

ECONOMIC IMPACT ANALYSIS OF KECAMATAN DEVELOPMENT PROGRAM INFRASTRUCTURE PROJECTS



Prepared by:
Anthony Torrens
Email: toro1@pacific.net.id
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Executive Summary

Introduction

The Government of Indonesia's KDP began its operations in 1998. Implemented by the Ministry of Home Affairs, Community Development Office (PMD), KDP successfully completed its first phase of operations (1998-2002) and is now finishing the first year of Phase Two (2002-2006). KDP's goals are to: (i) alleviate poverty by raising rural incomes; (ii) strengthen local government and community institutions; and (iii) improve good governance. The Program gives power to communities by placing funds and the planning and decision-making process directly in the hands of villagers. Village groups come together to plan local projects and submit two to three proposals for consideration at an inter-village forum. The selected projects are then funded through block grant transfers. Villagers themselves implement sub-projects and manage the funds. Approximately 70% of KDP Phase 1, and 66% of KDP Phase 2 funds were used for village infrastructure; the remainder was invested in education, health and micro-credit activities. KDP1 supported over 50,000 activities.

KDP2 operations began in early 2003 in 1,115 kecamatan and involved about 22,800 villages spread across the country. Subproject implementation was largely completed by April of 2004 in Java and most other areas (excluding Papua) by June 2004.

Objective of the Economic Impact Analysis Study

The Government of Indonesia and the World Bank commissioned this independent study to conduct a post-construction economic impact analysis on 113 KDP rural infrastructure projects to determine the overall economic benefits that have accrued to the villages that planned and built infrastructure facilities according to the KDP Community Driven Development approach.

In accordance with the Consultant's TOR, the study has been limited to four types of KDP infrastructure, i.e. (i) Roads, (ii) Bridges, (iii) Water Supply and (iv) Irrigation. These four types of infrastructure were chosen because they have been shown over time to be the dominant types of infrastructure requested by KDP villages across Indonesia. In KDP 1 these four categories of infrastructure represented approximately 70% of overall village-level investments with a total value of Rp 1,253,018,601,090 (US\$136,941,923.00 - US\$1.00 = Rp 9,150). In KDP 2 they represented 66% of overall investments with a total value of Rp 1,052,628,385,178. (US\$115,041,353.00)

Scope of Work - Economic Impact Analysis Study

This study expands on the scale and scope of the initial economic analysis that was completed for 41 KDP projects in November 2001 under KDP 1. That study was limited to calculating Economic Internal Rates of Return only. In contrast, this study focuses on three main activities:

- (1) Assessing tangible benefits by calculating the Economic Internal Rates of Return for the four types of KDP rural infrastructure;
- (2) Analysing the overall macro-economic impact of new income generated by KDP infrastructure activities within the local village economies by using (i) a General Income Multiplier Analysis and (ii) Project-Specific Quality of Life Indicators to capture certain intangible benefits that have accrued since the project's completion; and
- (3) Undertake a Least-Cost Analysis by re-costing KDP infrastructure projects using local contractor rates to determine what the same project would cost if tendered out by local government to local contractors.

The TOR also specified that the projects analysed should consist of approximately fifty percent that had been built during KDP Phase I, while the other fifty percent should have been built during KDP Phase II.

The provinces were selected that had a broad range project results ranging from problematic to quite good, and covering both KDP I and KDP II. Given the large number of projects completed in Java alone, it was decided to allocate two study teams to East Java to balance the overall number of projects analysed in recognition of this statistical reality. The provinces selected were:

1. East Java;
2. North Sumatra;
3. South Sulawesi; and
4. N.T.T.

Results of the Economic Impact Analysis Study

This independent study has shown that KDP's CDD approach to infrastructure development has had very significant impacts on the economies of the villages analysed. This analysis has measured those impacts, both quantitatively and qualitatively, with the following instruments:

- Economic Internal Rates of Return
- General Income Multiplier
- KDP vs Contractor Cost Comparison
- Project-Specific Quality of Life Indicators
- Basic Technical Quality Review

The aggregate result, as shown in the tables for each instrument, is a strong endorsement of KDP's comparative advantage in village infrastructure development if compared to the centralized top-down approach that has been the norm in Indonesia for over 30 years.

The EIRR Analysis in the table below shows the EIRRs for each type of infrastructure averaged over 4 provinces.

Economic Internal Rate of Return – 4 Provinces, 113 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	41	38.62%
Roads/ Bridges	55	51.84%
Irrigation	17	67.64%
Total Projects	113	Av. 52.70%

There were also 8 projects that produced EIRRs of over 100% due to extra-ordinarily large benefits. These projects were not included in the calculation of averages shown above due to the risk of major distortions.

In most cases these very large benefits resulted from either entirely new economic activities that were made possible by KDP infrastructure, or suppressed/latent production capacity that was finally able to secure access to local markets. The most frequently seen examples were roads that provided access to previously isolated villages where, before the road, all produce had to be hand carried or carried in small amounts on motor cycles for kilometres before reaching the nearest market.

Likewise, a number of irrigation projects were able to more than double the area under cultivation as well as channel water from local springs during the dry season. In some cases this resulted in triple benefits: (1) additional area cultivated; (2) two crops per year instead of one; and (3)

increased fertility due to timely watering. The resulting increases in yields per hectare were very significant.

A table summarizing these projects and the reasons why they produced such large benefits is included at the end of the EIRR section in the main report.

The General Income Multiplier was used to assess the broader macro-economic impact of the funds spent by KDP infrastructure projects as they circulated within the village economies. The General Income Multiplier is a very useful and flexible economic tool for quickly assessing the impact of small to medium size projects or businesses on relatively small communities. It provides an indicative, or General Multiplier which is calculated by estimating the disposable incomes and spending patterns of key groups within a community.

The table shown below is a consolidated summary table for all four provinces. The table consists of 5 data columns. From left to right:

1. The type of infrastructure;
2. the number of projects analysed for each type of infrastructure;
3. the multiplier itself;
4. the additional value of the multiplier if converted into cash; and
5. the total project cost (including *swadaya*) of all 113 projects analysed by type of project.

General Project Income Multiplier – 4 Provinces, 113 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	41	1.143	633,730,114	4,914,301,345
Roads/ Bridges	55	1.180	1,124,376,465	7,874,248,178
Irrigation	17	1.173	311,306,718	1,790,319,769
Total Projects	113	1.165	2,069,413,297	14,578,869,282

The most interesting aspect of the four province summary table above is the total additional value represented by the multiplier. The cash injected into the 113 village economies by the KDP projects generated additional value equivalent to Rp2,069,413,297 or US\$ 226,165 (US\$ 1.00 = Rp 9,150). When compared to the total value of all 113 projects (including the value of village contributions, or *Swadaya*) this amount is very significant.

The size of the Multiplier basically depends on the number of turn-over events (commercial transactions) that take place within a local economy. Unfortunately, almost 100% of the high-end building materials used in KDP projects like cement, steel reinforcing and pipes and fittings were only available from sub-district (*kecamatan*) level suppliers, or district (*kabupaten*) level suppliers. If the scope of the multiplier analysis had been extended to the sub-district (*kecamatan*) level, the resulting multiplier would have been significantly higher.

The Cost Comparison undertaken during this analysis was designed to determine what the same infrastructure would have cost had it been constructed by local government contractors instead of KDP. Each of the five field teams undertook a detailed re-costing (with the help of local officials and FKs) of the project proposals prepared by each KDP village using local government (*Pemda*) unit costs and local contractor costs. This method was considered to be the most objective and accurate way of comparing the construction costs of a KDP project with those of a technically comparable project built by local government contractors. Below is a summary table showing the results of the Cost Comparison.

KDP vs Pemda Cost Comparison – 4 Provinces, 113 Projects

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	41	4,101,268,770	6,704,995,650	66.04
Roads/ Bridges	55	6,547,034,660	10,349,768,540	58.70
Irrigation	17	1,669,110,053	2,269,372,345	42.72
Total Projects	113	12,317,413,483	19,324,136,535	Av. 55.82

The table above shows estimated Pemda/contractor construction costs compared to KDP funded project costs only. It compares actual cash spent and does not include the *swadaya* component of each village proposal.

The Cost Comparison analysis showed savings of Rp 7,006,723,052 or US\$ 765,762 because villages mobilized their own labour and other resources to build the projects themselves. If these figures alone are extrapolated to the total number of infrastructure projects constructed by KDP I and KDP II, even with considerable discounting to allow for problem projects, the total impacts in terms of additional economic value and cost savings would be quite significant.

The Project-Specific Quality of Life Indicators clearly showed a high level of direct and indirect benefits accruing to these projects. There were also a significant number of intangible impacts captured by these indicators that resulted from the projects. From 113 projects 62 (55%) were ranked by villagers as “*Sangat Dirasakan*” (Impacts Strongly Felt). 46 (41%) were ranked as “*Dirasakan*” (Impacts Felt) and 5 projects (4%) were ranked as “*Kurang Dirasakan*” (Impacts Barely Felt). In other words 108 projects (95%) were ranked by the villagers who built them as having impacts that were either ‘Strongly Felt’, or ‘Felt’ on a daily basis.

Villagers were asked if they had either experienced these impacts and benefits themselves, or if they had seen others in the village that had.

The Consultant designed a simple scoring system based on the number of hits a project scored in the “Present” and “Expected” columns in the questionnaire combined with the “Level of Importance” attached to each of the indicators selected by the villagers interviewed. Based on this scoring system a project that scored 80% or above was ranked as “*Sangat Dirasakan*” (Impact of the project was strongly felt within the village). A score of between 60% to 79% ranked as “*Dirasakan*” (Impact of the project was felt in the village). And a score of less than 60% ranked as “*Kurang Dirasakan*” (Impacts from the project were barely felt within the village).

The Quality of Life impact rankings received for all of the 113 projects surveyed are shown by type of infrastructure in the table below.

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	33	17	3
Water Supply	20	20	2
Irrigation	9	9	
Total	62	46	5

A Basic Post-Project Technical Quality Review of basic project management parameters was also conducted on all 113 of the KDP projects surveyed. However, given the generally low level of

technical complexity involved in these projects, and the economic focus of the TOR, the Consultant saw very little benefit in conducting an exercise in second-guessing the technical basis on which these projects were designed and finally constructed. Instead the technical evaluation of the projects was based solely on the standards for technical quality and project management that the villagers set for themselves. These basic standards are implicit in each village project proposal and are also the basis on which the NMC monitors the progress of each KDP project.

The Consultant distilled these standards into eight simple evaluation criteria that became the basis of a questionnaire that was used by the Consulting team. A simple scoring system was then used to provide a ranking for the project ranging from “*Baik*”, “*Cukup Baik*” to “*Kurang Baik*”. A project that scored 80% or above was ranked as “*Baik*” (Very Good/All technical criteria met). A score of between 60% to 79% ranked as “*Cukup Baik*” (Good/Technically Acceptable). And a score of less than 60% ranked as “*Kurang Baik*” (Not Good/ Technically Unacceptable). The technical ranking achieved for all of the 113 projects analysed are shown by type of infrastructure in the table below.

Basic Review of Technical Quality and Project Management – 113 Projects

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	29	25	
Water Supply	19	19	3
Irrigation	6	8	4
Total	54	52	7

When comparing the individual provinces it is interesting to note that 106 out of 113 projects achieved rankings of either Very Good or Good. Surprisingly, N.T.T. had the largest number of highly ranked projects. It is also interesting to note that no road project was ranked as *Kurang Baik*/ Technically Unacceptable.

Other issues impacting on economic benefits to KDP villages

Maximizing benefits by selecting the right type of infrastructure

The 8 cases where projects produced very high EIRRs are good examples of villages selecting the most appropriate types of infrastructure for their needs. In most cases the choice of infrastructure was painfully obvious because the main cause of the village’s poverty and hard living conditions could easily be traced to the need for a road to end the village’s isolation and provide it with access to markets for its products. Likewise, for irrigation projects where large areas of available and productive land were lying idle simply for the want of water.

The right mix of economic factors needed to maximize benefits

It was noted by all field teams that in general the KDP verification process guided villagers through a good strategic planning process which was led by capable facilitators. As a result villagers made the right choice of what type of infrastructure to build.

However, this process could be streamlined and professionalized by providing FKs with the benefit series used in EIRR analysis for each type of infrastructure. These could then be used as a checklist to ensure that no potential benefits have been overlooked. More importantly these benefits can be used as the basis for village level surveys that can be used to support a particular course of action. However, FKs would need additional training to undertake this.

The importance of appropriate design and routine maintenance to maintain benefits

All the consulting teams were in agreement that the most pressing post-construction issue that now needs to be addressed comprehensively by KDP management is maintenance. In many villages hard won benefits are in real danger of eroding to pre-project conditions, especially for roads. Perhaps the biggest problem observed with post-construction maintenance arrangements was that very little serious thought was given to the high repair costs that will arise periodically as natural wear-and-tear begins to take its toll. Costs of repairs for roads and water systems were significantly underestimated. Even where fees were collected for water usage, they were barely enough to provide minimal honorariums for appointed village workers, let alone to cover the purchase of tools and sections of pipe of other high cost items.

For the villages analysed, it was clear that the O&M burden, especially for roads, is too great for the majority of villages to shoulder because major repairs usually need materials and in some cases heavy equipment which must be paid for with cash. The resources available in these villages cannot cover the cost of repairs within the first 5 to 10 years because incomes are just beginning to increase due to the benefits accruing from the new infrastructure. Based on the above findings the Consultant has made detailed proposals in section 8.3 of this report for future consideration and discussion.

The importance of good leadership and the role of Technical Facilitators

There has been considerable debate recently within certain central government agencies about the need to add Technical Facilitators (*Fasilitator Kecamatan Teknis - FKT*) to villages where there is only an empowerment facilitator. The fundamental issue at stake appears to be whether the additional overhead they represent outweighs the extra value-added they bring. As a result of this on-going debate, the Consultant was also asked to gather information and informally assess the relative value-added of the FKTs, and their overall contribution to successful KDP projects.

If KDP is going to continue to invest approximately 75% of its total disbursements in infrastructure projects, then simple logic would tend to suggest that there needs to be a sufficient number of technical specialists present in the field with the training and experience to assist villages in the design and construction of these projects. Below is a short list of examples, based on direct observation by field teams, that supports the continued presence of Kecamatan Technical Facilitators in KDP villages:

- (a) Field teams concurred that the very significant increase in the quality and accuracy of project proposals (*RAP*) between KDP I and KDP II was directly attributable to additional technical support; in particular the presence of a Technical Facilitator.
- (b) Many examples were seen where site-specific problems such as bad soils, difficult terrain, materials selection and structural strength issues greatly increased the level of construction difficulty. In most cases, these problems were overcome by FKTs who possessed the advanced technical skills required.
- (c) Field teams observed that where two FKs (one Technical and one Empowerment) were working together, the KDP process appeared to progress more smoothly. This was especially so when activities such as tendering for the supply of materials or services demanded that FKs work very long hours.
- (d) The division of labour mentioned above, was also important where micro-credit activities were present in the villages. The additional administration involved in managing micro-credit groups was considerable.
- (e) FKs and KM.Kab are expected to comply with quite significant reporting requirements. Being able to share this administrative burden between two people helped considerably to reduce stress levels among the FKs.
- (f) It was clear that dedicated FKs (Technical or Empowerment) accepted a high level of responsibility. They were aware that the expectations and hopes of villagers for a successful outcome were ever present, and that to a large degree the success or failure of

projects rested mainly with them. This reality combined with the technical and administrative duties they had to perform created a high level of work related stress. The presence of a second person gave facilitators someone to discuss their problems with and clearly helped to reduce stress levels.

The role of Village Heads (Kepala Desa) and District Heads (Camat)

It should be mentioned at this point that the strong support given to the FKTs and FKPs by enthusiastic village heads (*Kepala Desa*) and district heads (*Camat*) was clearly instrumental in their success. All of the consulting teams noted the strong support and detailed knowledge that *Kepala Desa* and *Camats* had of KDP activities.

The only exception to this situation was registered by the consulting team that visited South Sulawesi's Tana Toraja Kabupaten. A number of *Camats* in this area complained that no funds were allocated by KDP for their participation, or that of their staff.

The consulting team that visited N.T.T was warmly welcomed by all the *Camats* and without exception received requests for continued KDP assistance. The refrain most frequently heard was, "we still have many more desperately poor villages in need of help".

Summary and Conclusions

This independent study has shown that the KDP approach to village infrastructure development has had significant impacts on the economies of the villages analysed. The aggregate result, as shown in the tables for each instrument, is a strong endorsement of KDP's comparative advantage in infrastructure development if compared to the government's long established top-down approach.

The results produced by the EIRR analysis showed a more than acceptable average return over 113 projects of 52.7%. It should be mentioned at this point that the calculations for the benefit series used in this analysis were based on quite conservative estimates and substantial discounting to allow for seasonal variations in rural incomes. Even with such conservative calculation practices the returns that accrued to these projects indicated that significant benefits had accrued.

For the 113 projects analysed quantifiable additional value of Rp 2,069,413,297 or US\$226,165 was identified through the General Multiplier analysis, and average savings of 55.82% resulted from the KDP vs Contractor Cost Comparison. If these figures were extrapolated to the total number of infrastructure projects built during KDP 1 and 2, even after substantial discounting to allow for problematic projects, the resulting savings and additional value would be quite significant.

The Project-Specific Quality of Life Indicators clearly showed a high level of direct and indirect benefits accruing to these projects. There were also a significant number of intangible impacts captured by these indicators that resulted from the projects. From 113 projects 62 (55%) were ranked by villagers as "Sangat Dirasakan" (Impacts Strongly Felt). 46 (41%) were ranked as "Dirasakan" (Impacts Felt) and 5 projects (4%) were ranked as "Kurang Dirasakan" (Impacts Barely Felt). In other words 108 projects (95%) were ranked by the villagers who built them as having impacts that were either 'Strongly Felt', or 'Felt' on a daily basis.

Overall the technical quality of the projects was considered generally acceptable by the villagers who built them. When comparing the individual provinces it is interesting to note that 106 (93.8%) out of 113 projects achieved rankings of either Very Good or Good. Surprisingly, N.T.T. had the largest number of highly ranked projects. It is also interesting to note that no road project was ranked by any village as *Kurang Baik*/ Technically Unacceptable.

1. Introduction & Brief Overview of the Consultant's Scope of Work

1.2 Scope of Work - Economic Impact Analysis Study

This study expands on the scale and scope of the initial economic analysis that was completed for 41 KDP projects in November 2001 under KDP Phase One. That study was limited to calculating Economic Internal Rates of Return only. In contrast, this study focuses on three main activities:

- (1) calculating the Economic Internal Rates of Return for four types of KDP rural infrastructure;
- (2) analysing the overall macro-economic impact of KDP infrastructure activities at the village level by using a General Income Multiplier Analysis and Project Specific Quality of Life Indicators to capture certain indirect and intangible benefits; and
- (3) re-costing KDP infrastructure projects using local contractor rates to determine what the same project would cost if tendered out by local government to local contractors.

The Study TOR also specified that the projects analysed should consist of approximately fifty percent that had been built during KDP Phase I, while the other fifty percent should have been built during KDP Phase II.

Provinces were selected that had a broad range of project results ranging from problematic to quite good, and covering both KDP I and KDP II. Almost all the projects selected had a total value of between Rp 70 million to Rp 200 million. This was done to maximize the ability of the analysis instruments to quantify and capture the widest possible benefits. Given the large number of projects completed in Java alone, the decision was taken to allocate two study teams to East Java to balance the overall number of projects analysed in recognition of this statistical reality. The provinces selected were:

5. East Java;
6. North Sumatra;
7. South Sulawesi; and
8. N.T.T.

Two-person teams consisting of an economist, and a technical specialist with prior knowledge of KDP projects and procedures, was assigned to each province. The minimum number of projects to be analysed was initially agreed at 100. However, due to better than expected cooperation in some provinces the field teams were able to increase the number to 113 projects.

The TOR elaborates on the three main activities mentioned above and refers to them as "Study Components". Although these components are separate fields of analysis, they are inter-related in terms of the Study's main objective which is to produce a more comprehensive macro-economic analysis of benefits accruing to KDP villages. With this in mind, the 3 study components were supported by analysis instruments designed to capture the widest possible range of benefits accruing to KDP villages that built their own infrastructure.

Study Component 1: Calculation of Economic Internal Rate of Return (EIRR)

This study component was undertaken for all 113 rural infrastructure projects selected in East Java (Malang and Probolinggo areas), North Sumatra, South Sulawesi and N.T.T. (Flores and Timor). The types of rural infrastructure for which EIRRs were calculated were the four main KDP infrastructure types as stated above: (i) Roads; (ii) Bridges; (iii) Irrigation; and (iv) Water Supply Systems.

Study Component 2: Calculation of Economic Impact of KDP Rural Infrastructure on the Villages Surveyed

The second component of the study attempts to quantify the overall economic impact that KDP infrastructure projects have had on village economies. Determining the economic benefits from increased local expenditures resulting from development activities is important. This is especially so when the main advantage of the KDP approach has clearly been to maximize local participation. This “participation” also includes the amount of funds actually getting into the hands of the village communities receiving the block grants; and to what extent those funds circulate within the village economies.

General Income Multiplier Analysis

For this reason the decision was taken to use a General Income Multiplier Analysis to assess the broader economic impact of the funds spent by KDP projects as they circulated within the local village economies. The General Income Multiplier is a very useful economic tool, but it is limited to tracking cash transactions in the local economy and quantifying the additional economic activity that the new cash stimulates as it circulates. The Multiplier is not able to capture the impact of certain indirect benefits, especially certain intangible benefits, that may accrue to a local community as a result of new infrastructure. For this task a number of project-specific Quality of Life Indicators were designed.

Project-Specific Quality of Life Indicators

Quality of Life Indicators attempt to identify the presence of certain tangible and/or intangible benefits that might be expected to accrue after the completion of one of the four types of infrastructure built by KDP. However, as the title suggests, the indicators selected for this study have been closely linked to the anticipated, or assumed local benefits, that might be expected to accrue to a KDP village as a result of new infrastructure.

The survey questionnaire basically attempts to establish three things:

1. Has the anticipated benefit been “felt” by the village;
2. if not, was the benefit expected or hoped for when the project was proposed; and
3. what degree of importance is attached to the anticipated benefit by the local community.

Points 2 and 3 above indicate the general level of participation and consultation that preceded the technical planning prior to building the infrastructure. Most of the survey questions are designed to establish the presence of economic benefits that would be expected to accrue as a result of the new infrastructure and additional income injected into the local economies by the KDP projects. As stated above, this analysis tool is also designed to provide an additional perspective to the General Income Multiplier analysis by identifying certain consumption and economic behaviour patterns among villagers.

According to field reports and previous household survey studies, villagers state that the following economic benefits accrue due to KDP infrastructure:

For roads and bridges:

- Increase in transport businesses
- New businesses opening due to increased traffic on roads and improved access to areas
- Decrease in transport costs to bring agricultural produce to market
- Greater access to schools, health facilities, markets, and town centers
- Time savings due to improved ease of travel and transport

For irrigation facilities:

- Increased agricultural production

For water systems:

- Time savings due to better access to water sources, especially for women

The Quality of Life Indicators and EIRR analysis were designed to capture and quantify most of these benefits.

Study Component 3: Comparison of Village-Level Infrastructure

Re-costing of KDP project proposals

The third component of the study attempted to make a cost comparison between KDP village infrastructure and other village infrastructure funded through normal local government programs, and built by local contractors. Once again, the comparison was only for KDP's four most popular types of infrastructure (roads, bridges, irrigation; and water systems). As with the other analysis tools mentioned above, approximately 50% of the sample consisted of infrastructure built during KDP Phase I, and 50% built during KDP Phase II.

This analysis was done by conducting a detailed re-costing of the project proposals prepared by each KDP village using local government (*Pemda*) unit costs and contractor costs. This was done to determine what the same infrastructure would have cost had it been constructed by the local government.

Basic Post-Project Technical Review

This review of basic project management parameters was also conducted on all 113 of the KDP projects surveyed. However, given the generally low level of technical complexity involved in these projects, and the economic focus of the TOR, the Consultant saw very little benefit in conducting an exercise in second-guessing the technical basis on which these projects were designed and finally constructed. Instead the technical evaluation of the projects was based solely on the standards for technical quality and project management that the villagers had set for themselves. These basic standards are implicit in each village project proposal and are also the basis on which the NMC monitors the progress of each KDP project.

A simple scoring system was then used to provide a ranking for the project ranging from “*Baik*”, “*Cukup Baik*” to “*Kurang Baik*”. A project that scored 80% or above was ranked as “*Baik*” (Very Good/All technical criteria met). A score of between 60% to 79% ranked as “*Cukup Baik*” (Good/Technically Acceptable). And a score of less than 60% ranked as “*Kurang Baik*” (Not Good/ Technically Unacceptable). The technical ranking achieved for all of the 113 projects analysed are shown by type of infrastructure in section 7.

2. Methodology and Analysis Tools Used

As stated above, KDP's primary mission is poverty alleviation. Therefore the Consultant's methodology had to be capable of compiling evidence that shows whether or not measurable progress has been made in accordance with this mission. The Consultant has selected four main economic analysis tools, and one technical quality instrument, to measure the type and scale of economic benefits that could be expected to accrue to the KDP villages surveyed.

The diagram overleaf attempts to show how the analysis instruments measure the aggregate contribution of the economic benefits that have accrued from the infrastructure projects. The total impact of these benefits should provide evidence of measurable progress, both quantitatively and qualitatively, towards poverty alleviation in villages that built infrastructure using KDP's Community Driven Development (CDD) approach.

2.1 Prices and conversion factors

For purposes of this analysis project costs and all calculations were done in constant prices. Given the small scale nature of the projects, their wide distribution throughout Indonesia and the fact that substantial community contributions (*swadaya*) were made, it was not possible to accurately estimate conversion factors for specific items. Therefore, all costs (except labour provided by the communities) and benefits were converted into economic values by using the standard conversion factor for Indonesia which is estimated to be 0.8. This factor also took into account production costs for most crops and primary goods.

Labour (working days) provided by the communities were converted into economic values by using the same conversion factor for labour (0.1352) used by the previous economic analysis study in November 2001. This factor effectively valued the "economic cost" of one working day at Rp 1,388 per day.

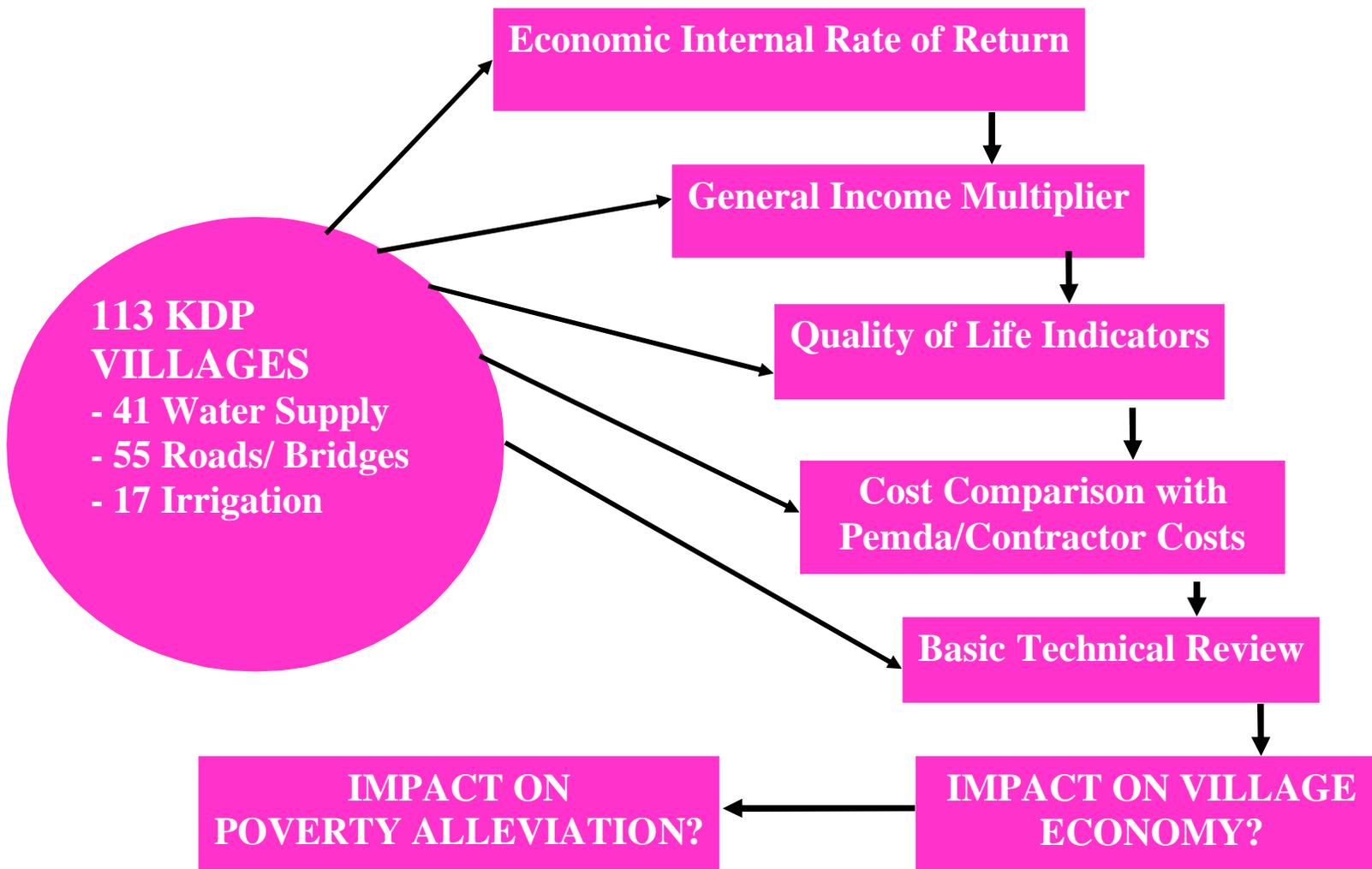
2.2 Economic least cost and cost effectiveness analysis

The KDP approach to constructing infrastructure is by nature highly customized and adaptable to conditions in each village. Technical Facilitators (FKTs) try to accommodate the needs of the people while at the same time produce a technically acceptable piece of infrastructure that will produce the benefits expected, and within the limitations of the funds available

The Consulting teams witnessed in virtually every village a process that attempted to balance 4 main factors:

1. The amount of funds allocated to a village after it had been awarded the project.
2. The needs of the people expressed in terms of beneficiaries and benefits expected.
3. The technical specification required to deliver those needs and benefits.
4. The compromises that had to be made to get the most value from the funds available.

In nearly all cases the villagers wanted to stretch the technical limits of the project to increase the beneficiaries and the overall benefits. In many cases material costs had risen over time beyond the initial budgets, or previously unknown field conditions (like bad soils) forced an increase in construction costs. This financial gap was nearly always closed with *swadaya* contributions, both in the form of materials, but more commonly labour. The natural "tension" that was produced by this process, i.e. to squeeze the most value out of every rupiah, tends to make each KDP project an automatic "Least Cost Option". However, a number of unfortunate technical short-cuts were taken in some villages with road-side drainage to achieve the desired cost savings.



3. Overview of Economic Impact Analysis for 113 Villages

From its inception, the primary objective of the Kecamatan Development Program has been poverty alleviation. Accordingly, the primary objective of this study has been to find and quantify evidence in the 113 KDP villages surveyed to prove that measurable progress has indeed been made towards alleviating poverty in these villages. This has been done mainly by assessing the economic impacts of selected KDP infrastructure projects on the local village economies where these projects were constructed.

As stated in the section above on the Consultant's Scope of Work, the study team attempted to determine the overall economic impact of these small infrastructure projects by using 4 main indicators of direct and indirect benefits, i.e. EIRR, General Income Multiplier, Quality of Life Indicators and a Re-Costing exercise to determine if KDP projects are more cost effective than similar projects constructed by local governments (*Pemda*).

Based on the results compiled to date from the 113 villages studied, there is no doubt whatsoever that these infrastructure projects have brought with them significant economic benefits for the villages that were analysed. In some cases the results were quite striking. It is also clear from the data collected during hundreds of interviews that measurable benefits such as significantly increased household incomes and improved quality of life have accrued to varying degrees to all of the 113 villages surveyed.

However, at this point it should be mentioned that the benefits recorded in the villages analysed are due in no small part to four key elements of the KDP approach that the study team observed to varying degrees in every village. These operational elements were observed to be instrumental in the success of the KDP projects analysed. They are:

1. a strong feeling of communal ownership and responsibility for the successful completion of the infrastructure constructed, and for any post-construction maintenance; (*It was found that villagers enthusiastically committed themselves during the planning stages to providing large amounts of swadaya labour to cover future maintenance burdens. However, they clearly did not think this through. Despite good intentions swadaya labour alone proved to be useless without money to pay for materials or equipment that was previously covered by KDP funds.*)
2. a relatively transparent management approach to all technical and financial decisions regarding the project, from its earliest conception to detailed implementation issues;
3. continual assistance and support from the Kecamatan Facilitators who guided villagers through the KDP approach and its procedures, and tried to ensure that the technical quality of the projects was acceptable and that each village got the best value for the money spent; and
4. good overall support from village heads and district heads (*Camat*) who provided formal leadership within the communities and worked closely with the FKs to give important official credibility to the whole KDP process.

Wherever the study team observed an economically successful project, all four of these elements were present, albeit to varying degrees.

4. Findings from the EIRR Analysis

Basically EIRR analysis attempts to measure benefits like cost and time savings, and opportunities afforded to increase personal incomes accruing to those directly impacted during the lifetime of the infrastructure project. Normally the World Bank and Asian Development Bank insist on an EIRR greater than 12% before they will consider a project to be economically viable. With the exception of only two (2) water projects, all of the 113 projects analyzed produced rates of return above 12%.

It was clear from the beginning of this study that the relatively small investments involved in KDP infrastructure would tend to produce relatively high EIRRs when compared to the large benefits that could be expected in some cases. Although the Consulting team did encounter 8 projects where the EIRRs were very high due to unusually high benefits, the EIRR still proved to be a valuable and valid analysis tool. As the study methodology indicated, it was necessary to combine the EIRR analysis with the other instruments to put the EIRR results into the correct macro-economic context and provide a more complete picture of the project's impacts.

However, just because the EIRR formula produced very large benefits for 8 projects doesn't mean that the benefits were not real, or the projects concerned are not worthy of special attention. Details from the 8 projects are shown separately in a table at the end of this section. These projects are also good examples of a community based decision making process that was supported by capable facilitators and village officials. They also show what can be achieved when all the right economic factors fall into place

4.1 Using EIRR analysis to evaluate KDP infrastructure projects

The EIRR calculation formula is a modified version of the Financial Internal Rate of Return calculation. However, this analysis tool is used to evaluate commercial projects with routine and measurable cash flows which are balanced or amortized against the initial capital investment, maintenance costs and routine debt servicing, to produce a rate of return for the project. In a commercial setting the benchmark for viability is simply a Rate of Return above the prevailing bank interest rates.

Unlike commercial projects, the infrastructure projects built in KDP villages are not designed to be financially sustainable or profit making (with the possible exception of cost recovery objectives for some water projects). Therefore they are assessed by using Economic Internal Rates of Return which calculate the broader (non-cash) benefits that accrue to these projects. Examples of the benefits measured to calculate EIRRs are listed below:

1. Water Supply:

- Time savings in collecting water.
- Cost savings in obtaining water.

2. Roads and Bridges:

- Time savings due to faster transportation.
- Increase in the value of land adjacent to the new road.
- Cost savings from personal travel.
- Cost savings due to more efficient transportation of goods to market.
- New employment in the transport sector.

3. Irrigation:

- Incremental increase in the value of agricultural land serviced by the new irrigation works.
- Incremental increase in incomes due to better harvests resulting from reliable water supply.
- Savings from avoiding damage to buildings and crops due to flooding.

Although many of the benefits shown above can be valued in financial terms, they are not collected in the form of cash, and they do not accrue in one place, or to one individual or institution. Instead they are distributed among individual households within relatively large communities. Benefits accrued in this manner cannot produce measurable and reliable cash flows that can be used to amortize the initial cost of capital. There is also no debt service to consider since these projects were financed by grants that do not have to be repaid. However, this does not make the benefits any less real, it just means they have to be accounted for in economic terms and not in purely financial terms.

One problem encountered during this study was that the EIRR calculation formula produces quite high rates of return when relatively small capital investments result in very large returns over a short period of time. In a commercial situation returns are produced in the form of cash, but when returns are measured in non-cash terms such as incremental time savings or increased harvest yields, the benefits begin to accrue as soon as the project is finished; or at the latest over the period of one harvest season. They then continue to accrue at the same rate because the conditions of production have been permanently altered by the new infrastructure.

When very large benefits accrue the EIRR calculation can produce returns well in excess of 100%. Returns of this magnitude are very rare in normal circumstances where large investments are involved and amortized over 20 years or longer. Most of the KDP infrastructure projects analysed by the field teams ranged between Rp 60 million to Rp 250 million, and for purposes of this analysis it has been assumed that they have an average operational lifetime of 10 years. However, when (in one actual example) this size of investment subsequently produces benefits of over Rp900 million in increased crop production (even after production and transport costs have been subtracted) and time savings during the first year alone - even after substantial discounting for seasonal and commodity price fluctuations - then very high rates of return are produced.

As previously mentioned, the field teams encountered 8 projects (2 in North Sumatra and 6 in N.T.T) where the EIRRs were extremely high due to very high benefits. These EIRRs have been treated as anomalies and separated from the other projects for purposes of general analysis and to prevent distortions to the study's overall results, especially where derived statistics such as averages needed to be produced. A special table detailing the results of these 8 projects and the reasons for the very high rates of return has been included at the end of this section. However, the separate treatment of these projects should in no way detract from the fact that very real and significant benefits did accrue to the 8 villages. These benefits were not only captured by the EIRR analysis, but also by the Multiplier Analysis and the Quality of Life Indicators. The table below shows the EIRRs for each type of infrastructure averaged over 4 provinces.

Economic Internal Rate of Return – 4 Provinces, 113 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	41	38.62%
Roads/ Bridges	55	51.84%
Irrigation	17	67.64%
Total Projects	113	Av. 52.70%

Irrigation projects

The table above shows that irrigation projects consistently produced the highest benefits. This was due to two main factors. Firstly, the area of land under cultivation was in many cases more than doubled. Thereby, producing very large increases in the total amount of rice harvested. Secondly, the reliable supply of non-rain dependent water (local springs) enabled two harvests per year instead of one. In many cases the availability of reliable water also had a significant impact on fertility resulting in even higher yields. Of the 8 projects mentioned above that produced EIRRs in excess of 100%, 3 of them were irrigation projects.



Road projects

The largest benefits accruing to roads projects came from time savings and significantly increased sales of agricultural products. All roads projects produced consistently high EIRRs. This is not surprising given the relative isolation of most of the villages that built the 55 road projects analysed. Many of these roads had quite dramatic impacts on facilitating the transportation of locally produced commodities and agricultural products. Commodities that previously rotted on the trees, or were simply ignored due to insurmountable transport difficulties, are now being taken to markets in significantly increased volumes.



The time required for some villagers to walk to the nearest main road or market centre before the KDP roads were built, was quite surprising. The worst case was a village in Timor where it took over 6 hours to walk to the nearest kecamatan market centre.

However, on average the KDP roads analysed by the Consultant changed a 2 hour walk into a 30 minute ride. The relatively large number of other benefits that can accrue to roads, as shown on Page 14, also helped to push up the final rate of return for many roads projects. Of the 8 projects mentioned above that produced EIRRs in excess of 100%, 5 of them were road projects.

Water Supply

Of the main benefits that normally accrue to water projects; (i) time savings for collecting water, and (ii) cost savings in obtaining water, were by far the largest benefits recorded during the study. For purposes of calculating EIRRs time savings are converted to 'work days saved' to determine the approximate value of the opportunity cost of time that was previously spent collecting water. As stated above, for the purposes of this study the Consultant used an economic conversion factor of Rp 1,388 per day for valuing one working day. This is the same factor that was used in the previous study completed in 2001.



In many of the villages surveyed (especially in N.T.T. and South Sulawesi) very long journeys had to be made to collect water. The negative impact this had on local productivity was substantial,

ranging from less time spent on productive activities such as tending to gardens, orchards and livestock, to children coming very late for school or missing school altogether. Many of these factors were captured by the project-specific Quality of life Indicators which were designed to complement the EIRR analysis. It should also be remembered that much of the burden for collecting water falls on women and children.

The summary table above for all 4 provinces is followed by another set of tables below for each of the 4 provinces surveyed. As previously stated, 2 teams were assigned to East Java province (Malang and Probolinggo areas) in recognition of the large number of projects completed in Java. These tables also show the average EIRR for each type of infrastructure.

Economic Internal Rate of Return – East Java, Malang 20 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	9	28.43%
Roads/ Bridges	11	46.82%
Irrigation	0	0.0
Total Projects	20	

Economic Internal Rate of Return – East Java, Probolinggo 20 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	6	36.40%
Roads/ Bridges	8	47.41%
Irrigation	6	66.38%
Total Projects	20	

Economic Internal Rate of Return – South Sulawesi, 27 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	11	33.07%
Roads/ Bridges	11	47.40%
Irrigation	5	85.09%
Total Projects	27	

Economic Internal Rate of Return – North Sumatra , 25 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	9	34.14%
Roads/ Bridges	12	33.28%
Irrigation	4	70.88%
Total Projects	25	

Economic Internal Rate of Return – Nusa Tenggara Timur, 21 Projects

Type of Infrastructure	No. Projects	Average EIRR
Water Supply	6	61.07%
Roads/ Bridges	13	62.01%
Irrigation	2	48.30%
Total Projects	21	

As previously mentioned at the beginning of this section, 8 KDP infrastructure projects produced EIRRs of over 100%. The average rate of return for all 8 projects is 333.71%. The table below gives a basic description of these projects and describes the reasons why they produced such high rates of return.

Projects That Produced Internal Rates of Return >100%

Village Location	Infrastructure	KDP Phase	EIRR	Reason for High EIRR
Nrth. Sumatra Kab. Humbang Hasudutan Kec. Polung Ds. Pandumaan	Irrigation	KDP I	141.28%	Additional area irrigated by the project was 50% more than the previous area and reliable water enabled 2 harvests instead of one each year. Extra water also increased fertility and yield per hectare. This amounted to more than a 2.5 fold increase in previous production.
Nrth Sumatra Kab.Humbang Hasudutan Kec. Pantai Labu Ds. Denai Lama	Irrigation	KDP I	103.26%	Additional area irrigated by the project was 50% more than the previous area and reliable water enabled 2 harvests instead of one each year. This amounted to more than a 2 fold increase in previous production.
N.T.T. Kab. Kupang Kec.Kupang Timur Ds. Merdeka	Roads	KDP I	830.00%	Large trucks can now carry out hundreds of tons of salt that previously had to be hand carried or on motor bikes. Sales of shrimp and fish have also increased more than five times for the same reason.
N.T.T Kab. Kupang Kec.Amarasi Ds. Ponain	Roads	KDP I	501.50%	Large trucks can now carry out hundreds of tons of high quality limestone gravel every week from a new quarry. This is used locally for roads. Previously the quarry area could not be accessed.
N.T.T Kab. Ende Kec. Ende Ds. Watusipi	Roads	KDP I	213.00%	No vehicles could reach this village before the KDP road. Large amounts of cash tree crops which previously had to be hand carried for over 2 hours now take 15 mins by truck or motor bike. Newly planted tree crops coming on line increased these benefits further.
N.T.T Kab. Kupang Kec.Amarasi Barat Ds. Toobaun	Roads	KDP I	128.40%	No vehicles could reach this village before the KDP road. Large numbers of cattle are now collected by outside trucks and tree crops which previously had

				to be hand carried for over 3 hours now take 15 mins by truck or motor bike.
N.T.T Kab. Kupang Kec. Takari Ds. Heuknutu	Roads	KDP I	548.30%	No vehicles could reach this village before the KDP road. Large numbers of cattle and pigs are now collected by outside trucks and tree crops which previously had to be hand carried for over 4 hours can now be taken to market in large volumes by trucks or motor bike in 15 to 30 minutes.
N.T.T Kab. Kupang Kec. Amarasi Ds. Nonbes	Irrigation	KDP I	203.00%	Additional area irrigated by the project was double the previous area and reliable water enabled 2 harvests instead of one each year. Extra water also increased fertility and yield per hectare. Minimal investment in relatively inexpensive canals resulted in a more than 4.5 fold increase compared to previous production.
8 Projects			Av.334%	

5. Findings from the General Income Multiplier Analysis

The General Income Multiplier Analysis was used to assess the broader macro-economic impact of the funds spent by KDP infrastructure projects as they circulated within the village economies. The General Income Multiplier is a very useful and flexible economic tool for quickly assessing the impact of small to medium size projects or businesses on relatively small communities. It provides an indicative, or General Multiplier which is calculated by estimating disposable income, and most importantly, the spending patterns of key groups within a community.

Once calculated the general multiplier produced can then be used as a tool for estimating the additional economic activity, or additional value, that new cash injected from an external source - like a KDP project - stimulates as it circulates within the village economy. However, it needs to be emphasised that the general multiplier is limited to tracking cash transactions in the local economy. It is not able to capture the impact of certain indirect benefits, especially intangible benefits that may accrue to a local community as a result of new infrastructure. Project-specific Quality of Life Indicators were designed for this task.

The tables shown below consist of a consolidated summary table for all four provinces, and individual summary tables with the same data for each province. Each table consists of 5 data columns. From left to right they are:

1. The type of infrastructure
2. The number of projects analysed for each type of infrastructure;
3. The multiplier itself;
4. The additional value of the multiplier if converted into cash; and
5. The total project cost (including *swadaya*) of all 113 projects analysed by type of project.

General Project Income Multiplier – 4 Provinces, 113 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	41	1.143	633,730,114	4,914,301,345
Roads/ Bridges	55	1.180	1,124,376,465	7,874,248,178
Irrigation	17	1.173	311,306,718	1,790,319,769
Total Projects	113		2,069,413,297	14,578,869,282

The most interesting aspect of the four province summary table above is the total additional value represented by the general multiplier. Or in other words, the cash injected into the 113 village economies by the KDP projects generated additional value equivalent to Rp 2,069,413,297 or US\$ 226,165 (US\$ 1.00 = Rp 9,150). When compared to the actual total value of all 113 projects (inclusive of village contributions, or *Swadaya*) this amount is very significant.

The interesting thing to note about the general multipliers calculated for these villages is that they can also be used to estimate additional value accruing from any other external cash source because the basic spending patterns of villagers have already been established. The multipliers shown above, and in the tables that follow, are fairly characteristic of the limited ability of the village economies surveyed to make use of extra income to stimulate additional economic activity. Recalculating the multiplier at appropriate intervals would also be a good way to see how individual village economies have matured economically over time.

Basically the larger the multiplier, the more cash circulates within the local economy, bringing with it more opportunities to create wealth. Circulation of money in a multiplier analysis is expressed as turn-over, or transaction events, where a sale has taken place. The more turn-over events that take

place, the more the money circulates, and the larger the multiplier. In the villages surveyed very little money remained in the village after workers spent their earnings at local kiosks or warungs to buy food and household essentials. In other words most of the money “leaked” out after the first turn-over event. In virtually all cases, the amount of money re-spent within these village economies by kiosks and warungs was very small. Most of their income was used to buy stock from outside the village. Money spent outside the village economy constitutes “leakage”.

The analysis teams expected to find a considerable amount of money spent on purchasing locally sourced building materials like sand, rocks and wood. This would add considerably to any multiplier. But such purchases turned out to be very rare indeed. In N.T.T. and North Sumatra every single village analysed donated such materials to the project to increase the *Swadaya* component. This was done to maximize each village’s ranking in the inter-village KDP competition so that their project proposals would have a better chance of winning. This made perfect sense of course within KDP’s competitive project selection system.

However, for purposes of accelerating local economic development and maximizing the general multiplier, the key factor is to maximize the number of turn-over events that take place within a local economy. Unfortunately, almost 100% of the high-end building materials used in KDP projects like cement, steel reinforcing, pipes and fittings were only available in sub-district (*kecamatan*) level shops, or district (*kabupaten*) level shops. If the scope of the multiplier analysis had been extended to the sub-district (*kecamatan*) level, the resulting multiplier would have been significantly higher.

To illustrate this point it is interesting to compare the multipliers of each province, and their equivalent cash value compared to the total value of the projects analysed. South Sulawesi is the only province in the study where KDP villages regularly purchased locally sourced building materials with KDP funds. As a result, the cash equivalent value of the multiplier compared to the total cost of the projects built was much higher (26%) for South Sulawesi than the other provinces.

In both areas of East Java a small number of villages also purchased locally sourced building materials with KDP funds. The impact on the multiplier was also significant, as was the cash equivalent value of the multiplier compared to the total cost of the projects (12%). However, in both N.T.T. and North Sumatra none of the villages purchased building materials with KDP funds. So their multipliers only registered the funds injected into the village by payments to labourers and the 3% administration costs allocated for the Village Implementation Team (TPK). The relative amounts can be seen below:

1. South Sulawesi 26%
2. East Java – Malang 12%
3. East Java – Probolinggo 12%
4. North Sumatra 8%
5. Nusa Tenggara Timur 7%

Below are the Multiplier summary tables for each province. The significantly larger multipliers produced in South Sulawesi can clearly be seen in these tables.

General Project Income Multiplier – East Java, Malang 20 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	9	1.149	69,444,877	906,491,252
Roads/ Bridges	11	1.212	184,591,902	1,098,745,353
Irrigation	0		0	0
Total Projects	20		254,036,779	2,005,236,605

General Project Income Multiplier – East Java, Probolinggo 20 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	6	1.115	75,010,523	835,795,117
Roads/ Bridges	8	1.168	129,814,000	853,635,473
Irrigation	6	1.146	77,386,578	527,205,433
Total Projects	20		282,211,101	2,216,636,023

General Project Income Multiplier – South Sulawesi, 27 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	11	1.297	370,928,247	1,485,876,113
Roads/ Bridges	11	1.320	502,879,367	1,742,957,435
Irrigation	5	1.252	153,783,327	644,472,791
Total Projects	27		1,027,590,941	3,873,306,339

General Project Income Multiplier – North Sumatra , 25 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	9	1.092	81,342,322	1,099,863,233
Roads/ Bridges	12	1.117	157,711,267	1,975,106,544
Irrigation	4	1.153	53,880,853	423,415,400
Total Projects	25		292,934,442	3,498,385,177

General Project Income Multiplier – Nusa Tenggara Timur, 21 Projects

Infrastructure	No. Projects	Av. Multiplier	Rp Equivilant	Total Project Cost
Water Supply	6	1.063	37,004,145	586,275,630
Roads/ Bridges	13	1.085	149,379,929	2,203,803,373
Irrigation	2	1.144	26,255,960	195,226,145
Total Projects	21		212,640,034	2,985,305,148

6. Findings from the Re-Costing Exercise

As stated above, one of the tasks assigned to this analysis was to determine what the same infrastructure would have cost had it been constructed by the local government contractors instead of KDP. Each of the five field teams undertook a detailed re-costing of the project proposals prepared by each KDP village using local government (*Pemda*) unit costs and contractor costs.

This method was considered to be the most objective and accurate way of comparing the construction costs of a KDP project with those of a technically comparable project built by local government contractors. Initially it was proposed to search for physically similar projects built close to KDP projects, and then attempt to compare them in terms of construction costs and technical quality. After further investigation it was clear that this approach was fraught with problems; some of which were:

- Endless debates over comparing standard building methods and technical specifications normally used by Pemda (which are often over-engineered) with those of the more customized but technically acceptable KDP approach.
- Arguments over what might appear to be sub-standard construction by government contractors.
- The reluctance of local governments and local contractors to open their books for such an analysis.

In the interests of a fair and objective comparison it was decided to undertake a detailed re-costing of the technical proposals prepared by each village. The two sets of tables below show estimated Pemda/contractor construction costs compared to KDP funded project costs. That is, project costs funded by KDP funds only, and total project costs with the *swadaya* component fully costed and added to the KDP funded figure. The Data Summary Tables for each province attached in Appendix 2 also show both sets of figures.

It should also be noted that the additional value of *swadaya* contributions (mainly in the form of labour) also represent very significant savings. The field teams saw numerous cases where the *swadaya* component was the crucial factor in enabling many villages to complete their projects and achieve their beneficiary targets. There were also many cases (especially in N.T.T.) where it would have been extremely difficult for the local governments to justify the very high cost of employing a contractor to build the infrastructure that was finally completed with KDP assistance and local *swadaya* labour.

Numerous factors like isolated locations, double and triple handling of materials and frequent on-site design modifications all conspire to make it virtually impossible for commercial contractors to compete with KDP on a cost basis, especially in isolated locations with difficult terrain.

The consolidated 4 province summary table below shows clearly the cost savings achieved through KDP's community-driven development approach. In reality, the additional value that these savings represent has already been invested by the villages in the form of additional kilometres of roads, extra lengths of water pipe or more hectares of agricultural land irrigated.

KDP vs Pemda Cost Comparison

KDP vs Pemda Cost Comparison – 4 PROVINCES, 113 PROJECTS (Without Swadaya)

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	41	4,101,268,770	6,704,995,650	66.04
Roads/ Bridges	55	6,547,034,660	10,349,768,540	58.70
Irrigation	17	1,669,110,053	2,269,372,345	42.72
Total Projects	113	12,317,413,483	19,324,136,535	Av. 55.82

KDP vs Pemda Cost Comparison – 4 PROVINCES, 113 PROJECTS (With Swadaya)

Infrastructure	Projects No.	KDP Cost Plus Swadaya Cost	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	41	4,914,292,345	6,704,995,650	36.43
Roads/ Bridges	55	7,837,539,177	10,349,768,540	32.05
Irrigation	17	1,838,083,770	2,269,372,345	23.46
Total Projects	113	14,589,916,292	19,324,136,535	Av. 30.64

KDP vs Pemda Cost Comparison – East Java, Malang 20 Projects (Without Swadaya)

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	9	589,439,981	1,031,877,190	75.10
Roads/Bridges	11	900,402,105	1,507,250,299	67.40
Irrigation	0	0	0	0
Total Projects	20	1,489,842,086	2,539,127,489	

KDP vs Pemda Cost Comparison – East Java, Malang 20 Projects (With Swadaya)

Infrastructure	Projects No.	KDP Cost Plus Swadaya Cost	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	9	906,491,252	1,031,877,190	13.80
Roads/Bridges	11	1,098,745,353	1,507,250,299	37.20
Irrigation	0	0	0	0
Total Projects	20	2,005,236,605	2,539,127,489	

KDP vs Pemda Cost Comparison – East Java, Probolinggo 20 Projects (Without Swadaya)

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	6	699,658,492	1,072,773,242	53.30
Roads/Bridges	8	727,187,463	1,153,151,495	58.60
Irrigation	6	518,969,534	718,581,733	38.50
Total Projects	20	1,945,815,489	2,944,506,470	

KDP vs Pemda Cost Comparison – East Java, Probolinggo 20 Projects (With Swadaya)

Infrastructure	Projects No.	KDP Cost Plus Swadaya Cost	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	6	835,795,117	1,072,773,242	28.40
Roads/Bridges	8	853,635,473	1,153,151,495	35.10
Irrigation	6	574,969,434	718,581,733	25.00
Total Projects	20	2,264,400,024	2,944,506,470	

KDP vs Pemda Cost Comparison – South Sulawesi, 27 Projects (Without Swadaya)

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	11	1,287,457,632	1,840,334,698	42.90
Roads/Bridges	11	1,543,723,240	2,117,150,372	37.10
Irrigation	5	595,475,794	721,937,018	21.20
Total Projects	27	3,426,656,666	4,679,422,088	

KDP vs Pemda Cost Comparison – South Sulawesi, 27 Projects (With Swadaya)

Infrastructure	Projects No.	KDP Cost Plus Swadaya Cost	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	11	1,485,867,113	1,840,334,698	23.90
Roads/Bridges	11	1,742,957,435	2,117,150,372	21.50
Irrigation	5	644,472,791	721,937,018	12.02
Total Projects	27	3,873,297,339	4,679,422,088	

KDP vs Pemda Cost Comparison – North Sumatra , 25 Projects (Without Swadaya)

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	9	1,008,101,619	1,900,364,066	92.50
Roads/Bridges	12	1,630,318,492	2,388,046,248	48.00
Irrigation	4	387,784,900	542,852,807	39.80
Total Projects	25	3,026,205,011	4,831,263,121	

KDP vs Pemda Cost Comparison – North Sumatra , 25 Projects (With Swadaya)

Infrastructure	Projects No.	KDP Cost Plus Swadaya Cost	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	9	1,099,863,233	1,900,364,066	74.40
Roads/Bridges	12	1,975,106,544	2,388,046,248	20.40
Irrigation	4	423,415,400	542,852,807	28.30
Total Projects	25	3,498,385,177	4,831,263,121	

KDP vs Pemda Cost Comparison – Nusa Tenggara Timur, 21 Projects (Without Swadaya)

Infrastructure	Projects No.	KDP Cost Only (No Swadaya Cost)	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	6	516,611,046	859,646,454	66.40
Roads/Bridges	13	1,745,403,360	3,184,170,126	82.40
Irrigation	2	166,879,825	286,000,787	71.40
Total Projects	21	2,428,894,231	4,329,817,367	

KDP vs Pemda Cost Comparison – Nusa Tenggara Timur, 21 Projects (With Swadaya)

Infrastructure	Projects No.	KDP Cost plus Swadaya Cost	Cost Pemda (Contractor Price)	Av. Difference %
Water Supply	6	586,275,630	859,646,454	46.60
Roads/Bridges	13	2,167,094,372	3,184,170,126	46.90
Irrigation	2	195,226,145	286,000,787	46.50
Total Projects	21	2,948,596,147	4,329,817,367	

During KDP 1 the four types of infrastructure analysed in this study represented about 70% of the total village level investments with a total value of Rp1,253,018,601,090. (US\$136,941,923. - US\$1.00 = Rp9,150). During KDP 2 the same four types of infrastructure represented about 66% of total village level investments with a total value of Rp1,052,628,385,178. (US\$115,041,353. - US\$1.00 = Rp9,150). If the average percentage of the cost savings estimated for the 113 projects analysed (55.82%) is extrapolated to the infrastructure investments made during KDP 1 and 2, then the savings that accrued to KDP villages would be approximately:

KDP 1 : Rp 699,434,983,100 (US\$76,440,981. - US\$1.00 = Rp 9,150)

KDP 2 : Rp 587,577,164,500 (US\$64,216,083. - US\$1.00 = Rp 9,150)

Due to the location specific factors that were so dominant in re-costing projects, all 5 of the analysis teams sort assistance with re-costing from either local public works (*Kimpraswil*) officials who were familiar with contractor prices, or from local Kecamatan Facilitators who were also very familiar with local construction costs and contractor practices. The results, as shown in the tables above, were well worth the effort and showed very clearly KDP's comparative cost advantage.

The re-costing exercise also proves that the KDP approach has an important role to play in filling the gap between what local government considers economically viable, and non-viable infrastructure projects. Local governments constrained by very limited local budgets (*PAD*) and continued dependence on Central Government APBN funding, have been forced to choose infrastructure projects carefully. More often than not their priorities are focused on areas closer to large urban settlements that are perceived to be commercially more important, and therefore likely to produce greater macro-economic returns for the money spent. Obviously small isolated villages do not rank very highly within these types of macro-economic priorities. In most cases the best they can hope for is that a major arterial or collector road will pass by a few kilometres from them.

However, just because isolated rural villages are difficult to accommodate in local government economic planning does not mean they have been forgotten. On the contrary, assisting poor rural communities has become a major political issue at the local level, especially since the start of regional autonomy. The dilemma has always been the trade-off between investing in more rapid growth by concentrating resources in what are perceived to be more productive urban areas verses supporting poor rural communities.

While the later is very politically correct and attracts a lot of talk in local legislatures, the reality of local politics and limited budgets is that highly populated areas always attract the lion's share of local budgets. However, the relative success of the KDP approach has not gone unnoticed and many District (*Kabupaten*), Metropolitan and Provincial Governments have tried to imitate the KDP approach in their attempts to find more cost-efficient methods of developing rural areas.

These numerous KDP "Copy-Cat" projects are further proof that the approach obviously has considerable merit, and has a significant role to play in extending development to long neglected

rural areas. Unfortunately, most local governments trying to imitate this approach have insisted on maintaining many of the flawed project implementation structures and management practices that gave birth to the alternative KDP approach in the first place. The results have been predictable.

7. Findings from the Project-Specific Quality of Life Indicators

As previously stated, Quality of Life Indicators are used to identify the presence of certain indirect and intangible benefits that might be expected to accrue after the completion of a certain type of infrastructure project. Characteristically, quality of life indicators are difficult to quantify in monetary terms, but the benefits they attempt to capture are often acutely felt by those who live with the daily hardships that KDP projects try to overcome, or at least minimize. As the title suggests, the indicators selected for this study are closely linked to the anticipated, or assumed local benefits that might be expected to accrue to a KDP village for certain types of projects.

The survey questionnaire used attempted to establish three things:

- was the anticipated benefit “felt” by the village;
- if not, was the benefit expected or hoped for when the project was initially proposed; and
- what degree of importance was attached to the anticipated benefit by the local community.

The indicators used were designed to establish the presence, or otherwise, of certain benefits and impacts that could be expected to accrue as a result of new infrastructure and additional income injected into the local economy after the completion of KDP projects. As stated above, this analysis tool was designed to provide an additional qualitative perspective to the multiplier and EIRR analyses. The survey was successful in identifying certain consumption and economic behaviour patterns among villagers in response to the additional income they received as a result of the new KDP infrastructure, both in terms of wages received from the project, and from increased household incomes accruing from other benefits made possible by the new infrastructure.

The indicators selected may appear simple at first glance, but they indicate the presence of an economic chain reaction within each village that has been initiated by the construction of new infrastructure. As one benefit is identified, it can be assumed, or anticipated that it will naturally cause the emergence of other benefits in a kind of economic cause-and-effect impact. The key factor in designing this kind of analysis tool is to select as accurately as possible the first benefit in the chain of anticipated cause-and-effect. Therefore, if the first benefit used in the list of indicators is present then one can assume that the rest of the anticipated benefits will follow sooner or later resulting in significant improvements in the quality of life for the residents of the village.

The field teams targeted three main groups for interviews: (i) The village implementation teams and village head; (ii) villagers who had worked as labourers on the project and their wives; and (iii) villagers who were economically active as traders or successful farmers and had information about commodity prices, business trends and local development issues.

Perhaps the most revealing of these indicators with regard to the relative success of the projects is the “**Level of Satisfaction**” expressed by the hundreds of villagers interviewed about the benefits they received from the infrastructure they built. The short table below summarizes this simple but highly significant indicator by infrastructure type.

Level Of Satisfaction expressed with the results of the Project

Infrastructure Type	Very Satisfied <i>Sangat Puas</i>	Satisfied <i>Puas</i>	Less Than Satisfied <i>Kurang Puas</i>	Unsatisfactory <i>Tidak Puas</i>
Roads/Bridges	28	27		
Water Supply	21	19	1	1
Irrigation	10	7	1	
Total	59	53	2	1

Overwhelmingly the villagers interviewed said that they were either “Very Satisfied” or “Satisfied” with the results of the projects. The two water supply projects in Malang and Flores, and the irrigation project in South Sulawesi that scored “*Kurang Puas*” and “*Tidak Puas*” were clearly the exception. The poor results recorded for the projects in Flores and South Sulawesi resulted from management problems and poor technical support. The low approval rating for the project in Malang was due to funding constraints which limited the beneficiaries to only 40 households. Many villagers had hoped more households would benefit.

It is interesting to note that the 2 problem projects mentioned above were not supported by Technical Facilitators (FKTs). Both were built with the help of local Village Technical Workers (*Tenaga Teknis Desa*) only.

It is also interesting to note that the overwhelming number of indicators that had “hits” in the “Present” column (for all the infrastructure types) were also given a high level of importance by respondents; either “Very Important” (*Sangat Penting*) or “Important” (*Penting*). This shows that the indicators were appropriate and relevant. It is also important to note that the high number of “hits” in the column for “Expected” (*Diharapkan*) shows that villagers had carefully thought through the benefits that they expected to get from these infrastructure projects. This level of awareness and understanding clearly indicates a high level of general participation during the inter-village meetings (*MAD*) where the projects were conceived and eventually selected.

A simple scoring system was designed based on the number of hits a project scored in the “Present” and “Expected” columns combined with the “Level of Importance” attached to each of the indicators selected by the villagers interviewed.

Based on this scoring system a project that scored 80% or above was ranked as “*Sangat Dirasakan*” (Impact of the project was strongly felt within the village). A score of between 60% to 79% ranked as “*Dirasakan*” (Impact of the project was felt in the village). And a score of less than 60% ranked as “*Kurang Dirasakan*” (Little impact from the project was felt within the village).

The quality of life impact rankings received for all of the 113 projects surveyed are shown by type of infrastructure in the table below.

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	33	17	3
Water Supply	20	20	2
Irrigation	9	9	
Total	62	46	5

The quality of life impact rankings received for each of the 4 provinces analysed are shown by type of infrastructure in the tables below.

Nusa Tenggara Timur

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	10	2	
Water Supply	5	1	
Irrigation	2		
Total	17	3	

East Java – Probolinggo

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	6	2	
Water Supply	4	2	
Irrigation	3	3	
Total	13	7	

East Java - Malang

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	4	5	2
Water Supply	2	6	1
Irrigation			
Total	6	11	3

North Sumatra

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	12		
Water Supply	9		
Irrigation	4		
Total	25		

South Sulawesi

Impact of The Project felt within the Village

Infrastructure Type	Impact Strongly Felt <i>Sangat Dirasakan</i>	Impact Felt <i>Dirasakan</i>	Impact Barely Felt <i>Kurang Dirasakan</i>
Roads/Bridges	1	8	1
Water Supply		11	1
Irrigation		6	
Total	1	25	2

Consolidated summary sheets for all 4 provinces by infrastructure type and using the same formats as the individual village survey questionnaires are attached in Appendix 3. The numbers in the boxes represent the “hits” that each indicator received from all of the 113 projects analysed.

8. Findings from the Basic Technical Review

As explained above, a review of basic project management parameters was also conducted on all 113 of the KDP projects analysed. However, given the generally low level of technical complexity involved in these projects the technical evaluation was limited to verifying whether the standards for technical quality and project management set by the villagers themselves had actually been adhered to. These basic standards are implicit in each village project proposal and are also the basis on which the National Management Consultant monitors the progress of each KDP project.

These were distilled into eight simple evaluation criteria that became the basis of a questionnaire that was used by the Consulting team. The criteria used covered the following project management issues:

- Was the project constructed according to technical specification?
- Although the technical spec may not have been followed exactly, were results still acceptable?
- Are modifications or additional work still needed to complete the project?
- Was the project constructed according to the agreed budget?
- Was construction completed on schedule?
- Were beneficiary targets for the project achieved?
- Have provisions for routine or periodic O&M been put in place?
- Were agreed project management and administration procedures followed?

A simple scoring system was then designed based on the number of hits a project scored in the “YES” and “NO” columns. These hits were allocated points and then given rankings in accordance with the scoring system outlined below.

A project that scored 80% or above was ranked as “*Baik*” (Very Good/All technical criteria met). A score of between 60% to 79% ranked as “*Cukup Baik*” (Good/Technically Acceptable). And a score of less than 60% ranked as “*Kurang Baik*” (Not Good/ Technically Unacceptable). The technical ranking achieved for all of the 113 projects analysed are shown by type of infrastructure in the table below.

Basic Review of Technical Quality and Project Management – 113 Projects

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	29	25	
Water Supply	19	19	3
Irrigation	6	8	4
Total	54	52	7

When comparing the individual provinces it is interesting to note that 106 out of 113 projects achieved rankings of either Very Good or Good. Surprisingly, N.T.T. had the largest number of highly ranked projects. It is also interesting to note that no road project was ranked as *Kurang Baik*/ Technically Unacceptable.

The technical ranking achieved for each of the 4 Provinces analysed are shown by type of infrastructure in the tables below.

Nusa Tenggara Timur

Basic Review of Technical Quality and Project Management

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	11	1	
Water Supply	4	1	1
Irrigation	2		
Total	17	2	1

East Java – Probolinggo

Basic Review of Technical Quality and Project Management

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	4	4	
Water Supply	6		
Irrigation	2	4	
Total	12	8	

East Java - Malang

Basic Review of Technical Quality and Project Management

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	7	4	
Water Supply	3	4	2
Irrigation			
Total	10	8	2

North Sumatra

Basic Review of Technical Quality and Project Management

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	2	10	
Water Supply	1	8	
Irrigation	2	2	
Total	5	20	

South Sulawesi

Basic Review of Technical Quality and Project Management

Infrastructure Type	<i>Baik</i> Very Good	<i>Cukup Baik</i> Good/Acceptable	<i>Kurang Baik</i> Not Good/Unacceptable
Roads/Bridges	5	5	
Water Supply	5	6	
Irrigation		2	4
Total	10	13	4

A consolidated summary table covering all 113 projects for all 4 provinces, and showing the number of ‘hits’ for each technical criteria is attached in Appendix 4.

9. Other issues impacting on economic benefits to KDP villages

9.1 Maximizing benefits by selecting the right type of infrastructure

The 8 cases where projects produced very high EIRRs are good examples of villages selecting the most appropriate types of infrastructure for their needs. In most cases the choice of infrastructure was painfully obvious because the main cause of the village's poverty and hard living conditions could easily be traced to the need for a road (for instance) to end the village's isolation and provide it with access to markets for its products. Likewise, for irrigation projects where large areas of available and productive land were lying idle simply for the want of water.

It was noted by all analysis teams that in general the KDP verification process guided villagers through a good strategic planning process which was led by capable facilitators. As a result villagers made the right choice of what type of infrastructure to build.

However, this process could be streamlined and professionalized by providing FKs with the benefit series used in EIRR analysis for each type of infrastructure. These could then be used as a checklist to ensure that no potential benefits have been overlooked. More importantly these benefits could be used in the future as the basis for village level surveys that could be used to support a particular course of action. However, FKs would need a few days additional training to implement this task.

9.2 The right mix of economic factors needed to maximize benefits

The issues that need to be highlight in this section are closely linked to the section above. Selecting the right type of infrastructure is a function of matching many different factors to produce the best returns for a village. If villagers are guided through a good strategic planning process by capable facilitators most will undoubtedly make the right choice of what type of project to build.

The field teams did not find one village where pre-construction surveys were able to be used as reliable baseline information for the EIRR analysis. In every village extensive interviewing revealed that KDP project personnel did not know why they were asked to collect such data or what it would be used for. There were also very few KDP II villages who were even able to produce the completed surveys when asked. When produced, the data in these surveys had obviously been filled in "because the facilitator asked for it". No serious survey effort or investigation had gone into any of the survey questionnaires due to the lack of understanding about their final use.

Among the "many different factors" mentioned above, it was noted that recently introduced cash crops such as cacao, vanilla, cloves, hybrid coconuts, peanuts, fruits and vegetables were playing a big part in village decisions to build roads. Road access to markets was the missing factor for maximizing the benefits that these new cash crops were beginning to produce. Undoubtedly the pressing need to turn these products into cash was a major factor in building numerous KDP roads, especially in N.T.T. It is worth noting that most of these crops were coming on line as the KDP roads were being completed. Obviously they had been a factor in the KDP planning process.

In many locations the study team noted the impacts of years of agricultural extension work undertaken by the Provincial Agriculture Departments (*Dinas Pertanian*) to introduce the new cash crops mentioned above. The high EIRRs produced by many of the villages (mainly N.T.T.) in this study were in large part attributable to the cash crops introduced by these agencies. The impact of these crops on increasing household incomes and poverty alleviation is undisputable. The people in these villages understood very well that the KDP roads were the missing link between the

commodities produced by their new trees, and realizing the benefits those trees were supposed to bring.

9.3 The importance of appropriate design and routine maintenance to maintain benefits

All the analysis teams were in agreement that the most pressing post-construction issue that now needs to be addressed comprehensively by KDP management is maintenance. In many villages hard won benefits are in real danger of eroding to pre-project conditions, especially for roads.

Perhaps the biggest problem observed with post-construction maintenance arrangements was that very little serious thought was given to the high repair costs that will arise periodically as natural wear-and-tear begins to take its toll. Costs of repairs for roads and water systems were significantly underestimated. Even where fees were collected for water usage, they were barely enough to provide part-time honorariums for appointed village workers, let alone cover the purchase of tools, sections of replacement pipe, spare parts or other high cost items.

It was also evident that benefits accruing to road projects drop noticeably in certain areas when normal vehicles like “*angkots*” (small mini buses) and passenger cars can no longer use them due to erosion damage and access is limited to trucks only.

The standard answer the field teams received to questions about post-construction maintenance was, “*we agreed that this matter would be handled by swadaya*”; especially for roads. However, it was noticed that this approach quickly broke down when free labour alone was not enough to repair accumulated damage or replace broken components. In many cases it was observed that even this commitment to providing free labour for maintenance was extremely dependent on village leadership; i.e the *Kepala Desa*’s ability to motivate villagers.

It was also evident that *swadaya* is a currency that devalues over time and cannot be depended on too heavily. The enormous energy and enthusiasm that went into building many of these projects cannot be exploited indefinitely, especially after the FKs have left the village. After all, they were largely responsible for generating it in the first place. It was clear that villagers will do maintenance work for considerably less than market rates when they are helping their own communities, as long as the payment for the work is handled transparently. Therefore, arrangements need to be put into place supported by reliable sources of funds.

For the villages analysed, it was clear that the O&M burden, especially for roads, is too great for the majority of villages to shoulder because major repairs usually need materials and in some cases the hire of heavy equipment which must be paid for with cash. For the majority of villages analysed, the resources available cannot cover the cost of the repairs needed within the first 5 to 10 years. It also needs to be remembered that during this early post-project period, incomes are just beginning to increase due to the benefits accruing from the new infrastructure. Based on the above findings the following suggestions are proposed for future consideration and discussion:

- a. Given the erosion in quality witnessed by the study team on so many KDP I (and some KDP II) projects, mainly road projects, it is proposed that funds should be set aside in KDP III for rehabilitation or urgent upgrading of badly damaged infrastructure to preserve the hard-won benefits that have already accrued to these projects. There is also a danger that medium to long-term (5-10 years) investment decisions could be deferred, or cancelled, by local communities, private investors and even local government if there is a perception that KDP I & II infrastructure will be allowed to deteriorate to pre-project levels.

- b. Consider a change in construction standards for roads to include more long-lasting materials and greater emphasis on correctly designed permanent drainage. This is the major cause of premature damage. In certain cases designs may have been appropriate but inadequate supervision allowed too many compromises to be made. It is evident that funding limitations also tempted villagers to compromise between the length of roads constructed and the overall quality of the roads. The quality of drainage clearly suffered during this process. This may prove to have been an expensive compromise.
- c. Set aside a pre-calculated proportion of total project funds to be held in trust as a sinking fund. This money could be kept in high-interest term deposit accounts in the local *Bank Pembangunan Daerah* (Regional Development Bank) until needed in the future to fund major repairs. The funds in this account, and the interest earned, would be a matter of public record and the account balance would be reported to the *Camat* every 6 months by the *UPK* and the *Kantor Desa*, or whoever was responsible for managing the fund. Ideally each local government would top up the sinking fund with small allocations from *APBD* local budget funds each year.
- d. To facilitate the sinking fund suggestion above, it is also proposed that completed infrastructure be formally handed over to the local government so that it receives the status of a government asset. At present KDP projects are “*handed over to their communities*” and as such, have no formal status or recognition from their local governments. As a result they are not entitled to ask for funds from government sources. This change in status would entitle KDP projects to receive small amounts of *APBD* funding. However, management and maintenance of the infrastructure would still remain in the hands of the village utilizing the systems already established by KDP. This arrangement would save local governments considerable amounts in repair work, assuming of course they were willing to support the sinking funds. KDP villages have already saved their local governments very sizable amounts in construction costs as this study has already shown, it seems only equitable that local Kabupaten governments should continue to support these initiatives with routine budget allocations.

9.4 The importance of good leadership and the role of Technical Facilitators

There has been considerable debate recently within certain central government agencies about the need to add Technical Facilitators (*Fasilitator Kecamatan Teknis - FKT*) to villages where there is only an empowerment facilitator. The fundamental issue at stake appears to be whether the additional overhead they represent outweighs the extra value-added they bring. As a result of this on-going debate, the Consultant was also asked to gather information and informally assess the relative value-added of the FKTs, and their overall contribution to successful KDP projects.

Based on what the field teams saw and heard during interviews conducted in 113 KDP villages, there is no doubt whatsoever that the FKTs should be an essential element of the KDP approach. They are largely responsible for the many infrastructure success stories that the study team saw during 2 months of intensive field work. It was also clear that most of the technical problems that were witnessed in some KDP I villages could probably have been avoided if a capable FKT had been available.

The relatively recent modification of the FK presence in each kecamatan to include one Technical Facilitator, and one Empowerment Facilitator, would appear to be a logical step in optimizing and strengthening an already successful concept. This modification has successfully addressed the only major weakness of the FK system that the study team observed, i.e. expecting one already

overworked facilitator to master another field of totally unrelated expertise in a very short period of time, and under quite stressful conditions.

This problem is particularly pronounced when the FK is an Empowerment Specialist with little or no technical training who has to rely on others for help with technical designs and supervising the construction of infrastructure projects. In most cases the FKPs have had to rely mainly on TTD (*Tenaga Teknis Desa* – Village Technical Assistants) or their Kabupaten Management Consultants.

Comments and descriptions that the field teams heard repeatedly from villagers and Village Heads (*Kepala Desa*) about the contributions and value-added provided by FKTs include:

- An impartial outsider with no special interests who can help to guide decisions based on the best technical solution available;
- Without the FKTs villagers would not be able to follow the relatively complex procedures required by the KDP process, especially tendering;
- Someone who can clearly describe the benefits of the KDP process and ensure that high standards of project administration and transparency are maintained;
- An invaluable source of technical expertise who can show the people how to get the most out of every rupiah they receive from the Government;
- A peacemaker and mediator who can intercede to resolve problems arising from technical problems when local personalities clash and petty local issues get blown out of proportion.

The truth of the comments mentioned above was clearly seen in routine activities that were witnessed by the analysis teams during field visits. Quite a number of village heads even went so far as to say that their infrastructure projects could not have been completed successfully without the help of the FKTs.

9.5 The role of Village Heads (Kepala Desa) and District Heads (Camat)

It should be mentioned at this point that the strong support given to the FKTs and FKPs by enthusiastic village heads (*Kepala Desa*) and district heads (*Camat*) was clearly instrumental in their success. All of the consulting teams noted the strong support and detailed knowledge that *Kepala Desa* and *Camats* had of KDP activities.

The only exception to this situation was registered by the consulting team that visited South Sulawesi's Tana Toraja Kabupaten. A number of *Camats* in this area complained that they were not well briefed or included in KDP decisions by FKs and were only asked to become involved when problems arose. They also complained that no funds were allocated by KDP for their participation, or that of their staff.

The consulting team that visited N.T.T was warmly welcomed by all the *Camats* and without exception received requests for continued KDP assistance. The refrain most frequently heard was, “*we still have many more desperately poor villages in need of help*”.

The Consulting teams also received interesting inputs from *Camats* who were also overseeing other local government sponsored CDD style projects. Many comments and constructive criticisms were noted by the Consultant, and in virtually all cases the comments received were objective and supportive.

10. Contribution of KDP infrastructure towards alleviating poverty

10.1 Comparing infrastructure projects constructed during KDP Phase I and KDP Phase II

The study was asked to give special attention to identifying any significant differences in quality between projects constructed during KDP Phases I and II. Special emphasis was to be given to technical quality and project management issues.

From 113 projects analysed, 7 received a Basic Technical Review ranking of “*Kurang Baik*” (Unsatisfactory/Unacceptable) – the lowest ranking. All 4 irrigation projects had below average EIRRs if compared to the total study average of 67.64%. The 3 water projects were slightly higher than the study average of 38.62%. Interestingly, all 7 projects received a medium to low ‘Quality of Life’ ranking of “*Dirasakan*” (Impact Felt), and all 7 projects were constructed during KDP Phase I.

Even Minimal Technical Quality Can Still Produce Major Economic Benefits

Although the results of the Basic Technical Quality Review instrument do indicate that the projects which experienced the most technical problems were constructed during KDP I, it does not mean that other benefits did not accrue to these projects. For the projects analysed, the results of the basic technical quality review are not statistically significant given the fact that a number of KDP II projects that scored well on the technical review, also had relatively low EIRRs. It should also be noted that this study only analysed 113 projects out of many thousands.



Although technical problems can obviously reduce the level of physical benefits, they do not necessarily translate into very poor economic benefits if the choice of infrastructure is appropriate to the needs of the village. A case in point is the water project shown in the table below from N.T.T (Desa Bloro, Flores). This project had significant technical deficiencies that could be traced mainly to an unqualified Village Technical Assistant (TTD) who simply did not have the skills or experience to design and construct a spring catchment box properly (photo above right).

However, even though the amount of water provided to the village from the poorly built catchment box was minimal, and women had to wait for 15 to 30 minutes to fill water containers (photo above left), the project still accrued benefits from time savings alone that managed to produce an EIRR of 26.6%. This happened because people no longer had to walk more than 2 hours to a local river over difficult hilly terrain to collect water. Even though people had to wait longer at local stand pipes than should have been necessary, this was still far preferable to the previous situation.

Lowest Ranking Projects in Basic Technical Review

Province	Infrastructure	KDP Phase	EIRR	Tech. Review	Quality of Life
E. Java Malang	Water Supply	KDP I	22.5	Kurang Baik	Dirasakan
E. Java Malang	Water Supply	KDP I	13.6	Kurang Baik	Kurang Dirasakan
N.T.T.	Water Supply	KDP I	26.6	Kurang Baik	Dirasakan
3 Projects			Av. 21.0		
S. Sulawesi	Irrigation	KDP I	34.0	Kurang Baik	Dirasakan
S. Sulawesi	Irrigation	KDP I	27.0	Kurang Baik	Dirasakan
S. Sulawesi	Irrigation	KDP I	71.0	Kurang Baik	Dirasakan
S. Sulawesi	Irrigation	KDP I	16.0	Kurang Baik	Dirasakan
4 Projects			Av. 37.0		
7 Projects			Av. 30.1		

The most significant difference between projects constructed during KDP I and KDP II was the improvement in overall village level management. These improvements were evident in all project documentation, administration and even the implementation of the KDP process in general. All field teams commented on the major improvement in the quality and standardization of village project proposals that were prepared during KDP II. This greatly facilitated the re-costing analysis.

By contrast, KDP I proposals were frustratingly short on detail and almost every project followed different formats and used varying methods for calculating project costs. This made the re-costing exercise quite difficult and forced the field teams to rely heavily on locally based project staff and village officials like TPK, LKMD, ex-workers and the UPK who still held what was left of the collective ‘project memory’.

It is irrelevant to make comparisons of Multiplier results between KDP I and II because this instrument is designed to assess the village economy’s ability to absorb and utilize newly introduced wealth in the form of cash. The Multiplier is a reflection of the structure, depth and sophistication of the local economy and its ability to use that cash to create more wealth. The project per say has no influence on its outcome. However, once calculated the General Income Multiplier for a village can still be used to gauge the effect of any new income on the local economy and could still be used by KDP to maximize benefits for future programs. Recalculating the General Income Multiplier at appropriate intervals would also be a good way to see how individual village economies have matured or developed over time.

10.2 A discussion on the economic nature of *Swadaya* labour

There has been considerable debate among CDD and development practitioners over the years about the true economic nature and the relative “fairness” of *swadaya* labour contributions by village communities. Criticisms most frequently heard generally cover the following issues:

- *Swadaya* labour constitutes a disguised tax on rural villagers because wealthier urban communities are not expected to provide it; or
- Using *swadaya* labour as a factor in inter-village competitions for infrastructure projects (in the case of KDP) disadvantages poor villages because richer ones can afford to give more; and
- The increasing use of *swadaya* labour is simply leading to more poor people not being paid for their labour.

Putting the above comments and observations aside for one moment; the true economic nature and origins of swadaya labour need to be put into the correct context before these issues can be discussed objectively.

The origins of swadaya labour can basically be traced to a well documented and frequently studied economic problem of the developing world, especially in rural areas, i.e. under-employment. Unemployment is already a major problem, but when this is combined with the considerable non-productive down-time that occurs during slow periods in the agricultural production cycle, the resulting increase in idle labour capacity forces already poor rural workers to seek income making opportunities in other sectors. The two most common manifestations of this practice in Indonesia are rural-urban cyclical migration, and the large numbers of unskilled rural workers taking poorly paid jobs overseas as plantation workers, construction labourers and domestic helpers.

Proponents of CDD projects claim that they have simply tapped into this resource of idle labour capacity. Those who strongly support swadaya labour contributions often state the following benefits:

- Villagers are able to increase the productivity of their own communities and add value to their local economies by constructing new infrastructure like roads and bridges, water systems and irrigation works - without having to leave their villagers.
- The savings in construction costs made possible by swadaya contributions have enabled many villages to build key infrastructure facilities that their local governments had been unable (or unwilling) to provide for many years.
- The strong sense of local ownership that comes with swadaya participation usually results in a better product and stronger commitments to maintain the facilities constructed compared to facilities constructed by outside government contractors that are simply handed over on completion.

There are also a number of other economic realities that need to be acknowledged in this discussion:

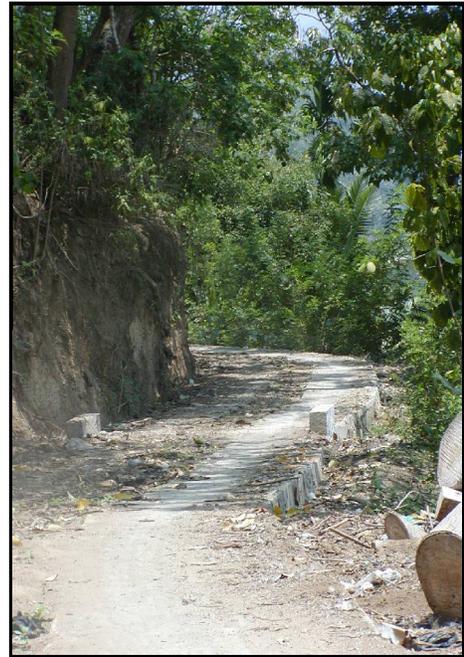
- Rural villagers that have participated in KDP do have a considerable amount of non-productive time to contribute during certain times of the year, and it is clear that most KDP projects were built during those periods.
- If it can be convincingly proven that the time donated to a project was in fact idle labour capacity, then the argument that villagers were exploited under the economic principle of “opportunity cost” is also invalid. For this to be true there would have to be a convincing argument made that opportunities for other alternative incoming generating activities were foregone because villagers were asked to participate in a KDP project.

It therefore follows that the suggestion that swadaya contributions constitute a disguised tax on the poor would only be true in the case of KDP if it could be proven that the time donated by villagers actually had a significant “opportunity cost”. The study field teams saw quite the opposite. Considerable efforts were made in all the villages surveyed to ensure that project construction schedules did not clash with important agricultural activities such as planting, harvesting, picking, processing and transportation of harvested commodities to markets.

The findings of this study indicate that swadaya contributions in the KDP villages surveyed have largely been an instrument of empowerment, enabling villages to get the infrastructure facilities that local government could not, or would not, provide. Interestingly, none of the field teams registered any comments from villagers complaining that their labour had been abused or exploited. On the contrary, many communities took great pride in explaining to the field teams that they were able to do in a few months, what their local governments had not been able to do in 30 years.

One Mans Eternal Tribute to KDP

For the last 59 years the people of Nakuramba village have had to make a hazardous 2 hour trip down a steep and winding mountain track to get to the main road that goes to the local capital of Ende about 15 kms away. Any local produce they wanted to sell had to be hand carried down this torturous track greatly limiting the quantity of products they could carry at any one time. Even motor bikes had great difficulty getting up and down the mountain track that connected Nakuramba to the main kabupaten road. In the wet season motor bikes rarely risked this journey due to the slippery and dangerous conditions. Nakuramba was effectively isolated from the only town that could provide its people with a market for their cash crops, education for their children and health facilities for their sick. Assuming of course a sick person was able to make the arduous trip down the mountain. This journey was obviously not an option for a pregnant women in difficulties, anyone with serious injuries or a very ill person.



Yearly appeals through normal channels to the local government were unable to produce the badly needed road. The terrain was very steep requiring cuttings, culverts and gabion reinforcing in many places to prevent landslides. The soils on the route were also not weather friendly and eroded badly with heavy rain. All this added up to very high construction costs for a road that would only service a population of just over 1,300 people. The local government had bigger fish to fry, and Nakuramba found itself near the bottom of the local government's development priority list year after year.



In 2003 the people of Nakuramba were asked if they wanted to participate in the KDP program. Together with their facilitators they went through the KDP process and step by step put together a good proposal. The total value of their road project was Rp180,078,656. They won a block grant from KDP of Rp147,245,313 which was supported by a swadaya component of their own labour valued at Rp 32,833,343. It was estimated that a local contractor would have asked for more than Rp 269,775,000 to build the same road.

Every able bodied person in the village lent a hand with women shouldering over 50% of the burden. More than 800 people participated in some way or another by the time the road was built.

Mid way during construction a front end loader hired by the village was making its way up the track to start work when an old man came out of his house and stood in front of the heavy machine with his arms raised. The operator fearing the old man was "*orang gila*" (insane) immediately stopped his machine. The old man then approached the end loader, put his arms around one of the front wheels and kissed it! He exclaimed with tears in his eyes that he had waited since

Independence for this road to end the hardship that his village had endured all these years and that KDP had finally answered his prayers. A few days later workers laid down the two parallel concrete tracks to complete the section of the road that passed the old man's house. He came out again and this time knelt down beside the road, gave thanks, bent down and kissed the freshly dried concrete. The two facilitators and Village Head supervising the work on those two days were deeply affected by these scenes and related them with considerable emotion.



About a week after this incident the road was almost complete and had reached the top of the mountain. Satisfied that his village had finally gotten its long awaited road the old man passed away peacefully. His last request was that he be buried beside his new road. His funeral had special meaning for the people

of Nakuramba, and as requested they buried him beside his beloved road. His modest grave adorned in bright blue ceramic tiles and a large cross stands as a tribute to the spirit of the people of Nakuramba and their struggle to improve their quality of life and determine their own destiny.

10.3 Conclusions

The results of this independent economic impact analysis have shown that KDP's CDD approach to infrastructure development has had significant impacts on the economies of the villages analysed.

The aggregate result, as shown in the tables for each instrument, is a strong endorsement of KDP's comparative advantage in village infrastructure development if compared to the government's long established top-down approach.

KDP's stated goals are to: (i) alleviate poverty by raising rural incomes; (ii) strengthen local government and community institutions; and (iii) improve good governance. There is no doubt that in the 113 villages analysed significant progress had been made to help poor rural communities to alleviate poverty through a process of guided empowerment. Although the scope of work for this study was not directly concerned with goals (ii) and (iii), it was nevertheless clear that a lasting impression had been made in the way sub-district (*kecamatan*) and village (*desa*) officials managed village level projects. These same officials now face high expectations from their communities for similar levels of transparency and openness in managing future village projects.

The results produced by the EIRR analysis showed a more than acceptable average return over 113 projects of 52.7% with average rates of return of: 38.62% for water projects; 51.84% for roads projects; and 67.64% for irrigation projects. As previously stated, there were also 8 projects that produced EIRRs of over 100%. The infrastructure constructed in these villages enabled latent economic potential to be realized that resulted in very large benefits. It should be mentioned at this point that the calculations for the benefit series used in this analysis were based on quite

conservative estimates and substantial discounting to allow for seasonal variations in rural incomes. Even with such conservative calculation practices the returns that accrued to these projects indicated that significant benefits had accrued.

The General Multiplier analysis identified quantifiable additional value of Rp 2,069,413,297 or US\$226,165 for the 113 projects analysed.

The KDP vs Contractor Cost Comparison showed savings of Rp 7,006,723,052 or US\$ 765,762 which represented average savings of 55.82% across the 113 projects. These savings were made possible because villages mobilized their own labour and other resources to build the projects themselves.

If the average percentage of the cost savings estimated for the 113 projects analysed (55.82%) is extrapolated to the infrastructure investments made during KDP 1 and 2, then the savings that accrued to KDP villages would be approximately:

KDP 1 : Rp 699,434,983,100 (US\$76,440,981. - US\$1.00 = Rp 9,150)

KDP 2 : Rp 587,577,164,500 (US\$64,216,083. - US\$1.00 = Rp 9,150).

The Technical Quality Review showed that the projects were considered generally acceptable by the villagers who built them. When comparing the individual provinces it is interesting to note that 106 (93.8%) out of 113 projects achieved rankings of either Very Good or Good. Surprisingly, N.T.T. had the largest number of highly ranked projects. It is also interesting to note that no road project was ranked by any village as *Kurang Baik*/ Technically Unacceptable.

The Project-Specific Quality of Life Indicators clearly showed a high level of direct and indirect benefits accruing to these projects. There were also a significant number of intangible impacts captured by these indicators that resulted from the projects. From 113 projects 62 (55%) were ranked by villagers as “*Sangat Dirasakan*” (Impacts Strongly Felt). 46 (41%) were ranked as “*Dirasakan*” (Impacts Felt) and 5 projects (4%) were ranked as “*Kurang Dirasakan*” (Impacts Barely Felt). In other words 108 projects (95%) were ranked by the villagers who built them as having impacts that were either Strongly Felt, or Felt on a daily basis.

The Ongoing Debate Over the Cost of Kecamatan Facilitators within the Central Government can perhaps best be answered by the comments the study team received from Pak Raymundus Lema, the Head of The N.T.T. Provincial Village Empowerment Agency (*PMD*). Pak Lema was quite positive about the potential for significant economic benefits resulting from KDP’s projects. He based his views on the fact that KDP had realized the need for a long-term and intensive commitment to qualified village level facilitators. He believed that a continual 3 year presence at village level was the minimum time required to successfully implement transfers of new knowledge, and institutionalize a program as complex and comprehensive as KDP.

His opinions on the role of facilitators were based on many years of experience as Head of agricultural extension programs for the N.T.T. Department of Agriculture (*Dinas Pertanian*). He said it took at least 3 years to properly teach village people how to plant, maintain and harvest the new cash crops that the department introduced in the mid and late 1990s. The resulting impacts on household incomes resulting from these crops have already been mentioned in the EIRR section of this report. To achieve these results Pak Lema said that the provincial department of agriculture invested heavily in qualified village facilitators imported at considerable expense from Java to ensure complete knowledge transfer and future sustainability for the new crops.