Creating Jobs: Capacity Building for Local Resource-Based Road Works in Selected Districts in NAD and Nias

Benefits of Improved Road Access

A Study Conducted by the Project in June 2010 of the Effects of the Road Improvements on the Livelihoods of the Targeted Beneficiaries

UNDP/ILO Project INS/51/071
Partner Agency UNDP
Implementing Agency ILO

Jakarta, August 2010

About MDF

The Multi Donor Fund for Aceh and Nias (MDF) was established to support the implementation of the Government of Indonesia's (GOI's) rehabilitation and reconstruction program after the December 2004 tsunami and subsequent March 2005 earthquake. At the request of the government, the World Bank serves as the trustee to administer the MDF which is in turn governed by a Steering Committee comprised of donors, GOI, and civil society representatives, with the United Nations and international non-governmental organizations participating as observers.

The donors contributing to the MDF are: the European Union, the Netherlands, the United Kingdom, the World Bank, Sweden, Denmark, Norway, Germany, Canada, the Asian Development Bank, the United States of America, Belgium, Finland, New Zealand and Ireland. The MDF pools about US$685 million in grant resources provided by these 15 donors, an amount equivalent to about 10% of the overall reconstruction efforts. As of March 30, 2010, the MDF has committed US$623 million to 23 projects in five outcome areas: recovery of communities, infrastructure and transportation, strengthening capacity and rebuilding governance, supporting sustainable management of the environment and economic development.

About the Project

The Project "Creating Jobs: Capacity building for Local Resource-based Road works in selected districts in NAD and Nias" was formulated in response to the devastating tsunami of December 2004 and the major earthquake of March 2005 that caused a tremendous loss of lives and livelihood opportunities and resulted in extensive and major damage to roads and other infrastructure. The project was formulated, seeking to contribute to economic recovery by improving road access and connectivity, providing local employment opportunities, building skills among the involved workers and contractors and strengthen local capacities in the use of employment-intensive local resource-based (LRB) road construction and maintenance approaches.

Following an initial demonstration project financed by OCHA and UNDP and implemented with ILO as the implementing agency, Phase I of the Project was implemented during 2006-2008. UNDP was designated as contractual partner (Partner Agency) of the MDF through a fiscal agency agreement. The ILO implemented the project under the guidance of BRR[1] and later the Ministry of Manpower and Transmigration. The Project included a major, demand-driven, capacity building component that strongly focused on the active involvement of communities - with a special emphasis on women.

The project received a total funding of USD 11.8 million for implementation during 2006-2011. Districts covered by the project are Aceh Besar, Bireuen, Pidie, Nias and Nias Selatan for road works and Aceh Jaya, Aceh Barat and Nagan Raya for irrigation work.

The project is implemented in three phases. Phase I focused on enhancing the capacity of district governments and local contractors to provide access roads to facilitate delivery of assistance to affected communities in 5 districts. Phase II seeks to sustain the Project's impact with regards to the capacity of district governments, small contractors and communities to adopt and undertake LRB road works in rehabilitation and maintenance activities. And a six-month extended of phase II implements a basic exit strategy that focuses on various issues related to the maintenance of the created assets and up-scaling the demonstrated LRB approaches in the rural road sector and other sectors.

[1] After the closure of BRR in April 2009, Bappenas took over BRR's coordinating role.

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Foreword

In response to the devastating tsunami that hit Indonesia in 2004, The UNDP/ILO project '*Creating Jobs: Capacity Building for Local Resource-based Road Works in Selected Districts in NAD and Nias'* was formulated[2]. The project is being implemented with funding from the Multi-donor Fund for Aceh and North-Sumatra and aims at contributing to the recovery and reconstruction of Aceh and Nias by integrating capacity building activities with road construction works in selected districts.

The project adopts a Local Resource-based (LRB) approach that optimizes a balance between the use of local labour, local resources and light equipment, thereby maximizing the generation of short-term employment opportunities while maintaining quality standards. The development objective of the Project is to *"contribute to the restoration of the rural livelihoods of communities of the disaster affected populations in NAD and Nias"*. The immediate objective of the Project is that "*District governments and small scale contractors in project areas adopt and undertake local resource- based road works thereby providing access to socio-economic centers and creating job opportunities for rural people"*.

The project achieved several notable outcomes, including the construction of high quality rural roads. It delivered outputs in a cost-effective way, provided employment to both women and men and implemented a comprehensive training programme, aiming at strengthening the capacities of the staff of the Department of Public Works – the project's local implementing partner and recipient – and small scale contractors involved in the project's construction activities.

To assess the extent to which the Project has contributed to the objective of restoring the rural livelihoods of communities of the disaster affected populations in NAD and Nias – through improvements in access to main roads and socio-economic centers, and the creation of job opportunities – an assessment of the effect of the improved road access to the beneficiaries has been made through a study. This study was designed and implemented by the Project in the period May-June 2010 and covered 13 rehabilitated road links, or 50% of the total length of roads that has been rehabilitated by the Project.

The findings of the study indicate that the Project has been successful in contributing to an improvement of the livelihood conditions of the targeted population. The investments made in the improvement of rural road access have not only created substantial short-term employment opportunities but have also boosted local economic development through increased access to social and economic facilities and services and the creation of long-term – spin-off – employment opportunities

The ILO hopes that the study's findings will be useful to senior policy makers and donors in taking decisions regarding the further continuation and up-scaling of the Project's approaches and methods as an effective strategy to contribute to local economic development and employment generation for vulnerable and poor people in rural Indonesia.

I would like to take this opportunity to express my sincere appreciation to the interviewed respondents in Aceh and Nias for their participation in the study. The ILO also wishes to thank UNDP – the partner agency for the project –, the Multi-donor Fund for Aceh and North-Sumatra, the Governments of North-Sumatra and Aceh, the Ministry of Manpower and Transmigration, the Department of Public Works, the PNPM Mandiri Programme, BAPPENAS and the people of Aceh and Nias for their continued support and collaboration that has been instrumental in the successful implementation of the Project.

Peter van Rooij
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ILO Country Office for Indonesia and Timor-Leste
Jakarta
August 2010

[2] NAD is the abbreviation for Nanggroe Aceh Darussalam, i.e. the Province of Aceh

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Abbreviations

ILO	:	International Labour Organization
LED	:	Local Economic Development
LRB	:	Local Resource-Based
MDFANS	:	Multi-donor Fund for Aceh and North-Sumatra
NAD	:	Nanggroe Aceh Darussalam (Province of Aceh)
UNDP	:	United Nations Development Programme
WATSAN	:	Water and Sanitation

Executive Summary

In response to the devastating tsunami that hit Indonesia in 2004, The UNDP/ILO project '*Creating Jobs: Capacity Building for Local Resource-based Road Works in Selected Districts in NAD and Nias'* was formulated[3]. The project is being implemented with funding from the Multi-donor Fund for Aceh and North-Sumatra and aims at contributing to the recovery and reconstruction of Aceh and Nias by integrating capacity building activities with road construction works in selected districts.

The project adopts a Local Resource-based (LRB) approach that seeks to optimize a balance between the use of local labour, local resources and light equipment, thereby maximizing the generation of short-term employment opportunities while maintaining construction quality standards. The immediate objective of the Project is that "*District governments and small scale contractors in project areas adopt and undertake local resource- based road works thereby providing access to socio-economic centers and creating job opportunities for rural people"*.

The Development objective of the Project is to *"contribute to the restoration of the rural livelihoods of communities of the disaster affected populations in NAD and Nias"*. The indicator to assess the extent to which the Project has been able to contribute to the development objective of the Project has been formulated in the Project's Logical Framework as *"Number of communities with access to main roads as a result of the project's road rehabilitation and maintenance"*.

The project achieved several notable outcomes, including the construction of high quality rural roads. It delivered outputs in a cost-effective way, provided employment to both women and men and implemented a comprehensive training programme, aiming at strengthening the capacities of the staff of the Department of Public Works – the project's local implementing partner and recipient – and small scale contractors involved in the project's construction activities.

To assess the extent to which the Project has contributed to the objective of restoring the rural livelihoods of communities of the disaster affected populations in NAD and Nias – through improvements in access to main roads and socio-economic centers, and the creation of job opportunities – an assessment of the effect of the improved road access to the beneficiaries has been made through a study. This study was designed and carried out by the Project in the period May-June 2010 and covered 13 rehabilitated road links, or 50% of the total length of roads that has been rehabilitated by the Project.

The findings of the study indicate that the Project has been successful in contributing to an improvement in the livelihood conditions of the rural people residing in the area of influence of the roads that have been rehabilitated and maintained by the Project. The improvements in road access to the district, provincial and national road network realized by the Project have provided all-year round road access for 75 villages (with a population of 61,500 people) located in the immediate area of influence of the 13 surveyed roads. It has resulted in substantial savings in travel times and travel costs.

Other benefits associated with the improved access relate to increased long-term employment opportunities, improved access to local markets, health centers, educational facilities, public transportation and public utilities like drinking water and electricity.

Due to a reduction of transportation costs, the profit margins of the sales of agricultural produce have also increased. With the improved road access, more products are available locally and the number of local businesses has increased. The value of agricultural land has also increased significantly since the road improvement works have been completed and in a number of areas agricultural activities have intensified and/or expanded. All above mentioned benefits have resulted in an increase of the net income of the targeted beneficiaries and have created additional spin-off employment opportunities (in particular through increased

[3] NAD is the abbreviation for Nanggroe Aceh Darussalam, i.e. the Province of Aceh

local business opportunities, agriculture-based employment opportunities and an increase in agricultural productivities).

Substantial short-term employment opportunities have been created by the Project during the construction works. A total of 104,211 worker-days of direct short-term employment opportunities were created in the rehabilitation of the 13 road links that were covered by the study. This included 27,505 worker-days for women (i.e. 26.4%). Cash transfers to the local workers, equivalent to approximately US$ 0.6 million, were realized in the rehabilitation of these 13 roads.

This translates to a cash injection of US$ 145 per household for about 33% of the estimated 12,300 households living in the immediate area of influence of the 13 rehabilitated roads. The majority of the respondents mentioned that they had spent the wages that they had earned in the Project to buy consumer products and to cover expenses for the education of their children. In a few cases it was reported that the earned income was used for small productive investments or for the repair of the homes.

The findings from the study not only confirm the effectiveness and appropriateness of the applied road selection criteria[4] and the use of the Local Resource Based (LRB) work methods in the delivery of the investments, they also indicate the relevance and effectiveness of the approach in terms of contributing to local economic development, the restoration of the rural livelihoods of communities of the disaster affected populations in NAD and Nias, and the creation of short-term and long-term job opportunities for the targeted rural population.

[4] Including criteria related to: i) connectivity to economic and social facilities and services; ii) local priorities; iii) economic potentials; iv) population; v) the condition of the road; vi) traffic volumes; vii) costs per km and per beneficiary

1. Introduction

1.1 Description of the Project

The UNDP/ILO project '*Creating Jobs: Capacity Building for Local Resource-based Road Works in Selected Districts in Aceh and Nias'* was formulated in response to the devastating tsunami of December 2004 and the major earthquake of March 2005 – the latter one especially hit Nias islands. The Project is financed by the Multi-donor Fund for Aceh and North-Sumatra (MDFANS). The implementation of phase I started in March 2006 and covered 5 districts: Aceh Besar, Pidie and Bireuen in Aceh Province, and Nias and Nias South in Nias islands. Phase I (US$ 6.42 million) was completed by 31st March 2008.

To give sustainability to the Project's impact with regards to the capacity of district governments and small-scale contractors to adopt and undertake Local Resource-Based (LRB) road works, a second phase (US$ 5.38 million) was approved. Phase II is scheduled for completion by 30th September 2010[5]. During phase II activities in Aceh Besar were discontinued.

The overall objective of the Project is to contribute to the restoration of the rural livelihoods in communities of disaster affected populations in NAD and Nias. The indicator to assess the extent to which the Project has been able to contribute to the development objective of the Project has been formulated in the Project's Logical Framework as *"Number of communities with access to main roads as a result of the project's road rehabilitation and maintenance"*. The **immediate objective** of the Project is:

District governments and small scale contractors in project areas adopt and undertake local resource-based road works thereby providing access to socio-economic centers and creating job opportunities for rural people

1.2 Achievements

Based on the progress till June 2010, it is already clear that the targets for physical works, training & capacity building and employment creation will be achieved – and even exceeded. The progress as of June 2010 for the works and the training components, and for employment creation is summarized in table 1.

Table 1: Progress for Road Works, Employment Creation and Training as of June 2010

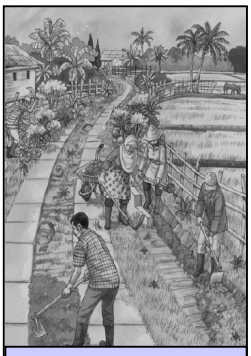
	Activity	Unit	Target	Progress	
				Jun-10	As % target
1	Road rehabilitation works*	km	155.7	163.9	105%
2	Road maintenance works*	km	177.3	177.3	100%
4	Irrigation canal rehabilitation works	km	0.85	0.85	100%
5	Irrigation canal maintenance works	km	2.18	2.18	100%
6	Short-term employment creation	work-days	430,000	387,000	90%
7	Training contractors and their staff	no	250	341	136%
8	Training Public Works staff	no	100	178	178%
9	Training PNPM facilitators on maintenance	no	50	74	148%
10	Training community maintenance supervisors**	no	50	56	112%

* Progress includes on-going works on limited numbers of road links ** Information from Nias and Nias Selatan still to include

[5] A proposal to extend the completion of phase II to June 2011 – using accrued interest from the Project's bank account – is currently being prepared. This extension of phase II provides an exit strategy to ensure that the results of the Project can be sustained beyond its completion date.

The Project has been able to deliver the planned physical outputs at a high quality, timely, i.e. within the foreseen time-frame, and in a very cost-effective way. Improved quality control and quality assurance, the selection of appropriate LRB designs and construction technologies, and the use of different procurement procedures, contributed to the satisfactory delivery of the construction works.

Improving road connectivity, with the aim of contributing to local economic development, is an important objective of the Project. In the prioritization and selection of the roads, a model has been used that included local community priorities, road network connectivity considerations and indicators related to: i) the population that would benefit from the road; ii) isolation factors, and; iii) local economic development potentials. Over 95% of the 164 km of road works[6] that have been implemented were completed to specified quality and standards.


Maintenance Manual

Maintenance works involved 96 km of (off-carriageway) routine maintenance work, implemented through community contracting, and 81 km of (on-carriageway) routine and periodic maintenance work. A system of community-based routine maintenance was introduced for the maintenance of district roads. Through the collaboration with PNPM, the Project trained PNPM Facilitators on the various aspects of community-based routine maintenance.

Through the LRB work methods that were applied, the Project was able to optimize the involvement of a local workforce in the construction and maintenance activities. It resulted in an estimated 5-10% increase in local employment opportunities, compared to employment opportunities generated under similar works executed using more capital-intensive approaches. Overall, approximately 387,000 worker-days of short-term employment were generated in the delivery of the rehabilitation and maintenance works till June 2010[7]. The Project has also been quite successful in promoting the involvement of local women in the workforce. Women now constitute about 28% of the workforce. In comparison, at the start of the Project, women's participation in the workforce was in the range of 7-15%.

The Project developed and demonstrated the effectiveness and cost-competitiveness of an approach of integrating demand-driven capacity building and training activities within the construction cycle. A hands-on approach was used, with extended on-the-job training activities and mentoring being the main elements of the various training activities.

The Project trained 178 staff of the District Public Works Office in the districts were the Project was operational. 341 staff of 134 contractors who were awarded contracts under the Project received training. An estimated 34,200 trainee-days of training were provided to the staff of Public Works and the contractors. The training of district PW staff and contractors included training on the planning, implementation and supervision of road rehabilitation and maintenance works, using LRB methods and appropriate intermediate technologies. Training on laboratory testing, tendering, pricing and work planning was also provided to the staff of PW and the contractors.

Training was also provided to PNPM facilitators (of which 20% women) on community-based maintenance and coaching support was provided to 367 PNPM facilitators (with 18% women) in conducting training to communities on planning and implementing LRB routine road maintenance. In addition to the training to community maintenance supervisors (of which 50% women), training was also provided to 530 village maintenance workers (with 28% women).

[6] About 90% of the rehabilitated district roads are paved and the remaining roads (farm roads) are unpaved.
[7] About 7,500 work-days of employment were created through community-based routine maintenance activities. Women constituted about 53% of the maintenance workforce. A study undertaken by the Project in 2008 indicated that the applied LRB work methods are very effective in optimizing employment opportunities (for local people), while maintaining quality standards.

The indicators that were set in relation to the assessment of the performance of the small contractors were achieved. These relate to the number of contractors who received more than one contract, the number of tenders submitted for each contract, the number of contractors using LRB approaches, the number of contracts completed within time and budget and the decrease in the percentage of non-responsive bids prepared by contractors.

A contractor tracer study conducted by the Project in May 2010 indicated that the local contractors benefited substantially from training on (pre-) tendering, the preparation of work plans, setting out, construction techniques and supervision provided by the Project. This is reflected in the increased competitiveness of the contractors in bidding and in an increase in their business.

2. Purpose of the Study

The Development objective of the Project is to *"contribute to the restoration of the rural livelihoods of communities of the disaster affected populations in NAD and Nias"*. The indicator to assess the extent to which the Project has been able to contribute to the development objective of the Project has been formulated in the Project's Logical Framework as *"Number of communities with access to main roads as a result of the project's road rehabilitation and maintenance"*.

To assess the extent to which the Project has contributed to the objective of restoring the rural livelihoods of communities of the disaster affected populations in NAD and Nias – through improvements in access to main roads and socio-economic centers, and the creation of job opportunities – an assessment of the effect of the improved road access to the beneficiaries has been made through a study. This study was designed and carried out by the Project in the period May-June 2010.

3. Design and Implementation of the Study

Semi-structured individual interviews and focus group interviews constituted the main elements of the survey methodology for data collection. Both qualitative and quantitative data were collected. Supplementary – quantitative – data were extracted from available Project records. Field observations and checks were used to cross-check information provided by the interviewed respondents (e.g. on travel times on main origin-destination routes).

In terms of coverage of the road length in the survey, the aim was to take a sample of approximately 50% of the completed roads that were rehabilitated using Project funds. As of 30th June the total length of completed rehabilitated roads was 145.3 kilometers[8] and the total road length covered by the study was 72.5 kilometers, i.e. 49.9% of the total length of completed road works. Table 2 provides an overview of the main characteristics of the roads that were covered during the survey.

[8] 97.1 kilometers during phase I and 48.2 kilometers during phase II.

Table 2: Main Characteristics of Roads Covered under the Survey

	Surveyed road no:	1	2	3	4	5	6	7	8	9	10	11	12	13		
1	District	Bireuen	Bireuen	Bireuen	Bireuen	Pidie	Pidie	Pidie	Nias Selatan	Nias	Nias	Nias	Nias Selatan	Nias Selatan	**Total**	**Average**
2	Sub-district	Peudada	Kuta Blang/Ganda Pura	Jeunib	Ganda Pura/Makmur	Padang Tiji	Indra Jaya	Glumpang Baro	Hilimegai	Gunung Sitoli Utara	Gunung Sitoli	Gunung Sitoli Barat	Lolowau	Lolowau		
3	Kampong	Menasa Blang	Paloh Raya	Lhok Kolam	Tanjung Mesjud	Jurong Anoe	Pulo Ie	Ukee Trueng Campli	Bawosalo'o Dao Dao	Gawu Gawu Bauso	Hiliaho	Gada	Lorong sehe - lolowau	Umbru Asi - Lorong Tuhoowo		
4	Date interview	27/05/10	20/05/10	31/05/10	25/05/10	21/05/10	01/06/10	27/05/10	27/05/10	31/05/10	31/05/10	31/05/10	27/05/10	28/05/10		
5	Road Name	Kedai Peudada-Teupok Baroh	Cot Tunong Timu-Blang Mee	Simpang Nalan - Krueng Nalan	Cot Tube - Cot Kruet	Jurong Anoe - Alue Reuhe	Pulo Ie - Jabal Ghafur	Kp Pisang - Ukee Trueng Campli	Mude-Ewo-Togihenu - Hilinake-Dao Dao	Afia Tambalou - Sp Lima - Lolaona - Tuhobauso	Sp Moawo - Sp Sisarahili Gamo	Tumori - Gada	Hilidaura -Sehe-Pantai (tourism -road to beach)	Hiliadulo - Tuho owo - Provincial roadhead		
6	Road length (km)	5.4	12.7	5.2	5.8	3.9	2.4	4.1	6.4	8.0	4.2	1.6	5.1	7.7	72.5	5.6
7	Type of surface	Latasir	CM 4.5 k GR 8.2 k	Latasir	Cold mix	Gravel	Cold mix	Latasir	Penmac	Penmac	Penmac	Penmac	Penmac	Penmac		
8	Completion Construct.	Jun-07	Jun-07	Mar-08 Aug-10	Aug-10	Aug-10	Oct-09	Feb-08	Dec-07, Nov-09	Jul-07 Aug-10	Mar-08	Apr-07	Jul-07	Feb-08 Jun-10		
9	Inv. cost (mill. IDR)	1,621	4,520	2,797	2,526	417	893	1,516	3,131	1,726	1,794	706	1,228	2,784	25,657	1,974
10	Invest. cost (US$)*	186,697	520,733	310,366	281,082	46,456	92,975	161,768	333,302	194,058	198,438	78,196	139,495	298,536	2,842,103	218,623
11	Invest. cost US$/km	34,573	41,003	59,686	48,462	11,912	38,739	39,456	52,078	24,257	47,247	48,873	27,352	38,771		39,201
12	Work-days men	10,877	12,407	12,025	5,685	800	4,036	7,297	4,906	3,381	3,381	1,946	4,359	5,606	76,706	5,900
13	Work-days women	3,490	8,124	2,785	2,932	334	877	2,348	533	1,846	1,846	1,210	473	707	27,505	2,116
14	Work-days total	14,367	20,531	14,810	8,617	1,134	4,913	9,645	5,439	5,227	5,227	3,156	4,832	6,313	104,211	8,016
15	Work-days/km	2,661	1,617	2,848	1,486	291	2,047	2,352	850	653	1,245	1,973	947	820		1,437
16	Wage: % total invest	44%	23%	26%	17%	14%	28%	32%	9%	15%	15%	22%	20%	11%	20%	
17	Investm/w-day (US$)	13.0	25.4	21.0	32.6	41.0	18.9	16.8	61.3	37.1	38.0	24.8	28.9	47.3		27.3
18	Invest/total pop (US$)	6.3	6.6	17.0	15.0	10.3	19.4	7.4	12.8	2.7	13.0	15.0	93.0	2.7		46.2
19	villages in road catchm	8	7	5	7	6	4	8	6	6	4	4	2	8	75	5.8
20	Pop in road catchment	5,488	6,253	3,502	3,233	1,160	2,000	5,340	4,080	8,861	3,628	3,249	294	14,400	61,488	4,730
21	Population/km	1,016	492	673	557	297	833	1,302	638	1,108	864	2,031	58	1,870		848

* UNDP exchange rates of the month that the works were completed, have been used

The Project has rehabilitated roads using different pavement types, i.e. emulsion bitumen (or cold mix), penetration macadam (or penmac) and latasir. In addition a limited number of gravel village roads were rehabilitated. In the selection of the roads for the survey a representative sample of these different types of roads has been taken:

- Roads with cold mix pavement: 12.7 kilometers;
- Roads with penetration macadam pavement: 33.0 kilometers;
- Roads with latasir pavement: 14.7 kilometers;
- Gravel roads: 12.1 kilometers.

In the selection of the roads for the survey a diverse selection has been made in terms of the land-use and geomorphologic conditions of the areas where the roads are located. Roads have been selected in flat and mountainous terrain, in paddy growing and plantation areas, and along the coast and further inland. Annex 1 shows the locations of the roads that have been included in the survey.

Semi-structured group interviews and individual interviews have been conducted in the Kampongs located approximately half-way along the roads that were included in the survey. This was done with the aim of obtaining an average picture of the benefits related to the improved road access, in particular with regards to induced changes in travel costs and travel times. The names of the villages where the interviews were conducted are mentioned in table 2. A total of 121 respondents were interviewed in the period from 20th May to 1st July 2010.

For the focused group interviews members of the Village Development Committee were invited to participate. A total of 74 Village Development Committee members took part in the 13 group interviews that were conducted. The number of participants in the focused group interviews ranged from 4 to 7. A total of 11 women (15%) participated in the group interviews. The English version of the questionnaire that was used for the group interview is presented in Annex 2. The group interviews and the individual interviews were conducted by Project teams comprising of a senior staff member (Project District Engineer or Administrator) and a Mobile Construction Trainer (MCT).

Apart from the group interviews, semi-structured interviews with individual beneficiaries were conducted. This group included both people who had worked on the road project and those who had not. The persons that were interviewed had been selected randomly, using random systematic sampling – stratified for gender. The target was to select per road 2 worker-beneficiaries and 1 non-worker beneficiary, with at least 30% of this group being composed of women. The English version of the questionnaire that was used for the individual interviews is shown in Annex 3.

Table 3 shows the number of people who were interviewed, against the targeted number of interviewees. The actual number of people that were interviewed was slightly less than the target. The reasons for this small deviation were related to time constraints and the (sometimes) unavailability of local people to participate in the interview. Table 3 shows that 87% of the targeted numbers of interviewees were actually interviewed, with 35% of them women.

Table 3: Targeted and Actual Number of Interviewed Beneficiaries

Interviewees	Target			Actual			
	Men	Women	Total	Men	Women	Total	% of target
Beneficiaries - workers			26	14	9	23	88%
Beneficiaries - non-workers			13	8	3	11	85%
Total	27	12	39	22	12	34	87%

In each of the 13 villages where the interviews were conducted, an interview was held with one randomly selected local shopkeeper or trader. These shopkeepers and traders were asked whether the improved road access had an effect on their business or trade. They were also asked to indicate whether, and to what extent, the improved road access had resulted in changes in transportation costs of goods, the availability of new products, differences in prices of local products and changes in the annual turn-over and profit of their business or trade. A total of 13 local shopkeepers/traders were interviewed, 5 of them (38%) being women.

4. Findings

This chapter presents the findings of study. In paragraph 4.1 an overview of the livelihood situation of the respondents is given, based on the information provided during the interviews. The effects of the Project on the creation of short-term and long-term employment opportunities and on the generation of additional businesses are described in paragraph 4.2.

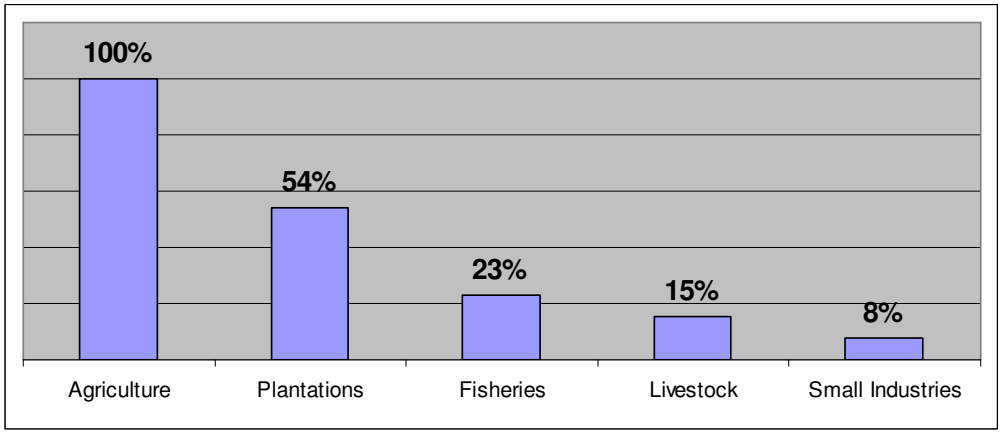
The extent to which the improved roads have increased accessibility to social and economic services and facilities is explained in paragraph 4.3. The effects of the Project on the prices of products and agricultural land are presented in paragraph 4.4.

In paragraph 4.5 the priorities and needs to improve the living conditions, as expressed by the respondents, are described. A case study – for one of the surveyed roads in Bireuen district – is presented in Annex 4.

4.1 Livelihoods Situation of Beneficiaries

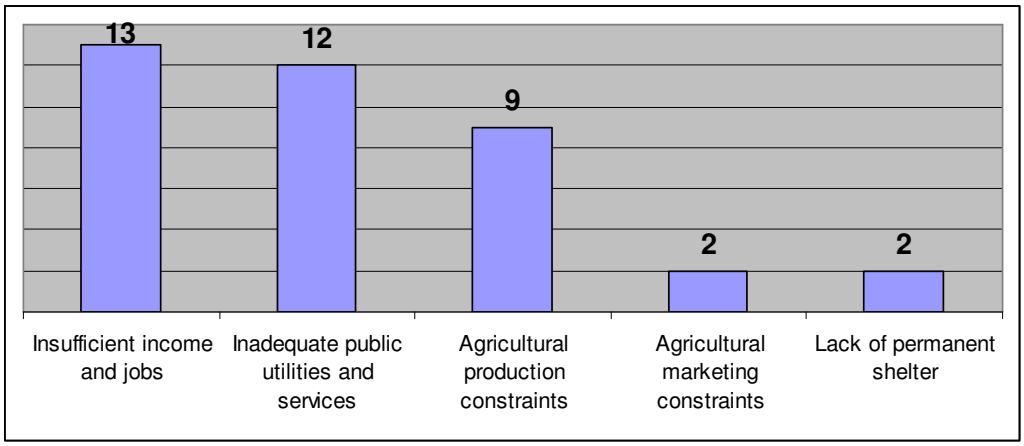
Agriculture is the mainstay of the economy in all the villages covered by the study. The main sources of income of the population in the surveyed villages are shown in figure 1. Agriculture is a main source of income in all the surveyed villages. Plantations provide a source of income in 54% of the surveyed villages, i.e. in all the villages surveyed in the Nias cluster and in one village in Pidie district. In 3 villages (in Pidie, Bireuen and Nias Selatan) fisheries is also a main source of income for the local population. Livestock as a source of income was mentioned in two villages (in Bireuen and Nias Selatan) and in one village in Pidie there was also a small industry (local cake production).

Figure 1: Main Sources of Income of the Population in the 13 Villages Covered by the Survey



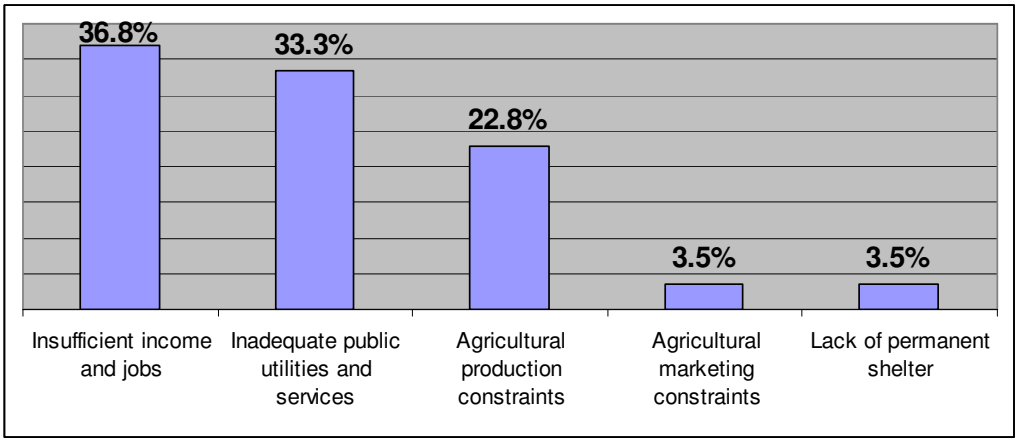
In all the 13 surveyed villages a lack of income and insufficient employment opportunities were mentioned as a main problem. In 12 villages inadequate public utilities were also seen as key livelihood problems. Constraints related to agricultural production were considered a main problem in 9 villages. Marketing problems and a lack of permanent shelter were seen as a problem in 2 of the surveyed villages.

Figure 2: Main Livelihoods Problems in the 13 Villages Covered by the Survey



In terms of the frequency of the number of responses on identified livelihood problems, figure 3 shows that insufficient income and a lack of jobs were considered the most important problems, closely followed by inadequate access to public utilities and services. Out of the 57 responses received, about 1/4th of the respondents (22.8%) mentioned agricultural production constraints as a major problem as well. Agricultural marketing constraints and a lack of permanent shelter were only mentioned in a few cases as a key livelihood constraint.

Figure 3: Main Livelihood Problems as Percentage of the Received 57 Responses



Questions were also asked about the traveling distances from the village to socio-economic facilities and services where the local people usually go. Table 4 summarizes this information. The average distance from the village to markets for selling products is 5.1 kilometers. For buying products the average distance is slightly longer (7.9 kilometers). Elementary schools and primary health care centers are located within a range of 0-7 kilometers from the village and the average distance to these facilities is about 2.35 kilometer. The largest variations were observed in the distance to banks. In 3 villages in the Nias cluster the distance to the banks ranged from 88 to 94 kilometers. For the other 10 villages the distance to the bank varies from 3 to 16 kilometers, with an average of 8.3 kilometers.

Table 4: Distances to Markets, Schools, Health Care Centers and Banks

	Range	Average
Distance to markets for selling products	0-10 km	5.1 km
Distance to markets for buying products	5-12 km	7.9 km
Distance to elementary schools	0-7 km	2.4 km
Distance to primary health care centers	0-7 km	2.3 km
Distance to banks in 3 villages in Nias Cluster	88-94 km	91 km
Distance to banks in other 10 villages	3-16 km	8.3 km

Before the rehabilitation of the roads, there was no public transport in the surveyed villages, with the exception of the Ojek (motorbike) or, in a few villages, the Angkot (minivan).

4.2 Created Employment and Income Generating Opportunities

All respondents were satisfied with the selected road and their involvement in the construction works. The active promotion of involving women was also appreciated by the interviewed respondents. A total of 104,211 worker-days of direct short-term employment opportunities were created by the Project during the rehabilitation works on the roads covered by the study. This included 27,505 worker-days for women (i.e. 26.4%).

The creation of the short-term employment opportunities resulted in a cash injection of approximately IDR 5.2 billion[9] (US$ 0.58 million) in the local economy. Based on the information provided by the respondents, the average duration of employment of the construction workers appeared to be 26 days. This translates to a cash injection of IDR 1.3 million (US$ 145) per household – with one member per household participating in the works. Based on above figures it can be calculated that 4,000 households benefited from the cash-transfers. This translates to a coverage of 33 % of the estimated 12,300 households living in the immediate area of influence of the roads[10]).

The majority of the respondents mentioned that they had spent the wages that they had earned in the Project to buy consumer products and to meet expenses for the education of their children. In a few cases it was reported that the earned income was used for small productive investments or for the repair of the homes.

Apart from the short-term employment opportunities that were created, the study also indicated that long-term employment and income generating opportunities were created that are related to the improvement of the road. The following spin-off employment and income generating opportunities were created according to the respondents:

- Because of the improved road condition, the number of operators of Ojeks and Angkots increased and the demand for services from the existing operators increased, thus leading to additional employment opportunities and income earnings;
- With the improved road access, more truck operators are now serving the villages along the improved roads and this had resulted in an increase in employment and income generating opportunities for the truck operators;

[9] Average daily wage according to study approximately IDR 50,000

[10] Based on the information from the Village Development Committees the total population in the area of influence in the roads covered by the survey is approximately 61,500. With an average size of 5 persons per households this translates to 12,300 households

- The improved road connectivity between agricultural land/plantations and the local markets has led to an increase in the areas under agricultural production and/or resulted in a diversification/intensification of agricultural production. These developments have increased agricultural employment opportunities and income earnings;
- Due to the improved road condition, an additional 44 local grocery shops were established along the 13 roads that were covered under the study, thereby generating additional employment and income earning opportunities. The majority of the interviewed already existing small shop keepers reported an increase in their annual turn-over and profits related to the improved road. Reported incremental profits among 7 interviewed local shopkeepers ranged from IDR 1-18 million per year (a 10%-150% increase) Anecdotal evidence suggests that other small businesses were also able to increase their business due to the improved road conditions.

> *In one village in the Nias cluster for example the ownership of private motorbikes increased from 7 to 127 as a result of the road improvements, thereby giving a substantial boost to the local motorbike sales agents and the motorbike workshops.*

- A few of the interviewed respondents mentioned that the skills that they had acquired while working as a construction worker on the Project had enabled them to find jobs after the completion of the work on the Project (e.g. in the case of masons).
- Some respondents had spent part of the wages that they had earned in the Project for productive investments, thereby creating additional employment and income generating opportunities for them.

In 8 out of the 13 villages that were covered by the study, the creation of longer-term additional employment and income generating opportunities – as a spin-off effect of the improved road – was reported. In 5 villages this was not the case (yet) and this could be explained by the fact that the road improvements have only been completed recently and that it is too early to expect such spin-off effects.

4.3 Improved Access to Social and Economic Facilities and Services

Table 2 on page 4 shows that a total of 75 villages, with a total population of approximately 61,500, are located within the immediate area of influence of the roads included in the sample. Improved access to the connecting main road has been mentioned as a key benefit by all the interviewed respondents.

The survey covered 50% of the total road length rehabilitated by the Project and if the findings from the survey were to be extrapolated, it can be estimated that about 150 villages with a total population of about 123,000 has benefited from improved road access to the main roads.

This estimate is considered conservative as only villages within the immediate area of influence of the road have been taken into account. A number of the roads that have been rehabilitated provide important connections within the local road network, thereby also benefiting people living in a larger area.

Table 5 presents an overview of the reported savings in travel time (one-way) on the main origin-destination routes (between villages and local markets) as a result of the improved road connections. On an average, the road improvements have resulted in a reduction in travel time of 64 minutes, or 74% of the original travel time.

In the Nias cluster the reduction in travel time is substantially more than in the Aceh cluster. This is explained by the differences in road density between the two clusters, the comparatively poor condition of the roads in the Nias cluster prior to the road improvements and the relatively longer distances in the Nias cluster to local markets and other economic and social facilities and services.

Table 5: Reduction in Travel Times on Main Origin-Destination Routes

	Reduction travel time in minutes		**Reduction travel time as %**	
	range	average	range	average
Nias Cluster	50-130 minutes	96 minutes	70-90%	83%
Aceh Cluster	15-90 minutes	36 minutes	50-75%	62%
Overall	15-130 minutes	64 minutes	50-90%	72%

In 5 out of the 7 surveyed villages in the Aceh cluster a reduction in operating costs of privately owned motorbikes, ranging from 40-75%, was mentioned. Monthly savings were estimated in the range of IDR 150,000 to 200,000.

All 7 surveyed villages in the Aceh cluster also reported a decrease in the transport costs of goods by 8 ton trucks. For a one-way trip on the typical origin-destination route, a cost saving of 50-75% was reported (IDR 37,500 to IDR 150,000; on average IDR 102,500). As hardly any trucks plied the roads covered by the survey in the Nias cluster, no such benefits were mentioned by the respondents in the Nias cluster.

In 6 surveyed villages (2 in the Nias cluster and 4 in the Aceh cluster) a reduction in costs of 30-50% of a one-way trip with an Ojek on a typical origin-destination routes were mentioned. Reported decreases of the cost of a trip ranged from IDR 2,000 to IDR 10,000 (with an average cost reduction per trip of IDR 5,000).

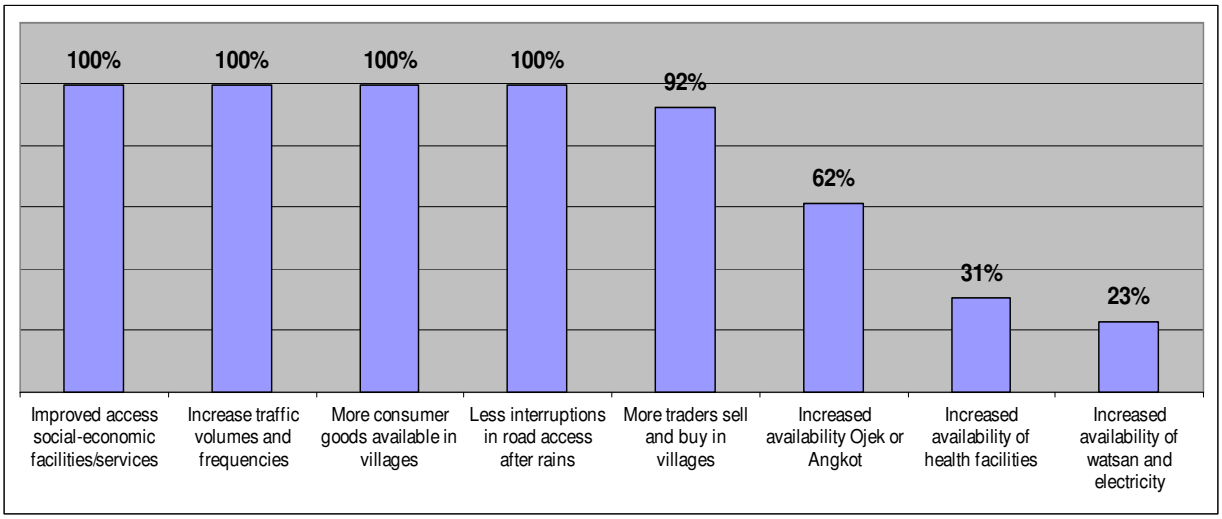
Figure 4 summarizes the main reported accessibility benefits of the improved roads. Improved access to social and economic facilities and services like markets, schools, health centers and public transport as a result of the improved road was mentioned as a benefit by all the respondents.

In all the surveyed villages it was mentioned that the improved road access had led to an increase in traffic/travel volume and frequency. The reported average increase in travel frequency to the local markets was 100% (ranging from 50-200%).

All villages indicated that the road improvements had led to an increased local availability of consumer goods and a decrease in access interruptions during the monsoon. 12 villages mentioned that the improved road conditions had resulted in an increase of the number of traders selling and buying products in the villages. In 8 villages the availability of Ojeks or Angkot increased.

In 4 villages health centers were constructed and electricity or water and sanitation facilities were provided in 3 villages as a result of the road improvements. Increased school attendance was reported in 6 out of the 13 villages due to improved road access to the schools. 2 villages reported that the improved road access to the plantations had resulted in a reduction of theft from the plantations.

Figure 4: Reported Accessibility Benefits Related to Improved Road Access



4.4 Prices of Consumer Products and Land

In 6 of the surveyed villages it was mentioned that prices of consumer goods have decreased. In the other surveyed villages this was (not yet) the case. This could be because it might still be too early to expect such effects on local consumer prices as the rehabilitation works have only been completed recently.

In 10 villages it was reported that the value of agricultural land had increased due to the road improvement. Reported increases in the value of agricultural land ranged from IDR 4,000 to IDR 45,000 per square meter (with an average of IDR 22,000). This corresponds to a 75% - 500% increase in the price of agricultural land. In 6 villages it was also mentioned that the price of land for the construction of houses had increased. Price increases of 50-500% were reported (IDR 6,000 – IDR 82,500). On average, the reported price increase was IDR 39,000 per square meter (300%).

4.5 Beneficiaries' Needs and Priorities

Apart from the need for further improvements in access to social and economic facilities and services[11], the need for a livelihoods cum Local Economic Development (LED) programs was mentioned as a priority by a majority of the respondents. According to them such programs are required to: i) meet the needs of providing additional and more productive employment opportunities in both the agricultural and non-agricultural sectors, and; ii) address agricultural constraints (regarding skills, inputs, production and marketing).

The respondents in all the 13 villages realized the need for maintaining the rehabilitated roads and in 10 villages the respondents expressed their intention to organize this. However, for the mobilization of the required financial resources no specific ideas emerged from the respondents. The general conception is that the local government should provide financial assistance in securing the funds necessary for the maintenance

[11] Including the further development of the road network, improving irrigation facilities, providing water and sanitation, electrification and the provision of public transport

of the roads. Interviewed respondents expressed their interest to continue to be engaged as maintenance workers, following the community-based maintenance system that was introduced by the Project.

To avoid excessive damage of the rehabilitated roads, interviewed beneficiaries suggested that measures needed to be taken to prevent heavy trucks (with more than a 8 tons pay-load) from plying the rehabilitated roads as these roads were not constructed to carry heavy traffic.

5. Conclusions and Recommendations

The Project has been successful in contributing to the restoration of the rural livelihoods of communities of the disaster affected populations in NAD and Nias through the rehabilitation of vital road links in the local road network, using Local Resource-Based (LRB) approaches.

Apart from the short-term benefits of substantial cash injections in the local economic – through the creation of short-term employment opportunities to the local population – the improved road access has boosted local economic development (LED) and contributed to an improvement of the livelihood situation of the rural population.

The road rehabilitation works have resulted in improved access to social and economic services and facilities, a decrease in transportation costs and travel times and led to increased long-term employment opportunities – as a spin-off effect of the improved accessibility.

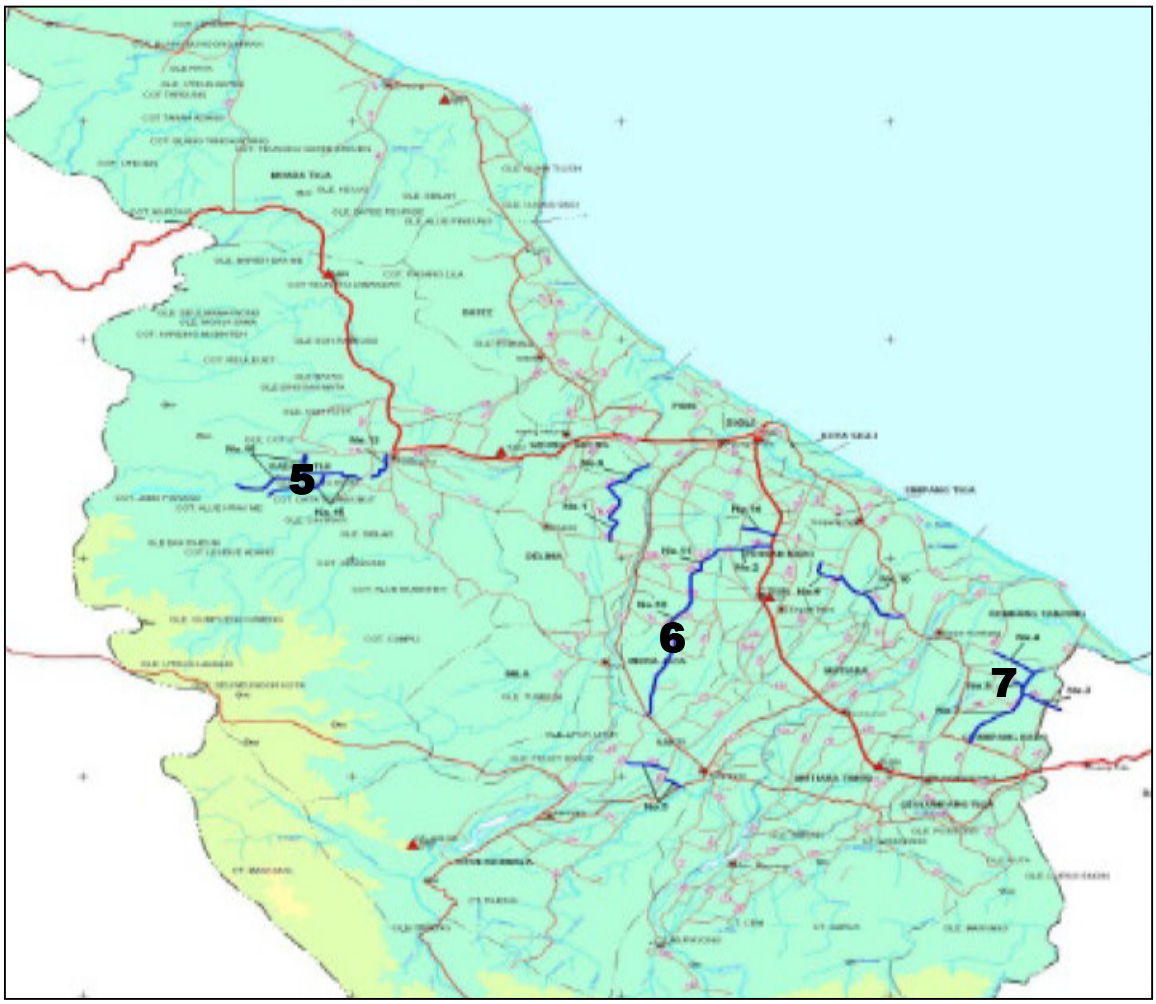
Crucial to the sustainability of the realized benefits is the maintenance of the created road assets and priority should be given to activities geared towards the establishment of effective maintenance systems and the mobilization of resources to meet maintenance requirements.

Another recommendation is to give more attention to integrate LED programs with rural (productive or public) infrastructure development programs to ensure that maximum use can be made of the improved infrastructural facilities.

Annex 1: Map with Location of the Roads covered under the Survey

PIDIE DISTRICT – ACEH CLUSTER

(The numbers of the Roads refer to the numbers of the roads mentioned in table 2 in the main text)



BIREUEN DISTRICT – ACEH CLUSTER

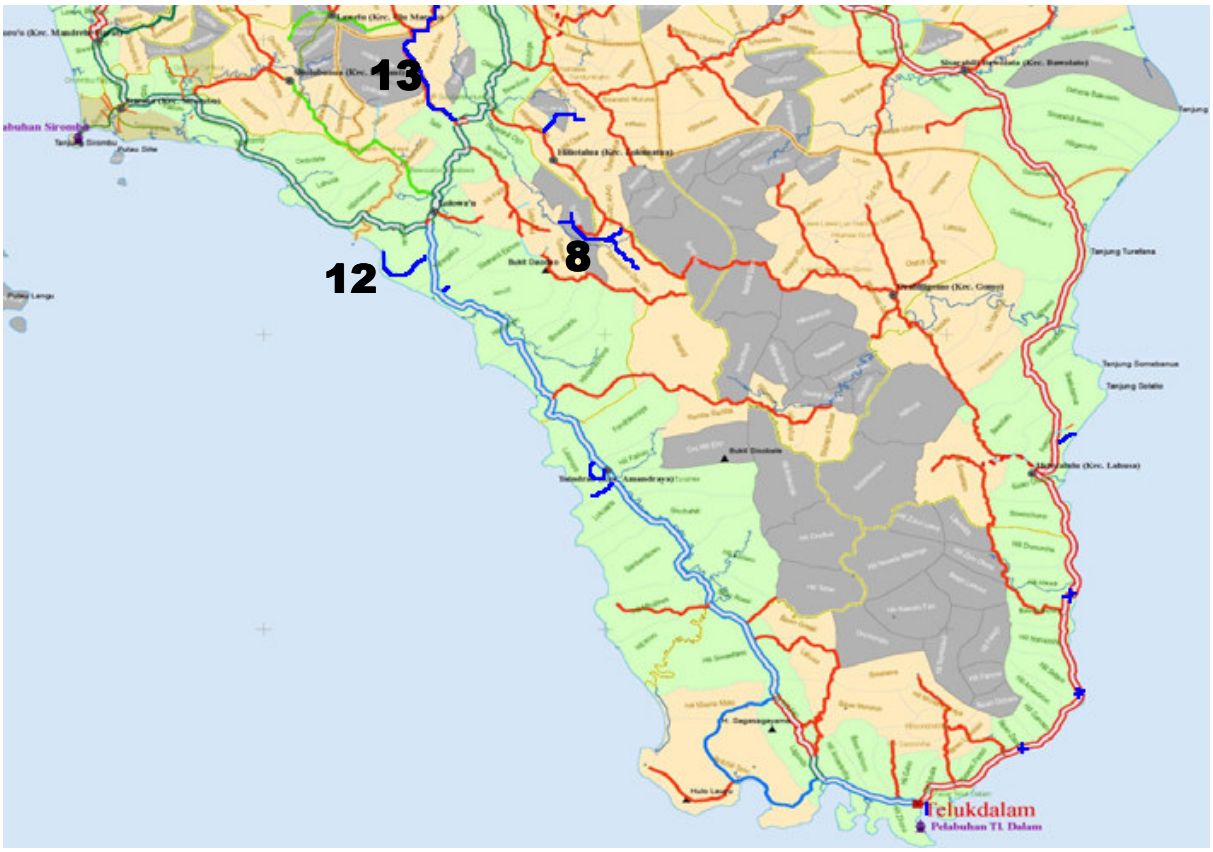
(The numbers of the Roads refer to the numbers of the roads mentioned in table 2 in the main text)

NIAS DISTRICT – NIAS CLUSTER

(The numbers of the Roads refer to the numbers of the roads mentioned in table 2 in the main text)

NIAS SELATAN DISTRICT – NIAS CLUSTER

(The numbers of the Roads refer to the numbers of the roads mentioned in table 2 in the main text)



Annex 2: Questionnaire Used for Group Interview

The questionnaire below is meant to be used as guidelines for structuring the group interviews with the members of the Village Development Committee. If other relevant issues come up during the interviews, it may be useful to record those as well. If necessary, additional pages may be needed to record effects or impacts that are not covered by the questions but that are relevant. One additional blank page is provided at the end of the questionnaire to record such additional information.

Date: **Interviewer:**

1.1 District: Sub-District:

1.2 Kampong/Desa of interview: Population in Kampong/Desa:

1.3 Name of road and length (km):

1.4 Type of road:

People participating in meeting and their designation:

1:……
2:……
3:……
4:……
5:……
6:……

1.5 Estimate of the total population living in the area of influence of the road and using the road (include number of Kampongs in the area of influence and their population):

1.6 Main sources of income of the people in the catchment area of the road:

1.7 Places where people from the Kampong go for:

- Selling products: Distance (km):
- Buying products: Distance (km):
- Schooling: Distance (km):
- Health care services: Distance (km):
- Banking services: Distance (km):

1.8 Information about public transport services (type, frequency, from where to where):

1.9 Main origin-destination routes used by the people of the Kampong to go to local markets:

1.10 Main economic, social and/or public service/facility problems that the people in the Kampong are facing (could for example be access to markets, schools, fertilizers, seeds, electricity, drinking water, job opportunities, public transport, etc. etc.):

1.11 Did the improved road access make a difference in terms of:

- Travel time (if yes, please specify/quantify/give examples):
- Travel costs (if yes, please specify/quantify/give examples):
- Number and/or type of vehicles plying the road (if yes, please specify/quantify/give examples):

1.12 Has the improved road access had an impact/effect on:

- The cost of agricultural land in the area (buying or leasing)? If yes, please specify and or quantify:
- The area under cultivation? If yes, please specify and or quantify:
- The availability of public services (e.g. public transport, number of shops, locally available consumer products, electricity, water supply, credit facilities, banking services, health centers, schools, etc):
- Employment opportunities (e.g. because of the skills that the people who worked on the road have acquired):
- Any other effects or impacts due to the improved road access?

1.13 Are the villages satisfied with the selection of the road? Please elaborate:

1.14 Are the villagers satisfied with their involvement in the construction work, with the job opportunities provided to them and with the involvement of women in the construction works?

1.15 How are the communities going to organize the maintenance of the road in the future?

1.16 Any other comments from the community in relation to the construction of the road and/or the effects/impacts of the improved access or other issues that came up during the meeting?

Annex 3: Questionnaire used for Individual Interviews

The questionnaire below is intended to be used as guideline for structuring the individual interviews with beneficiaries (workers and non-workers). If other relevant issues come up during the interviews, it may be useful to record those as well. If necessary, additional pages may be used to record effects or impacts that are not covered by the questions but are relevant. One additional blank page is provided at the end of the questionnaire to record such additional information.

Date: **Interviewer:**

I General Information

1.1 District: Sub-District:

1.6 Kampong/Desa:

1.7 Name of road and length (km):

1.8 Name and age:

1.9 Occupation:

1.10 Worked on construction (circle) Yes No

1.11 If worked, no of days:……. and wages earned: IDR…….

1.12 General information about the composition of the household (name, position in household, age, occupation):

1: ……...
2:……
3:……
4:……
5:……
6:……
Etc.

1.13 Main sources of income (please describe):

1.14 What are the main problems that you and your family are facing:

1.15 What are the effect of the improved road access on:

- Costs of transportation/travel (please describe, specify and quantify):
- Travel time (please describe, specify and quantify):
- Frequency of travel (please describe, specify and quantify)
- Cost of goods (e.g. consumer goods, fertilizers, paddy, etc.)

- The availability of goods (more, different goods available?):
- Availability of public transport
- Land value (purchase and lease). Please describe and quantify:
- Any other effects/impact? If yes, please describe:

1.16 Are your satisfied with the selection of the road? Please elaborate:

1.17 If you earned money during your work on the construction or maintenance works, please describe what you did with the money you earned:

1.18 If you worked on the project (construction or maintenance) did the skills that you acquired gave you better opportunities to find work? If yes, please explain and elaborate:

1.19 Any other comments that you have related to the effects/impact of the improved road access or any related other suggestions/questions?

Annex 4: Selected Case Study from the Aceh Cluster

The case of Kota Blang and Ganda Pura in Bireuen District

The 12.7 kilometers long road from Cot Tunong Timu to Blang Mee passes the sub-districts of Kota Blang and Ganda Pura in Bireuen District, Aceh Province. This rural road is the key road connection for a rural population of more than 6,250 who live in the 7 villages along the road. The main occupation of the population living in the area of influence of the road is subsistence farming. Crops grown in this rural area are paddy, coconuts, palm oil, betel nuts and cacao.

The road is the only connection for the local people to the main market town of Kuta Blang, situated on the national highway, and – at the other end – the local market in the village of Blang Mee along the provincial road.

Before the road was improved by the project, the people in the area suffered from access problems. During the monsoon the road was often impassable and also during the dry season the poor road condition seriously impaired the movement of goods and persons.

In close consultation with the concerned government officials, the district Public Works Office and the local people, the road was prioritized and selected for under implementation under the project. A total investment of US$ 502,218 (IDR 4.52 billion) was allocated for the rehabilitation works. These consisted of the provision of a black-topped road surface along a section of 4.5 kilometers and the improvement of the remaining section of 8.2 kilometers as gravel road. Necessary culverts, retaining walls and bridges were included in the works.

In interviews with local village leaders, youth leaders, farmers and local business people it became apparent that the local people have benefited greatly from the improved road access and the employment opportunities that were offered during the construction works.

75% of the working-age local population is unemployed or under-employed and the temporary jobs created by the project were considered a very welcome supplement to the meager incomes of the local people. The project generated a total of 20,531 worker-days of employment for the local people – of which 40% for women – and an estimated USD 114,000 (IDR 1.03 billion) was injected in the local economy through cash transfers from wage earnings.

The improved road has greatly improved access to the local economic centers and the places where social infrastructure facilities and services, like schools and health centers, are available. Before the road improvements it took for example the people of Paloh Raya village 2 hours to reach Blang Mee and 1 hour to go to Cot Tunong. Since the road improvement, these travel times are reduced to respectively 1 hour and ½ hour.

Interviewed local people also mentioned that the travel costs had reduced with 50%. Before the road was improved it cost for example IDR 150,000 to transport one ton of agricultural produce to the local market in Kuta Blang. Now these costs have been reduced to IDR 75,000 per ton.

Another benefit was a reduction of the operational and maintenance costs of the motorbikes, a commonly used mode of transport in rural areas. Before the road was improved, people spent about IDR 250,000 to 300.000 per month on operational and maintenance costs of their motor-bikes. Since the completion of the road works this figure has gone down to IDR 100,000-150,000.

Another indication of the economic benefit of the improved road is the increase in the value of the agricultural land. Whereas the price of agricultural land was IDR 20 million per hectare before the road improvement, agricultural land sells currently at a price of about 38 million per hectare. This means that the price of agricultural land has almost doubled.

The improved access has also led to the construction of other infrastructure facilities in the area, including a kindergarten. Because access to schools has also become easier since the road was rehabilitated, the interviewed persons reported that this had a positive effect on school attendance.

Due to the improved road accessibility, more and more diverse consumer goods are also available in the local shops as Mrs. Ariani, 30 years old, married and a mother of two small children, told.

Mrs. Ariani is running a small grocery shop in Paloh Raya. Since the road condition has been improved, she has seen her monthly turn-over and profit increase substantially. Before the road was improved her daily turn-over was about IDR 200,000 and her profit margin IDR 40,000 per day. Since the completion of the road improvement works she is now selling on average consumer products worth about IDR 500,000 per day and her daily profit has increased to IDR 100,000.

Mr. Amin Usman, married and farther of 14 children, has worked as a gang-leader on the construction of the road. The income that he earned by working for the project provided a welcome addition to his meager income as a subsistence farmer.

He used the money earned in the project to repair his house, finance the school costs for his children and use the money to buy essential consumer goods for his family. Mr.

Usman also appreciated the improved road access very much and mentioned the reduced travel time, decreased transportation costs, the improved overall accessibility, the improved availability of consumer goods in the locality and the increase in the value of agricultural land as main benefits. He also things that his employability has increased due to the skills that he obtained while working for the project.

Ms. Siti Aminah, a single woman who lives in a temporary shed near the road, was also happy with the improved road access as it reduced her travel time to the local market a lot (from 2 hours before to ½ hour now). She also mentioned that more consumer goods are now available in the local grocery shop and this means that she does not have to travel that far anymore to buy basic consumer commodities.

Ms. Siti's main sources of income are wages earned as a daily agricultural labourer. With the money that she earned during the short period that she worked on the project, she bought essential consumer goods. She mentioned that she would like the ILO to continue its activities in the area to provide much needed employment opportunities.

All the interviewed people asked for a continuation of the project, not only to provide short-term employment opportunities but also to assist in the improvement of the much needed community-based irrigation infrastructure. The lack of sufficient or adequate irrigation infrastructure in the area was mentioned as a key constraints to local economic development and the villager were all very keen to see the project's future involvement in this area.