something that belong to them personally, so they will not feel pressured into working on the project by people from outside of their surroundings.

#### B. AGRICULTURAL ASPECT

In summary we would like to present our data which depict the output, purpose and goal of the rice terracing project. The output of the project will be shown by its average area of harvested rice paddy fields, the purpose will be denoted by the average yield per Hectare and the goal will be denoted by the net benefit received by farmers.

##### 1. The Outputs :

The outputs of the rice-field terracing subproject can be seen in term of the extent of the rice-field which has been terraced, and the average area harvested compared to the farms without project.

It was revealed during the survey done by our enumerators that, by terracing the rice field, the area has increased from 20 hectares through 30 hectares, an increment of 50 percent. The construction of rock bed and outlet facilities in this rice-field terracing works has improved the condition of the rice-field.

In addition to that, it has also conserve the soil of the rice field from erosion.

As shown in Table 24 the average area harvested of the with project's farms has been about tripled of the without project farms.

Table : 24. The average area harvested in rice-field terracing subproject

F a r m e r s	Paddy (ha)	Green pea (ha)
with/project farms	2.83	-
without/project farms	0,50	-50

2. The Purpose :

It has been demonstrated in the previous sections that the output of the subproject in term of rice-field hectarage and average area harvested had increased due to the rice-field terracing subproject. However, the subproject did not increased the yield per hectare of paddy but the green pea. As shown in Table 24, the yield of paddy of the with project farms is smaller than that of without project farms, while that of green pea of the with project farms is a little higher than that of the without project one.

Table : 25. The average yield per hectare of paddy and green pea - Rice field terracing subproject.

F a r m e r s	Paddy (ton/ha)	Green pea (ton/ha).
with/project farms	4.7	5.0
without/project farms	'4	'3

Even though the yield per hectare of paddy of the with project farms is a little smaller than that of the without project, the production is still higher. From Table 23, and Table 24 we can see that the production of paddy of the former farms has been about five times bigger than the later one; i.e. about 13 tons compare to about 2.5 tons.

This in turn increase the net benefit of the with project farms as shown in the following section.

The impact of the rice-field terracing works on agriculture in the project area could be seen from the crude B/C-ratio of the farming system in the area. As shown in Table 26, the crude B/C-ratio of the with project farms is much higher than that of the without project. This figure indicates that although the purpose of PKGB in this particular subproject in term of increasing yield per hectare was not achieved, the other purpose in term of increasing efficiency has been achieved considerably.

Table : 26. The crude B/C-ratio in the rice-field terracing subproject

F a r m e r s	Benefits (Rp'000)	Costs (Rp'000)	Crude B/c ratio
with/project farms	1,883.3	297.5	6.3
without/project farms	70.5	193.0	'4

3. The Goal :

It is indicated in the GPOI logical framework for the rice-field terracing subproject that, the goal of the PKGB is to increase the income of the farmers in the project area. To see whether the PKGB project has increased the income, the net benefit of the with project farms has been calculated, and compared to that without project one.

As shown in Table 26, the net benefits obtained by the with project farmers is tremendously bigger than that of the without project farmers.

Table : 27. The net benefits of the farmers in the rice-field terracing subproject :

Farmers	Benefits (Rp'000)	Costs (Rp'000)	Net Benefits (Rp'000)
With/project farms	1,883.3	297.5	1,585.8
Without/project farms	70.5	193.0	-125.5

We can see from the discussion in this section that, although the subproject did not achieve one of its purpose, i.e. to increase the yield per hectare, the other purpose, however, has been achieved. And hence, through considerable increment of the area harvested, the production could be increased, which in turn increased the net benefit of the farmers in the project area.

C. ECONOMIC ASPECT

Our survey on the rice terracing project have revealed some economic facts, considering the input, output, purpose and goal. In short we will present those data denoting the efficiency of the project, effectiveness and intensity.

1. Efficiency :

a. Total Costs :

If we look at table 28, the planned and actual payments are the same. A thing is not possible.

With this the consultants agreed that the project executive tried to finish all the budget that was available for the project, or there were plans that were not carried out because the budget was already finished.

Because the consultants did not receive uncarried out plans data then the first point seems the most possible reason for this happening. Even so the cost of the rice terrace project per hectare was 1,044,000rp. and the cost of each meter of project was 104rp. a cost which is estimated to be quite low.

b. Work force :

The work force costs per WD where the workers/WD was 600rp. and the group leader/WD was 750rp. was thought to be low enough. From the report can be seen that the skilled labourers got 1,200rp and in the plans there was thought to be no need to use this skilled labour.

From table 31 can be seen that 26 019 WD were needed or 1,300 WD per hectare or 0,13 WD per square meter. An efficient work force.

c. Goods :

The costs of the goods reached 3,950,000rp. or 197,000rp. per hectare or 19,70rp. per square meter. (table 32).

This total was also assumed to be low enough.

d. Tools :

Also thought to be satisfactory was the costs of the tools per hectare which came to 42,000rp or 4,20rp. per square meter.

2. Effectiveness :

The aims of the project were to Prevent erosion, utilization of the land, assembling a work force, improving production and raising the people's incomes.

a. Erosion prevention :

The aims of the project were seem to be satisfactory enough. This point is proved by the survey results that no erosion of the land was visible.

This point is sharpened by the restoration of the land which was carried out by the owner.

b. Land utilization :

The aims of the project to utilize the land can also be said to be satisfactory, where the area of the land at the beginning was 20 hectares and after the project this became 30 hectares; a rice of 50%.

c. Assembling of a work force :

The aims of the project to enable the assembling a work force, until this time are not visible. This is because the benefits of the land cannot be felt yet, because the farmers have not yet found an ideal plant to grow in the land.

d. Improved production and increased incomes :

With the inability in the use of the land for farming the improved production and increased incomes have not yet come about.

3. Intensity :

From the results of the analysis above it is proved that the rice terracing project cannot yet bring about an increase in income. With this the multiple national figure of 2.85 will not come about in this project, the benefits from this project are in the land used for farming. So the increased income only lasted as long as the project was being carried out.

C. CONCLUSION AND RECOMMENDATION

1. Efficiency :

From all the above points it is analysed that the carrying out of the project is already efficient enough, even though there is a peculiarity in the fact that the planning and actual amounts were 100% the same.

2. Effectiveness :

While this rice terracing project was efficient it was not effective. It will only be seen as effective if the rice terraces can produce something.

The wet rice fields in Krawang are dependent on rain. Therefore sowing can only take place in the rainy season. Because of this the consultants decided that the sown crop must be a sturdy one that wouldn't die even in the dry season. Crops such as rambutan, belimbing and jambu for example.

The choice of the sturdy crop must be with the help of the government, who can find the most ideal crop to plant in accordance with the kind of land that they have in Krawang. The crop Lamtorogung lives thrives on the edge of these wet rice fields, as well as helping to prevent erosion. The Lamtorogung plant can also be used for animal fodder.

So what is wrong with planting a large part of these rice fields with Lamtorogung and the owners change from being farmers to become animal farmers.

As well as the Lamtorogung being planted the consultants also decided that the dependent rice fields could also be used to plant grass (*Pennisetum Purpureum*) or elephant grass to be animal fodder. This kind of grass can be stored, so in the rainy season the grass grown which grows very well can be cut and stored for food for the animals during the dry season. ( It is called silage or hay ). With this system the animal farmers will have enough grass to last for the whole year.

### 3. Intensity :

It has already been stated that the only aim of the project was the prevention of erosion. Whereas the other aims of the project including the utilization of the land, the assembling of a work force and the improvement in production and an increase in income cannot as yet be carried out. These aims will be realized as soon as the land can be used for something.

In paragraph 2 the consultants decided that the rice terracing project was not unconditionally meant for the crop farming. But the wet rice terracing was also ideal for livestock and the fodder which they need. Such as lamtorogung and elephant grass. For the elephant grass one hectare could produce 50 tons of grass per year.