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Farm Risk Reduction Assessment for Nusa Tenggara Islands, Indonesia

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Abstract

Farming has always been risky, and with global warming may be getting riskier. Faced with uncertainty, what do Eastern Indonesia farmers now do to reduce risk? In the future, what more could they do to reduce risk to their livelihoods, their families' incomes? That is the subject of this paper. It is undertaken in the context of SADI, an AusAID funded smallholder agribusiness project which follows the Community Driven Development approach, along the lines of the existing World Bank KDP project, which has now been expanded and has become the national PNPM village empowerment program. SADI provides small competitive grants that might be used to undertake risk-reducing investments. What then are the possible investments?

The principal risk to agriculture is variability in physical production due to erratic and unpredictable rainfall. Eastern Indonesia receives much less rainfall and has a longer and more pronounced dry season than experienced in the wetter islands of western Indonesia (Java, Sumatera). There has been speculation that, with global warming, the amount of rain falling on these eastern provinces decreased on a long term basis, but the study shows this is not actually true for NTT province. But rainfall during the main growing season has become very variable over time.

The main division of types of risk is along the following lines: yield risk, resource risk, and price risk. Yield risk is usually associated with weather (lack of water at appropriate times). Catastrophic events such as storms, floods, drought and fire can reduce yields irreversibly. Resource risks include the unavailability of purchased inputs, but can also relate to lack of secure access to land. Price risk is evidenced in Eastern Indonesia by several symptoms: [i] widely fluctuating prices within any given year because of uniform harvest time and [ii] low farm gate prices compared to prices in destination markets such as Surabaya.

Farmers' constraints (negative events with 100% certainty) were identified separately from risks through facilitated village level meetings held in both NTB and NTT. On the island of Timor, the main unavoidable constraints were the need to farm sloping land and a short rainy season. The main risk factors identified were unpredictable rainfall (delayed onset, dry spell in middle of season, early end). Wind damage during January-February is often important. Prices fall at harvest time. In NTB the main constraint is the lack of cash to buy inputs; borrowing from money-lenders is at exorbitant interest rates. The main agricultural risk factors identified on Lombok, NTB were rice and goat diseases, soil erosion and lack of vital information. The geographic focus of the risk problem within NTT was identified by examining kabupaten-specific poverty rates and child malnutrition evidence. The problems of poverty and food shortage (as measured by malnutrition) appear to be focussed on Timor Island (Kupang, TTS, TTU and Belu), Sumba Island (West and East) and Lembata Island.

Weather information was examined to see whether total rainfall has fallen below its historical average. Rainfall data was collected for the four kabupatens on Timor, plus

Ngada (Bajawa) on Flores as these are key locations for SADI. Surprisingly, average rainfall has not fallen below the historical mean. However it has become more erratic, with high coefficients of variation for the five locations examined.

The study then turned to possible strategies for defending against risk or coping with misfortune after the event. It is important to distinguish between risk-management (prevention) and loss-management (after the fact). The main loss management strategy would be the building up assets which may be sold off in bad years. But many households cannot reach a position of positive assets because of existing indebtedness to loan-sharking money-lenders. This problem is especially serious on Lombok Island, NTB but also widespread on Timor.

Formal measures for risk-sharing such as insurance were examined. Insurers interviewed do not want to insure farmers for a number of reasons; the main reason is that agriculture has an unknown but high level of risk. While the door is closed to insurance contracts, there are other formal methods being developed and these are explored. Prime among these is a risk-sharing contract cattle farming activity developed with the PUSKUD cooperative office in Kupang. Another successful formal measure is contract peanut farming with Garuda Food on Lombok. A third method is for farmers to diversify into planting agro-forestry tree species on land barren allocated by government. The harvest is split on a share-cropping basis.

Informal measures have met with wider success than formal measures. Chief among the methods tried has been greater access to and command over water using low lift water pumps, at least in low-lying areas or areas near rivers. Farmers are now better able to manage price risk and the possibility of collusive behaviour by collection traders by resorting to new means of information dissemination, including a mobile phone price system developed with assistance from the IFC. Improved yet simple maize storage techniques (drums, plastic bags) are being introduced to reduce damage from storage beetles. The most encouraging aspect is that farmers in a number of locations are now able to build up saleable assets such as livestock and agro-forestry trees. Agro-forestry trees such as mahogany or teak and plantation tree crops such as candlenut and cashew in particular are much less susceptible to fluctuations in rainfall than food crops. The villages would need nurseries to produce seeds and seedlings. To date these types of village level investments have not yet been included in SADI PNPM, but should be.

Glossary of Acronyms, Indonesian Words

Agrindo	PT Santosa Agrindo, a member of the JapfaComFeed group
Bank Subuh	"Sunrise bank", a money lending operation in which the debtor is visited at sunrise each morning for loan repayment. Operated by a <i>Rentenir</i> (see below)
BDSP	Business development service provider

Becom	PT. Benang Komunikasi (BECOM) a service provider company that works with multiple cell phone providers with certain numbers
CSP	The Cocoa Sustainability Partnership, based in Makassar South Sulawesi. An Indonesian foundation supported by IFC and SADI. Works closely with PT Agrindo to supply daily cocoa prices, broadcast by SMS.
FGD	focussed group discussion
<i>fufuk</i>	Either <i>Sytophyllus Mais</i> or <i>Sytophyllus Oryzae</i> beetles, storage pests
Kab.	Kabupaten, a district in Indonesia (sometimes called regency)
KDP	Kecamatan Development Project, WB loan funded
Kec.	Kecamatan, a sub-district in Indonesia
NTB	Nusa Tenggara Barat (West Nusa Tenggara) Province
NTT	Nusa Tenggara Timur (East Nusa Tenggara) Province
<i>Rentenir</i>	A village level money-lender, charges very high interest rates
PNPM	<i>Program Nasional Pemberdayaan Masyarakat</i> , central government program empowering villages, a community driven development
<i>PusKud</i>	Pusat Koperasi Desa, provincial cooperatives office
SADI	Smallholder Agribusiness Development Initiative, AusAID funded. Agricultural initiative using the approach of KDP project, now PNPM program
TTS	Timor Tengah Selatan (South Central Timor) kabupaten or district
TTU	Timor Tengah Utara (North Central Timor) kabupaten, district

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1. Background

Farming has always been risky. It may be getting riskier with global warming, but this is subject to evidence. Faced with uncertainty, what do farmers do now to avoid or at least reduce risk? In the future, what should they do, or put more succinctly, what can they do? That is the subject of this paper.

This study of agricultural risk management is undertaken in the context of community-driven development (CDD) in Indonesia. For the past ten years the World Bank has worked with the Government of Indonesia to develop a portfolio of community-driven development programs through the Kecamatan Development Project (KDP), a nationwide project to help poor villages and villagers learn to plan and manage locally appropriate development projects. This project has now been adopted as a national program by the central government and the name has changed to *Program Nasional Pemberdayaan Masyarakat (PNPM)*, or national program for empowering people. The government has expanded the program to cover the entire country by the end of this year, 2009. In the past, traditional KDP/PNPM was rather limited to building village infrastructure, but there are now pilot efforts to expand this menu to education, health and most importantly agriculture, the one of interest to us.

Government has introduced a small 3-1/2 year pilot to help address long-standing issues and constraints to agricultural production and rural poverty in four provinces of Eastern Indonesia. The pilot, the Smallholder Agribusiness Development Initiative (SADI), is funded by AusAID under the Australia-Indonesia Partnership (AIP) and is currently operating in South Sulawesi, Southeast Sulawesi, West and East Nusa Tenggara (NTT and NTB). If successful, the 3+ year pilot is expected to lead to an additional 6-1/2 years for total program duration of 10 years.

SADI is not just community driven development or CDD; there are also important elements of applied research and private agribusiness support as well. The SADI pilot, centred in Makassar, includes a component to disburse KDP grants to target agricultural communities to support the development of household-level economic production activities. The nature of the grants is to fund technical assistance, training and inputs. Implementation of this component, including strategic review of the Government of Indonesia (GOI) executed components, is managed by the World Bank on behalf of AusAID.

As introduced briefly above, there are two additional components of SADI with which the KDP community based agribusiness development component collaborates closely. These are first, an adaptive research and technology testing component assisted by the Australian ACIAR agricultural research group and second, an agribusiness support activity for private entrepreneurs and investors supported by the International Finance Corporation, the private sector support group of the World Bank. The overall program began in 2007. The World Bank and GOI worked together to finalize the pilot design of the government-executed KDP component of SADI. All three components of SADI are

now underway and are collaborating closely on agribusiness strategy and activities in all four eastern provinces of Indonesia.

Agricultural risk in Nusa Tenggara: One major impediment to the successful development of smallholder agriculture in Eastern Indonesia is a higher degree of risk than normally associated with agriculture, although agriculture is perceived as a risky enterprise in any country. There are many types of agricultural risk. Risk has many causes, principal among which is variability in physical production due to erratic and unpredictable rainfall. Eastern Indonesia receives much less rainfall and has a longer and more pronounced dry season than experienced in the wetter islands of western Indonesia (Java, Sumatera). There is even speculation that, with global warming, the amount of rain falling on these eastern provinces has decreased on a long term basis, and grown even more variable over time. This is a matter for investigation for empirical information.

There are many symptoms of risk. The main division of types of risk is along the following lines: yield risk, resource risk, and price risk. **Yield risk** is usually associated with weather (lack of water at appropriate times), but also with the availability of (and ability to buy) intermediate inputs. Catastrophic events such as storms, floods, drought and fire can reduce yields quickly and irreversibly. **Resource risks** include the unavailability of purchased inputs, but can also relate to lack of secure access to land, or lack of any documents providing formal ownership or guaranteed tenure to land, the control over which is often disputed in Eastern Indonesia. **Price risk** is evidenced in Eastern Indonesia by several symptoms: widely fluctuating prices within any given year because of uniform harvest time (short rainy season, photosensitive crop, lack of irrigation, lack of transport facilities to markets). Another price risk facing Nusa Tenggara farmers (as shown in many previous studies) is the general low level of farm gate prices -- as a percentage of wholesale market prices in destinations such as Surabaya or Jakarta. This low level farm gate / destination market price ratio has been attributed to concentrated collection market power by a few, relatively well-financed and well-informed buyers, who exercise monopsony power in the east.

2. The risk problem: defining sources of risk, evidence of consequences and measures that can be adopted to reduce risk. The viewpoint of village groups interviewed

In order to understand villagers' perceptions of risk, a number of focus group discussions were held in two of SADI's sub-districts on Timor Island in NTT (Kec. Kuan Fatu, Kec. Mollo Utara but not Amanuban Utara because the kecamatan facilitator was killed in a road accident) and in three of SADI's sub-districts on Lombok Island in NTB (Kec. Narmada, Kec. Gerung, and Kec. Bayan). Unfortunately similar interviews could not be held on Flores Island or Sumbawa Island because of a timing constraint (the Idul Fitri national holiday).

During the discussions and subsequent analysis, it became clear that a distinction must be made between a constraint and a risk factor. We define a constraint as a certainty, an unavoidable problem or limitation, such as “sloping land”, an event with 100% probability. Similarly we define a risk factor as an event with a probability of less than 100%. Annex 2 (by Rohandi) presents the full findings of the focus group discussions in the kecamatans visited. In the section below we summarise the findings. The reader is directed to that annex for a fuller discussion.

a. NTT: Kec. Kuan Fatu and Kec. Mollo Utara, TTS

Constraints: All land sloping, un-irrigated. Rainy season only 4 months. Labour constraint limits cultivated area. Low use of purchased inputs because of cash constraint and lack of information on what to use/rates of application. Food shortage every year for several months.

Risk factors: Rainy season becoming more unpredictable, sometimes very short. Late planting can severely reduce production of maize. Heavy wind affects standing maize crops from end-January to early-February many years. Erosion sometimes takes place during heavy rains. Loss of soil fertility requires farmers to shift to new fields every few years. Farmers would be interested to plant agro-forestry trees for sale, but lack information on where to buy seedlings. Cattle disease (abscess around head)¹ affects cattle killing them. Pests and diseases attack crops. Low prices at harvest time; do not understand why so low. Short period of surplus of vegetables; otherwise chronic shortage.

b. NTB: Kec. Narmada, Kec. Gerung, Kec Bayan, Lombok Barat

Risk factors: Tunggro rice disease. Rainfall has become more erratic (especially onset of rainy season). Erosion and loss of soil fertility an increasing problem. Lack knowledge where to purchase quality seeds and seedlings. Goat disease during rainy season. Frequent food shortages near end of season.

Constraints: Shortage of cash leads to selling crops “green” (*ijon*) at considerable loss. Money-lending at high interest rates. Middleman (money-lender) often determines cropping pattern for farmer.

3. Locating the worst food shortages and nutrition problem in the Nusa Tenggara islands

Annex 3 to this report presents a scorecard for the kabupaten of East Nusa Tenggara on three of the most important Millennium Development Goals, [i] kabupaten specific poverty rates, [ii] prevalence of child (under age 5) malnutrition, and [iii] child (under age five) mortality rates. Using the evidence presented in that annex, we reviewed the problem of agricultural poverty and malnutrition. The areas where problems are most severe are the islands of Timor and Sumba, compared to other islands of East Nusa

Tenggara. In the section below, we summarise the evidence taken from poverty studies and nutritional surveillance studies. The quantitative findings presented in Annex 3 were confirmed on a qualitative basis for Timor island locations during our focus group discussions in PNPM villages.

a. Poverty incidence

Nationwide the poverty rate rose from 15% in 1990 to a high of about 23% during the financial crisis, but fell back to less than 17% by year 2004. Poverty rates were much higher in East Nusa Tenggara during the same period, at least half as much again as the national numbers at each point measured: 24% in 1990, 39% in 1999 during the Financial Crisis, and most recently (2004) they have fallen back to 28%. But provincial average poverty rates mask regional differences. Recently (2004) very high poverty rates are still being detected in Timor Tengah Selatan (37%), Kabupaten Kupang (33%), Sumba Barat (42%), Sumba Timur (40%) and Lembata (35%). The kabupatens listed above have economies based on agriculture and agriculture is failing to deliver a steady, reliable level of living that is above the poverty line.

b. The malnutrition problem:

The net effect of the riskiness of agriculture in the eastern islands is that food availability and agricultural incomes – already low – fluctuate widely. This presents clear welfare problems for rural people in the islands: poverty, malnutrition, loss of assets and decreased employment opportunities. Near the end of each dry season there is continuing incidence of malnutrition, chronic food shortages.

The evidence of frequent food shortages, at least in East Nusa Tenggara, is confirmed by high malnutrition rates for children under the age of five as measured by the national socio-economic survey, Susenas: Timor Tengah Selatan (51%), Belu (46%), Timor Tengah Utara (45%), and Kabupaten Kupang (42%) according to the BPS. See Annex 3 for details. Newspaper reports continue to monitor and report on the child malnutrition in Nusa Tenggara islands. A recent UNICEF report (Jakarta Post, 7 July, 2008) stated that from January through June 2008, malnutrition was most serious in East Nusa Tenggara (31 deaths of children) and West Nusa Tenggara (20 deaths of children).

The international response to this continuing food shortage problem led to a very large multi-year feeding program undertaken by the World Food Program^{2,3} in various parts of the eastern islands. WFP feeds about 2 million people throughout Indonesia. NTT is one of the major participants in WFP's programme. WFP uses its food to provide school feeding, mother and child supplemental food, and food-for-work construction of public infrastructure. The commodities supplied include noodles, rice and fortified biscuits. In areas of severe malnutrition WFP also distributes dry skim milk. There are three main WFP distribution channels used to overcome malnutrition: [a] **nutrition rehabilitation** (distribution of noodles and biscuits at community health stations) costing about \$1.6 million per year, [b] **emergency rehabilitation** of severely malnourished children through the local government health services, about \$0.2 million per year, and [c] **food**

for work (food distribution as wages-in-kind, for construction of roads and other infrastructure), about \$10 million per year. WFP mainly employs two local NGOs to distribute, monitor and report on food distributed, namely Yayasan Alpha Omega and ANIMASI. So far in NTT, WFP's activities have been restricted to the western half of the island of Timor and its four rural kabupatens. By 2006 the WFP was already assisting schools with supplemental food in West Timor. In 2006 it was proposed that the school feeding program be extended to the two kabupatens on Sumba Island, and (should resources permit) Kab. Alor and Kab. Lembata. Funding has not yet been secured to undertake this expansion however.

4. Weather, the main risk factor

Weather is the most prominent source of risk for farmers in the Nusa Tenggara islands. There are two aspects of changes in rainfall examined in this paper.

Given that global warming is now universally agreed to be occurring, the first issue for Nusa Tenggara islands is whether there has been a discernable continuous downward trend in total rainfall over a long time period. If such a phenomenon is to be observed, this would not represent an increase in risk. Instead, it would have become a certain event, a heightened and very certain constraint, as defined above in section 2 of this report. Agriculture would have to adjust to such a change in circumstances.

On the other hand, rainfall has become more unpredictable and variable, especially during El Nino events, when the sea temperature rises, near the equator, in the middle of the Pacific Ocean. When this happens, Indonesia suffers lower rainfall. According to WWF's associated climate research unit, Indonesia suffered major El Nino events in 1972/73, 1982/83, 1986/87/88, 1991/92 and a truly disastrous rainy season during 1997/1998⁴. Minor El Nino events have since occurred in 2002/03 and 2004/05. Annex 8 to this report shows the Oceanic Nino Index Numbers for the period from 1950 through July 2008, as taken from the NOAA web-site. Numbers in **red** in Annex Table 8 indicate El Nino periods. Annex 8 also reproduces two NOAA diagrams/maps that show the impact area affected in Southeast Asia, and Indonesia in particular by an El Nino such as 1997/98. In the disastrous 1997/98 El Nino period (during *KrisMon*, the financial crisis) most of Indonesia remained exceptionally dry; uncontrollable fires broke out on many islands. Naylor et al⁵ investigated the impact of El Nino events on Indonesia's food-crop (rice) agriculture. Their work showed that El Nino events accounted for almost 2/3 of all year-to-year variation in rice production. During El Nino events Indonesia's agriculture is affected in two important ways: (i) delayed rainfall causes crops to be planted later in the monsoon season thus extending the "hungry season" (*paceklik* or scarcity in Indonesian), and (ii) delayed planting of the main wet season crop cannot then be compensated by planting of any second, end-of-rainy season crop; indeed a second crop becomes distinctly less possible.

Whereas on Java the rainy season normally starts by mid-October in the west and mid-November in the eastern part of the island, the rains often only start by December in the Nusa Tenggara islands. As Naylor notes, the normally reliable pattern of onset of rainy season can be disrupted by variations such as El Nino: an El Nino event can cause a delay in monsoon onset by as much as 2 months, postponing the main food crop harvest and often driving up prices in markets, with a disproportionate impact on poor net consumers of food grains⁶.

In general, drought can have 3 unfortunate negative consequences on a crop: [a] the rains start later than usual, extending the food-shortage period; [b] rains start at the normal expected time, but then suddenly stop or decrease severely for a period right in the middle of the main (growing season causing drought stress or loss of planted crops, or [c] rains end early, leaving crops in field drought stressed and unable to finish filling grain. What then is the evidence on these two very different aspects, [i] a possible long-term decrease in average annual rainfall (a very certain constraint ... lower rainfall every year), and [ii] an increase in unpredictability or variability, due largely to El Nino events?

a. Is there evidence of a long-term decrease in average annual rainfall?

A lengthy time series of weather data from all of the Nusa Tenggara climate stations and rainfall gauges was obtained by the RePPPProT⁷ studies. That time series covers from installation of the first rain gauges during the Dutch colonial period in about 1880 through the end of RePPPProT, about 1985. In NTT there are 6 full climate stations and an additional 75 rainfall stations. In NTB there are 10 full climate stations and 65 rainfall stations. The data time series are woefully incomplete, with many missing monthly observations. Indeed many whole years' data are missing.

Table 1: Average Annual Rainfall for NTT, a long term view

Location	Time Period	Number of Observations (max)	Average Annual Rainfall (mm)
Kupang, Kab	[1879-1941]	63	1413
	[1972-1985]	9	1844
	[1996 - 2005]	10	1703
So'e, Kab TTS	[1922-1984]	51	1483
	[1996 - 2006]	11	1927
Kefa, Kab TTU	[1931-1983]	24	1342
	[1996-2005]	10	1603
Atambua, Kab Belu	[1920-1984]	38	1447
	[1996-2005]	10	2079
Bajawa, Kab Ngada	[1910-1978]	48	1883
	[1996-2005]	10	2111

Source: Annex Tables 12 a, b, c, d, and e

The retrievable historical rainfall data has been summarised for five NTT rain stations (Kupang, rainfall records since 1879; So'e, rainfall records since 1922; Kefamananu, rainfall records since 1931; Atambua, rainfall records since 1920; and Bajawa, rainfall records since 1910). The historical data are summarised in Annex 12 to this report. Text table 1 above summarises the findings of the tables in Annex 12. A simple conclusion can be drawn from examination of the data: there is no overall long term decline in total rainfall to be observed, at least for these five stations. Indeed, for each of the five rainfall records examined, the average rainfall in the last ten years (1996-2005) was higher than the long-term historical average!

There is enough rainfall during the 4 month rainy season to grow NTT's traditional main food crops. Crop water requirements (through calculations of evapo-transpiration) are approximately a monthly minimum of 200 mm for rain fed rice⁸ and 100 mm per month for secondary crops such as maize, peanuts, cassava and vegetables as a number of studies have shown. Based upon the evidence of Annex 12 there is no cause to begin to look for less water-using crops as substitutes for maize, peanuts or cassava.

b. Is there an increase in unpredictability/variability in rainfall during the rainy season?

There was considerable variability of rainfall over the decade 1996 through 2005. The annual variation in total rainfall has actually been relatively moderate. But variations for specific months have been large, especially for the most important months at the beginning and end of the rainy season. We calculated the coefficient of variation (standard deviation divided by mean) for the most recent decade's rainfall records. For some months in some locations the coefficient of variation was greater than 100%. Text table 2 below summarises this variability.

Table 2: Variability of Rainfall in Five NTT locations from 1996 through 2005

Location	CV Total Annual rainfall	CV December rainfall [begin rainy season]	CV January rainfall [early rainy season]	CV March rainfall [rainy season tapers off in NTT]	CV April rainfall [end of rainy season in NTT]
Kab Kupang	23%	51%	45%	40%	96%
Kab TTS	41%	99%	76%	86%	94%
Kab TTU	54%	45%	62%	103%	105%
Kab Belu	52%	103%	63%	72%	87%
Kab Ngada	24%	26%	36%	59%	70%

Source: Annex Tables 12 a, b, c, d, e

As measured by the coefficient of variation, the level of variability for total annual rainfall is relatively low across the five kabupatens, ranging from a low of 23% to a high of only 54%. But there is much greater variability in the rainfall of important months at the onset and the tail end of the rainy season. For several of the months the coefficient of variation is in the range from 90% to more than 100%. To see clearly whether these levels of monthly fluctuation represent an increase over the past, it would be necessary to calculate similar coefficients of variation on the historical data set. Unfortunately there are so many missing values in the long-term data set that this approach is not possible. Nonetheless, during the most recent decade it is clear that rainfall in the onset months (December, January) and tail end months (March, April) of the rainy season now show very high variability.

5. Building up assets: The net asset positions, indebtedness, “negative equity”,

One of the greatest risk facing farmers is falling into debt, which often leads to a downward spiral in welfare status. The objective of loss-reduction strategies is to build up equity or savings as a buffer against misfortune, risk. During times of sudden downturn caused by risk factors (crop failure, price drop, and market failure) such assets may be sold to cover periods of distress. Traditional means of building up assets in Nusa Tenggara include the purchase of gold, building up stocks of food grains in storage, acquiring land, raising livestock, and cultivation and harvesting of plantation tree crops or agro-forestry trees. The presumption therefore is that households start in an initial position of at least zero assets or, better, some positive assets. This presumption may not hold for the island of Lombok. Focus group discussions in the field in three kecamatans on Lombok inevitably turned to the level of indebtedness, especially to money-lenders who charge exorbitant interest rates.

Money-lenders (*Rentenir*)

Money-lenders and money-lending are mostly un-studied in Indonesia. Some money-lenders pose as cooperatives (*koperasi*) in order to undertake private money-lending activity. As such their *modus operandi* is close to loan-sharking. This type of *koperasi* operates not only at local markets among traders but also in settlement areas. It provides loans for small home industries run mostly by housewives. It commonly has high interest rates frequently up to 20% to 50% per month. But since the lender actively comes to the customers there are no complicated procedures to apply for a loan. This is favoured by many women especially in urban and semi urban areas who need some start-up capital for their business. The loan can be as little as Rp.100,000 (about \$10). Many of Indonesia's poor have to depend upon the informal, roving bank that visits households directly. In various parts of Indonesia, these lending institutions or individuals are called variously *Bank Pelecit* (Squeeze-Dry Bank), *Bank Selamat Pagi* (Good Morning Bank), *Bank Subuh*⁹ (Sunrise Bank) and *Bank Berjalan* (Walking Bank). The borrower does not go to the bank. The bank's staff comes to the borrower, usually

at sunrise in rural areas. Payment is collected daily by the staff. The grace period is one day. When the poor are forced to borrow from this kind of institution, they face horrific interest rates. Interest rates charged by the different financial institutions are presented in Table 3.

To our knowledge, there has been no systematic study on this informal economic institution that actually plays a significant role to serve the poor when they need some small capital to start their petty business. Money-lenders as institutions are secretive; few have offices or are in any way registered. Little is known about them – size, number, number of clients – but every Indonesian knows where to locate a money-lender to whom they could turn immediately for a loan.

Table 3: Annual Interest Rates for Micro Loans, By Type of Loan and Type of Institution			
	Working Capital, median rate	Investment, median rate	Other purposes, median rate
Large formal banks	19%	20%	20%
BPR banks	32%	36%	30%
Non-Bank Micro-Finance Institutions	24%	n.a.	24%
Money-lenders, <i>Bank Selamat Pagi</i> to small shops (fixed, unregistered establishments)			60% to 120%
Money-lenders, <i>Bank Selamat Pagi</i> to individuals, households			240% to 600%

Sources: Large Banks, BPRs, Non-Bank MFIs, Asia Foundation, *Microfinance Services in Indonesia*, A Survey of Institutions in 6 Provinces, pages 60, 61, Tables 4-5 and 4-6

Money-lenders: field level focus group discussions

In order to overcome poverty on Lombok Island we therefore call for a special study on indebtedness. The study should evaluate all assets and liabilities of a sample of farming households to determine whether the household is in a position of “negative equity”. It will not be possible for farming households to reduce risk from their agricultural sources of income if overall they are in debt. Rather than keeping the *Rentenir* problem hidden, government must address the money-lending problem head on. First the problem deserves a proper study that will not just find facts on the current situation but also would propose means of addressing the problem. The study should identify loan-sharking operations, identify locations, list names of actors and those responsible, and examine their terms and conditions. It is easier to borrow from a money-lender than from even a non-bank financial institution such as a credit union or a savings-and-loan group. The differences in approach and terms-and-conditions must be studied. A solution (or solutions) to money-lending must be sought. If the interest rate from money-lending can be brought down from its current range of 10% to 50% per month to the range of 3% to 5% a month as with most micro-credit institutions, the problem may

be alleviated. But as long as the poor must pay 10% to 50% per month they will remain poor.

In 2005, the World Bank proposed the following steps to help prevent small enterprises and farmers from resorting to money-lenders¹⁰. To improve access to finance, the government needs to do the following:

- reduce the amount of public contributions to subsidized lending schemes while increasing attention to capacity building of micro-finance providers;
- redirect public resources saved into building capacity of formal and community-based informal micro-financed providers;
- arrange for proper supervision of non-bank micro-finance providers. There have been cases where non-bank finance providers have been supervised by formal banks;
- establish a national strategy of support for sustainable micro-finance service provision;
- promote links between non-bank micro-finance providers and the formal banking sector;
- accelerate land titling as a basis for collateral.

6. Formal measures to reduce risk for rural households in Nusa Tenggara: the involvement of institutions

Formal vis-à-vis informal interventions to reduce risk in agriculture in East Nusa Tenggara: There are two main types of instruments for reducing risk: formal measures (types of insurance) and informal (social risk sharing). The formal measures aim either to transfer risk (to other individuals or institutions, completely outside agriculture) or to pool risk (among farmers themselves, across regions, across crops, or with other sectors of the economy). Formal measures include, but are not limited to, various types of insurance. With formal measures there are two major drawbacks that give pause: moral hazard and adverse selection. **Moral hazard** means that farmers become less conscientious in trying to avoid loss because the crop is insured. **Adverse selection** means that insurance programs attract mainly farmers who have higher than average risk relative to the premiums charged. This second problem arises if the insurer cannot accurately measure the actuarial risk they are insuring against. Actuarial risk (the probability of loss) is difficult enough to measure for much more common events where statistics exist and can be examined by insurance providers, events such as human death or loss of automobiles to fire or theft. The actuarial risk of losses within agriculture is most likely not at all known to insurance providers in Indonesia, but this is a subject to be examined during the course of this study. To overcome the reluctance of insurers to insure agriculture, many governments have provided subsidies, but once

these start they are difficult to end. In the USA agricultural subsidies continue after 50 years of successfully experience.

a. Insurance policies for agricultural production

We have assessed the extent to which the insurance industry is either interested in, or capable of, assisting to reduce risk in agriculture in Nusa Tenggara. Formal insurance contracts directly with farmers are not yet available or used in the Nusa Tenggara region. Interviews were held with a number of insurance companies in both NTT and NTB. Their main lines of insurance are life insurance and insurance against property loss or damage. There have been a number of experiences and experiments in other parts of Indonesia, with varying degrees of success. These are described in Annex 1 which reports the interview notes with insurance companies.

By contrast, transport insurance for agricultural crops and livestock is widely used. These measures are also described in Annex 1. While not directly of assistance to Nusa Tenggara farmers, this type of insurance is of indirect assistance and can be seen as eventually helping to support farm gate prices and farm incomes.

b. Sharing risk with farmers, PUSKUD and cattle fattening

An important development was discovered in East Nusa Tenggara related to livestock raising and marketing, especially for inter-island trade. East Nusa Tenggara formerly was saddled with discriminatory regulations that imposed inter-island livestock shipment quotas, and favoured a few selected inter-island traders who were able to obtain quota rights. This led to very low farm-gate prices and discouraged small farmers from raising cattle. The inter-island shipment quota system was dismantled as a result of reforms made in response to the Financial Crisis of the late 1990s.

The NTT PusKud provincial level cooperatives office has developed a system of cattle fattening that shares risk with farmers. This organisation (with technical assistance from Sam Filiaci¹ of the National Cooperatives Business Association) has provided valuable help to cattle fattening and marketing. Assistance has been given by placing 20,300 head of PusKud owned young cattle with farmers for fattening by stall feeding. The farmer is relieved of the burden of buying the young calf, which reduces risk. The program has helped bring up farm gate prices and to break the former monopsonistic buying cartel by a selected few inter-island traders which previously existed in East Nusa Tenggara. PusKud also provides insurance for livestock transported to Java (at an insurance cost of approximately Rp 50,000 per head, out of a total transport cost of Rp.450, 000 per head). The insurance is against total loss (boat sinking) but only if the livestock are shipped on metal boats, but not wooden *Expedisi* boats.

c. Contract farming, the example of Garuda Food on Lombok

¹ Email: clusa@idola.net.id, phone: 021 799 6867 or 0272 321 077.

On the island of Lombok, PT Garuda Food has begun entering into contract farming for peanuts. This is growing increasingly important and is expanding. For instance in Kec Bayan's village (Sambek Elen, Barung Bira) visited, in 2006 only 30 ha of contract peanuts were grown. Next year, the villagers plan to expand this to 800 ha. Garuda Food (actually its subsidiary, PT Bumi Mekar Tani) advances seed (of its preferred variety), cash (Rp 1.5 million per ha) and free extension advice to participating farmers. At harvest the firm takes the first 50% of harvest. The other 50% can be sold to the company at an agreed price per kg (which is stated in fresh nut bunches, not shelled or dried). In case of failure, there is an element of self-insurance by Garuda Food, which does not require that it be reimbursed for inputs. The cash advance and the element of insurance are important to the farmers and are major factors behind their willingness to participate. This model can be replicated (and with other field crops) in other parts of Nusa Tenggara.

d. Increase legal access to government-claimed land, to plant agro-forestry

For years the Indonesian NGO LP3ES has been promoting agro-forestry on government claimed land. The successful example of Desa Sesaot (Lombok Barat) has been held as a model, waiting for replication. But forestry laws and regulations (from the central ministry) did not provide for a share of the forestry tree species to the participating villagers, once harvested for their timber.

This has changed with decentralisation. In Kec Gerung, farmers planting forestry species on government claimed land have an informal arrangement with the Forestry Service (Dinas Kehutanan Kab) that will allow a 50% - 50% crop share. This represents a significant improvement, and provides an incentive to plant fast growing tropical timber species as money-making agro-forestry.

Kec Gerung is not an isolated example. There are now also examples on Java where forestry authorities are undertaking share-cropping agreements with farmers, to encourage villagers to plant and manage agro-forestry plantations. Annex 6 presents a newspaper article¹¹ which shows that the Para-statal forestry company Perum Perhutani has now entered into such a share-cropping program with participating villagers.

What is lacking is a legal umbrella to codify and legalise such a share-cropping arrangement and to allow for participation agreements or contracts. Two local NGOs on Lombok were interviewed about this (Samanta¹² and Konsepsi). They said that a third local NGO (Koslata) was working directly with local government on drafting a local regulation (Peraturan Daerah) which would authorise share-cropping agro-forestry. Samanta and Konsepsi said that for large area plantings of agro-forestry (more than 1000 ha) a Hutan Tanaman Rakyat permit would have to be obtained from the central Forestry Ministry. But for smaller plantings, a local Hutan Kemasyarakatan (HKM) permit can now be issued directly by a Bupati. Konsepsi stated that in Lombok Tengah such permits for local agro-forestry permits have been processed first by the Bupati and

then by the Dinas Kehutanan for 42 agro-forestry groups. This is an important legal development and could use legal assistance perhaps from the World Bank, through its commitment to support SADI as part of PNPM.

7. Informal measures to reduce risk that have been tried and adopted in Nusa Tenggara islands

In many agricultural regions in the developing world, there is a **lack of formal measures**. Instead, rural people themselves have created a wide range of **informal agricultural risk-sharing** arrangements. Such arrangements traditionally include: [a] share-tenancy contracts which pass on yield risk to the land owner, [b] traditional money lending (which shares the risk of default with the owner of capital) and [c] various risk sharing understandings within extended family networks. These are the three most often recorded methods of risk sharing, but there are others as well. The nature and breadth of informal measures in the Nusa Tenggara islands were examined during the course of this study. The limitation usually noted for such informal risk-sharing is that participants tend to come from the same region (even village) and face the same risks. Local arrangements cannot pool risks as efficiently as those that span across regions or other sectors, such as formal national crop insurance.

Farmers' strategies to cope with risk and loss: Existing informal risk-management strategies differ from loss-management strategies. **Risk management strategies** noted in the literature on agriculture in the developing world are efforts to prevent or at least minimize risk during the cropping season. Agronomic strategies include the following: spatially scattered planting, production of crops with multiple uses, planting crops with insurance potential, planting crops that are insensitive to variability, mixed farming methods such as inter-cropping or relay-cropping, changing plant spacing, splitting input use, diversification of crops planted, and tenancy risk-sharing.

Loss management strategies are different. These are after the loss has occurred, to protect the family and defend minimum consumption levels. **Loss management strategies** noted in a number of countries include the following: informal mutual aid, storage facilities, linkages of product markets with factor markets (through patron/client relationships), depletion of assets (selling livestock, drawing down on-farm food stocks, using up family savings, sale of land or household items), labour market participation (off-farm employment, often involving out-migration). When all of the above fail, the final loss management strategy is to turn to public relief. East Nusa Tenggara (in particular the western half of the island of Timor) has had to turn to public relief; the World Food Program's distribution program is a response to the lack of any other means to maintain minimum food consumption levels. From our discussions in the field, there are several specific activities that may be undertaken to reduce risk of loss:

a. Increase access to, and command over water: begin to use low lift pumps and shallow tube wells

In most parts of NTT, maize (*jagung*) has been the main staple food of the people. However, maize production by most farmers is still not enough for their own consumption. For example, in Kuanfatu Sub-District (Kecamatan), TTS, most farmers could produce maize only to cover their own consumption for about eight months. In Obesi village, Molo Utara Sub-District, sometimes some farmers produce maize only enough for five to seven months. Therefore, it is not surprising if maize is still short in NTT as a whole. Maize production would need to be increased significantly to achieve food security from household level to community or society level in NTT.

One alternative to increase maize production in NTT is to plant maize twice a year, but the rainy season is only 3 to 4 months. So far, farmers mostly plant maize just once a year, during this rainy season. In general, maize cultivation depends on the availability of water from the rain only. To increase frequency of maize cultivation become twice a year, farmers need to get water not only during the rainy season. Actually, in many places, irrigation of an agricultural plot can be done by bringing up water from a river or other sources (such as spring water) using pump.

Pump irrigation has been practiced by a group of farmers in sub village Uel, Nunkurus village in Kupang District, for example¹³. In this area, farmers can plant maize before rainy season, namely in July, August up to September. They use a water pump (such as Honda 3.5 HP) to raise water from a stream and distribute it to their agricultural plot using pipes (*paralon*). Before they take the water, they block the stream in order to get pond the water. According to our informant, the price of such a pump with pipes and equipment is about 2.5 million rupiah.

b. Improve access to information to decrease price risk

Improved access to commodity price information for locations outside Nusa Tenggara (such as Surabaya, Jakarta or Makassar) will assist Nusa Tenggara farmers to know and understand whether the price offered by a collection trader is close to, or far from that destination price. It is difficult for farmers and for even extension agents or local government officials to find information on prices outside of the Nusa Tenggara region. There are few freely available sources which can be consulted as reference points.

Cashew nut prices

Annex 10 presents information on a web-based source of cashew nut price information from India presented by Foretell Business Solutions Ltd of www.Cashewinfo.com of Bombay India. They have a subscription service which is unfortunately very expensive (US\$300 per year). Their contact point is mktg@fbspl.com.

Timber prices

Prices for timber logs (in Rp/m³) for main destination areas outside Nusa Tenggara are also difficult to obtain. Fortunately the Java based para-statal forestry company Perum Perhutani publishes timber prices on its web site for various commonly traded valuable species. The internet address is: <http://perhutaniproducts.com/>. Examples of the price quotations are presented in Annex Table 13 (for Albizzia / *Sengon*), Annex Table 14 (for mahogany) and Annex Table 15 (for three types of Dalbergia: *Sonobrit*, *Sonokeling* and *Sono Kembang*).

Growing Albizzia (*Sengon*) has become exceptionally profitable throughout Indonesia. A recent issue of the monthly agricultural magazine *Trubus*, published by the national agricultural NGO Bina Swadaya featured the exceptional profitability of growing Albizzia commercially. Annex 7 presents the main articles from that August edition, and prices and revenues per hectare may be computed implicitly.

Maize and cocoa prices by mobile phone SMS

The IFC (part of the World Bank) has undertaken an innovative step by assisting private parties in Makassar to report price information to both buyers and farmers throughout Indonesia on a low-cost, yet potentially profit-making basis. This service was developed to support the IFC Agribusiness Linkage Program. The SMS service is not yet self-sustaining, but an expansion of awareness about its availability and an uptake in use can make it so. According to an IFC staff member, the service may be sustained with minimum hits around 25,000 per month to support a dedicated staff to update the information. The highest were 5441 hits, in June 2008.

IFC's efforts to improve access to price information by using mobile phone technology (SMS text messages)

Box 1: The story of prices by SMS text message

1. It was set up in cooperation between AGRINDO (BDSP) and PT. Benang Komunikasi (BECOM) a service provider company that can work with multiple cell phone providers with certain numbers (i.e. 9165 & 9168). IFC in this case acted as a facilitator and developed content of price information that will appear in cell phone. Currently, we are in the process of changing the agreement between CSP Foundation and BECOM. (Becom only provide the system, the content is updated daily by AGRINDO/CSP directly to a website developed by BECOM)
2. Content of cocoa price information was taken from New York Board of Trade (NYBOT) and London terminal (LIFFE) as international price. Local price (Estimate Makassar Price) was developed based on the lowest and the highest differential price among top five exporters in Makassar. This differential price changes every three months, based on the exporter positions in the international market. the information is obtained from multinational companies in Makassar/exporters and ASKINDO.
3. We put stickers of the service at every single direct assisted cocoa farmer's house, printed the information in calendars (last year we distribute 17.500 calendars contain the SMS information), newsletters, and National radio. The most efficient tool is calendar that indicated in number of hits that significantly increase after distributing cocoa calendars.
4. It is charged Rp.1000 per SMS with the following share :
 - Rp. 750 for cellular providers (Telkomsel, Indosat, XL, Telkom); send/receive SMS
 - Rp 150 (60% of Rp 250) goes to Becom
 - Rp 100 (40% of Rp 250) to AGRINDO (the % depends on cell providers)
5. Lessons that we learned from this service that
 - It needs a reliable source of information that continuously provide information (the association and exporters)
 - Advertisement through calendars/stickers are the most effective and efficient tools.
 - Hits fluctuated based on harvest season.
 - It needs a dedicated staff to continuously update the information.

The contract document of the service is in AGRINDO, details of share and exact numbers are mentioned in the contract.

Source: IFC, Rafiuddin Palinrungi International Finance Corporation
 Tel: + 62 (21) 5299 3001 Fax: + 62 (21) 5299 3002 Cell: + 62 811 442 255
 Email: rpalinrungi@ifc.org Web: www.ifc.org

There are two numbers to send text messages to:

- For Telkomsel (including Simpati) text to 9165
- For other carriers (such as Excel) text to 9168

Price information obtained (Rp/ kg) included the following:	26 Sept	9
Oct		
[1]cocoa price ranges message:	CSP Kakao	23,106-24,044
21,219		20,260-

[2] ...maize prices message: IFC Jagung 2,200 2,000

The return messages also gave cocoa prices in New York (in US\$/ton) and London (GBP £/ton). The maize prices were an average of warehouse prices in Bontonopo (Gowa) and Pattene (Makassar) for 18% moisture content (i.e. needs further drying before storage). So far we remain unable to find easily accessible destination prices (sources that are web-based, SMS text message based) for other important agricultural crops and products from the Nusa Tenggara Islands, products such as candlenuts (*kemiri*) and livestock. We continue to search.

c. Adopt improved storage methods, especially for maize in NTT

The amount of maize available for consumption, whether in a household or in a community, is affected quite significantly by post harvest treatment. In NTT, traditionally maize is stored in the kitchen or a storehouse. This is done to preserve the maize with smoke. However, quality of the stored maize is strongly affected by the continuity and amount of smoke given as well as amount and arrangement of the maize in the kitchen or storehouse. According to informants, by using this traditional method, average post harvest loss is about 20%. Some farmers even said the loss reached 50%. The post harvest loss in the kitchen or storehouse is due to small insect locally called “*fufuk*”¹⁴. The *fufuk* eats maize, especially those that which is not smoked properly.

According to a World Bank consultant agronomist stationed in Kupang, Bill Ruscoe, PhD, the post harvest loss could be reduced significantly by storing the maize in a drum. Several people and institutions such as the seed multiplication farm (Balai Benih Induk) in Kab Kupang use old Pertamina oil product drums. These need thorough cleaning, but once cleaned work adequately. In this method, the maize needs to be shelled and then dried until its water content is below 15%. Maize can also be stored in plastic bags or types of plastic containers such as fish-transport plastic drums.

8. Conclusions and Recommendations How to make these measures operational within the context of PNPM community driven development

The ToR requested the team to assess new methods, either formal or informal to reduce the impact of agricultural risk, and therefore to raise farm incomes, and reduce both poverty and malnutrition.

Conclusions: The team was asked to evaluate the following possible interventions (or investments, to be funded by villagers themselves, using KDP agricultural funding, and with technical assistance from SADI). Based on the findings in the field and our analysis we conclude the following:

- [i] Mandatory savings: Not yet possible. There are too many households still in serious debt to a money lender. Until the net asset position of households can become positive, it will not be possible to propose realistic savings plans.

[ii] Insurance policies for specific agricultural products, against specific risks. It is not yet possible to consider insurance policies directly with farmers for agricultural products in the Nusa Tenggara islands. It might be possible to associate insurance policies with contract farming operations such as that conducted by PT Garuda Food or the tobacco buying companies on Lombok. But beyond these possibilities we see no realistic opportunity to introduce formal insurance.

[iii] Post harvest storage: Post harvest storage is a strong candidate for exposure and inclusion as possible activities through PNPM SADI. There is ample evidence that a change in storage facility (using drums for dried, shelled maize rather than traditional maize barns) can be effective in increasing household maize supplies by up to 20%.

[iv] Increase and diversify sources of income through changes to crops, cropping patterns, input use, other agronomic practices; Diversification has already taken place throughout Nusa Tenggara. Most households grow a variety of field crops, vegetable and fruit species. Yet they remain poor. Diversification in and of itself will not assure greater, more steady incomes.

[v] Build saleable assets through smallholder livestock, on-farm agro-forestry: The greatest potential to build assets is through raising livestock and planting agro-forestry tree species. Livestock disease is a major constraining problem on Timor, and livestock theft (cattle rustling) is a serious constraint on Lombok. Instead of livestock we believe that agro-forestry presents a clearer positive opportunity.

[vi] Control and storage of water: Ponds (*embung*) have been built repeatedly, especially on Timor, only to fall into disuse and disrepair. We do not propose constructing new ponds. Instead we propose exposing Timor farming villages to pump irrigation for areas that have undeveloped springs and unused river water or ground water. Pump irrigation is already in use by farmers in Kab Kupang. Farmers from other areas such as TTS could be brought to observe, learn and decide for themselves whether they could profitably manage community owned water pumps.

[vii] Reduce incidence of losses to fire: firebreaks using fire-retarding commercially valuable crops. Time did not allow for examination of this issue, yet it is an important one.

[viii] Increase information on prices and increase access to markets (radio, mobile phone price quotations. This is an important opportunity which should not be missed. IFC has led the way in making price information available at reasonable cost, with appropriate technology for two important crops in Nusa Tenggara, maize and cocoa. PUSKUD has assisted with making livestock price information available. Yet there remain other crops for which destination price information is not yet available, and solutions need to be found. A possible radio program broadcast from Kupang might be the solution. FAO's Blasius has successful experience with such in

the past, at Radio Wonocolo, East Java. Radio programs which broadcast price information might be a possible solution the problem of lack of information.

Recommendations: The current preferred activities of PNPM in Nusa Tenggara, as decided through *Musyawarah Antar Desa* meetings do not include most of the activities discussed above. We understand that this year's fund allocation was constricted to training, human resource development. As yet there are no evident proposals for trying pump irrigation, nor are there proposals for planting agro-forestry species as money-making activities. Yet both would reduce risk of serious income loss caused by crop failure (erratic rainfall, wind damage during Jan/Feb).

Instead, this year's lists of mutually agreed upon projects include some that would appear to increase risk rather than reduce it. There are many proposals for training in post-harvest technology (such as making *keripik nangka*, or jackfruit chips). Yet the market for such processed products is not well understood. It would easily be possible to swamp the local market absorption capacity of Kupang or Mataram with jackfruit chips, should all the people trained by PNPM begin to undertake production.

This is an area where the local SADI IFC representatives could be of assistancehelping villages to examine market outlets, market demand, and capacity to absorb extra production. We understand full well that the primary obligation of SADI IFC is to work with large firms as lead firms; this is accepted. Yet there is time to spare within a typical work week for the provincial IFC representatives to assist with this type of smaller scale market investigation.

To encourage PNPM groups to include a greater variety of proposed projects (especially those which reduce risk rather than increase risk) in the future, there is a need to widen their vision and scope of options. This will require greater use of the existing agricultural information and expertise network (universities, research stations, agricultural NGOs, other successful projects such as PIDRA) at a much earlier point: during project formulation and during the process of exploring ideas (*penggalian gagasan*). Field trips to visit successful models and operations will be essential to increase the breadth of activities considered.

There is one remaining issue to be discussed: the importance of increasing farmers' access to, and use of, technical agricultural information from the outside world. During our field visits a number of technical agricultural problems were uncovered. They usually involved what to do about a disease or pest. The examples include *Septicaemia epizootica* or SE livestock disease, *Tunggro* rice disease, *Fufuk* (*Sytophyllus Mais*, *Sytophyllus Oryzae*) maize storage pest, and *phytoptera* root rot of oranges. At an early stage, for instance during "exploring ideas" or *penggalian gagasan*, these diseases/pests may require that villagers be enabled to discuss their technical agriculture problems with those who may know a solution. The third partner of SADI, ACIAR and its relationships with BPTP research stations, can be brought to bear on this issue. Some of these diseases or pests can at least be prevented, if not cured. Disease prevention and

control should well become activities considered by PNPM villages, and successfully funded.

ANNEX 1: FORMAL INSURANCE FOR AGRICULTURE

By Rilus Kinseng², *Institut Pertanian Bogor*

1. EXPERIENCE WITH AGRICULTURAL INSURANCE ACROSS INDONESIA (OUTSIDE NUSA TENGGARA)

Reducing agricultural risks through formal insurance is not yet a common practice among farmers in Indonesia. Generally, it only practiced by a few large estate plantation companies, not individual farmers. For example, Jasindo insurance company provides insurance for big palm oil plantation such as Sinar Mas covering losses due to fire and extended to losses due to pests. It covers not only failure in harvest (*gagal panen*), but also failure to grow (*gagal tumbuh*)³.

Ministry of Agriculture experience

Ms Ratna and Ms Ning Pribadi of the Ministry of Agriculture, Building D, Pasar Minggu Jakarta explained that the Ministry of Agriculture doesn't have experience on agricultural insurance for risk reduction. The consultants were advised to meet private organization and professional associations. The following sections reflect findings from such meetings and discussions.

Daspindo

Dr. Mat Syukur and Mr. Kismo of the Ministry of Agriculture Department, Building A, Jakarta, mentioned that the public-private board for insurance for agricultural commodities (Dewan Asuransi Komoditas Pertanian Indonesia, DASPINDO) has experience in providing agricultural insurance in partnership with Artajasa Insurance Company. According to Mr. Eko Wijanarko⁴ from DASPINDO, many insurance companies are not interested to provide agriculture insurance, because of high rates of failure. This is wrong, according to him. What happens is, mass media too often exposes news about harvest failure but almost never exposes harvest success. There are two on-going trial programs where DASPINDO is involved in providing agricultural insurance:

Insurance for maize farming in Bali

The program involves suppliers who support target farmers with agriculture inputs (fertilizer, pesticide, etc), the local agriculture services (Dinas Pertanian) and extension agents (PPL) on technical guidance, as well as private sector who will buy the products (to access appropriate market). DASPINDO guarantees the farmers for any failure on harvest and marketing.

Insurance for livestock in Boyolali and Cirebon

There is one farmer group in Boyolali raising 99 head of cattle and another farmer group in Cirebon raising 49 head of cattle. These cattle growers are assisted by the local government

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³ Interview with Mr. Daniel Parlindungan, Head of Financial Unit, Jasindo in Kupang, NTT.

⁴ His HP: 08151 401 4099. Interviewed by phone on 15 October 2008.

Animal Husbandry Service (Dinas Peternakan) of each district on technical skills and community development. The Ministry's directorate general for livestock (Direktorat Jendral Peternakan) supports the program by providing inputs through the local government Animal Husbandry Service (Dinas Peternakan) in each district level. As this is a pilot project, the ministry's directorate for support payments to agriculture (Direktorat Pembiayaan Pertanian) paid the insurance premiums to DASPINDO for the farmer groups.

The National Maize Board

According to Mr. Max Sola⁵, the public-private Maize Board (Dewan Jagung), in 2006 established a consortium of insurance for agricultural commodities to cover harvest failure (*gagal panen*). The consortium is comprised of 10 enterprises including the Bakrie Company. Mr. Don Utoyo, Head of the National Poultry Forum (Forum Masyarakat Perunggasan) and Executive Director of the Association of Poultry Companies of Indonesia (Gabungan Perusahaan Perunggasan Indonesia), has experience in connecting insurance companies with large scale poultry raising companies (with minimum 5,000 chickens). However, these associations have no experience in linking insurance company with individual small- scale chicken raisers.

Transport Insurance

Formal insurance is widely used to cover transporting agricultural commodities. As will be described further later, in NTT, for example, it is quite common practice to reduce risks of transporting cattle to Surabaya through formal insurance. Formal insurance is also used in transporting seaweeds and rice (inter-island trade).

Bumida insurance company in Bali (Jembrana District) has provided insurance for livestock (cattle) since 2003. The insurance covers losses because the cow is either dead or lost. In this case, Bumida only provides insurance to farmers collectively (in group), and also if extension worker and veterinarian are available to assist the farmer. This insurance is connected with a government program where the government provides financial aid to farmers at amount Rp 5 million/cow. The aid was channelled through local government bank, namely BPD Bali. The premium is Rp 100,000/cow/year⁶. Moreover, Bumida in Lampung has also provided crop insurance for crops (*tanaman keras*) such as rubber, coffee, and palm oil. The insurance is provided to plantation enterprises as well as farmer groups. It covers losses due to fire and pests attack. For this crop insurance, payment is calculated base on total value of the crops per hectare.

PT Asuransi Astra Buana⁷ also has experience in providing insurance for agricultural activities. According to Ms Trinita Situmeang (agriculture insurance section of PT Asuransi Astra Buana), they only provide for big plantations, especially palm oil plantation. In her opinion, private insurance companies would not be interested in providing insurance for small holder farming.

⁵ His HP: 0811117633. Interviewed by phone on 13 October 2008

⁶ For more detail information about this insurance schema, see attachment

⁷ Address: Head Office: Jl. TB. Simatupang, Cilandak Barat, Jakarta Selatan, phone 7590 0800, mobile: 081 931 101 608

2. EAST NUSA TENGGARA NTT

There are several insurance companies in Kupang, including:

1. Bumi Putra (interviewed)
2. Jiwasraya
3. Jasindo (interviewed)
4. Allianz (interviewed)
5. Jasa Raharja
6. Berdikari
7. Bumi Asih Jaya
8. Prudential
9. LIG Lippo
10. Parolamas
11. Wahana Tata
12. Bumi Putra Muda (Bumida) (interviewed)

Most of these insurance companies provide life insurance (*asuransi jiwa*). However, Jasindo, Jasa Raharja, Berdikari, Parolamas, and Bumida also provide insurance (*asuransi kerugian*), for losses due to fire, road accidents, robbery, sea accidents, etc.

PT Auransi Bumi Putra⁸

Two consultants (Rilus and Rohandi) visited Bumi Putra insurance company on Monday, 15 September 2008. We met three of the Bumi Putra staff, Mr. Abdullah Manager), Ms Tanti and Ms Devi. They explained that Bumi Putra only provides life insurance. No insurance is provided for business activities, including agricultural business. Bumi Putra has three divisions: individual, syariah, and collective (institution) insurances. According to them, it is necessary to study the agricultural risks before considering whether to provide agricultural insurance. Here, agricultural risk is very high, for example in livestock activities such as cattle fattening; cattle are still not cared for properly, including putting them in the stables. We were referred to their subsidiary Bumi Putra Muda insurance company to get more information on insurance related to agricultural products. Bumi Putra Muda provides losses insurance, including for house and vehicles.

PT Asuransi Jasa Indonesia (Jasindo)⁹

On Monday 15 September, the two consultants also visited Jasindo insurance company. A second visit by the two consultants was made on Friday 19 September 2008. We met Mr. Daniel Parlindungan¹⁰ head of Finance Unit. Mr. Daniel was involved in an IFC led discussion of developing Weather Index Insurance when he was in Makassar. According to him, India has Weather Index Insurance, which was developed together with the World Bank. It took eight (8) years to develop the weather insurance in India. According to Mr. Daniel, Jasindo provides

⁸ Address: Jl. Jend. Suharto, Naikoten I, Kupang, Phone (0380) 833541.

⁹ Address: Kantor Cabang Kupang, Jl. Veteran No. 7, Kupang. Telp (0380) 824635, 823982, 829268; Fax (0380) 823076.

¹⁰ His mobile phone: 081 550 41680, flexi (0380) 8022122

agricultural insurance, namely for palm oil, but only for big plantations, not for individual small holders. Its main coverage is fire accident, but also extended to pests attack. In NTT, Jasindo provides insurance for transportation, including transportation of agricultural products such as cattle. According to Mr. Daniel, there are several types of insurance schemas in transportation, namely Marine Cargo ICC “A”, ICC “B”, and ICC “C”. In general, the coverage of Marine Cargo ICC “C” type is limited just to TLO (total, 100%, loss only), due to ship sinking, fire, or explosion. All insurance for transportation using less-safe wooden inter-island ships would be included in the highest risk category ICC “C” type. But if a shipper uses iron ship, the coverage can be extended more cheaply. According to Mr. Daniel, the premium for TLO ranges between 1% and 3% of the value of the cargo, for transportation using ship (such as a roll on – roll off, *Kapal Roro*) from Kupang to Surabaya. In transporting cattle, several factors are used to determine the premium to be paid to the insurance company, including:

1. Cattle value
2. Type of ship used to transport; price for transporting using ship made of wood would be different from using ship made of iron, for example.
3. Age of ship (older ship will have higher cost)
4. Destination (different sea lane has different risks). For example, Flores-Makassar route is considered as a high-risk route.

For seaweed shipment, other factors such as whether the seaweed is put in a container or not is also taken into account by insurance company. For example, Jasindo has provided insurance for transporting seaweed from Surabaya to China using iron ship aged more than 20 years. Because the seaweed was put carefully in containers, the insurance price was just 0.25% of total value of the seaweed sent.

Allianz¹¹

On Monday 15 September, the two consultants also visited Allianz insurance company. We met Ms Ria (marketing manager). According to her, in NTT Allianz just provides life insurance. However, in other parts of Indonesia, Allianz also provides losses insurance, such as house, car, and shop and also losses due to disaster such as tsunami, flood, and landslide. In her opinion, it is good if we could provide agricultural insurance. However, for Allianz in NTT, they cannot make their own policy; they just implement policy made by the central.

PT Asuransi Bumiputramuda (Bumida)¹²

On Monday 15 September, the two consultants also visited Bumida insurance company. We met Mr Teguh¹³ and Mr. Anton Adikerong¹⁴. According to Mr. Teguh, so far Bumida in NTT has no

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¹² Address: Jl. Timur Raya No.2 Kupang 85226, Phone (0380) 8081912, Fax (0380) 8080361, 821555. E-mail: kupang@bumida.co.id.

¹³ His mobile phone: 081 339 319 583

¹⁴ His mobile phone: 081 339 405 585

insurance to cover agricultural commodities. Farming, according to him, is a speculative business and therefore cannot be covered by Bumida insurance. Bumida in NTT covers losses due to fire (all kind of buildings) and accident (car, motor cycle, and life itself). However, Bumida could cover transportation of agricultural products. For example, Bumida has given insurance to transport cattle to Sumba. The rules applied in transporting agricultural products are the same as for transportation in general. Usually two alternatives schemas are provided, namely TLO (total loss only) or all risks. For the TLO, the client needs to pay premium 0.15% of the total value, while for all risks is 0.25% of the total value.

Bumida in Bali used to provide insurance for cattle production, which was connected with credit provided to the farmers. In this case, Bumida would pay the same amount as the amount of credit given to the farmers if cattle production was fail. Bumida was willing to provide this insurance because it was connected with program from government and the World Bank. In addition, cattle in Bali is “respected”, therefore would be treated carefully, so the risk is quite small. According to Mr. Anton, in 2006, there was a discourse (wacana) to develop agricultural insurance, for example when harvest fail due to climate and/or pests (not intentionally). But it can only apply to large plantations, for example 100 hectares of cocoa. It is difficult to apply for individual farmers with a small land plots.

3. West Nusa Tenggara (NTB)

In Mataram, NTB, there are at least 17 insurance companies. Losses insurance comprise of:

1. PT Asuransi Bangun Askrida
2. PT Asuransi Jasa Indonesia (Jasindo) (interviewed)
3. PT Asuransi Bumi Putera Muda 1967 (interviewed)
4. PT Asuransi Wahana Tata
5. PT Asuransi Jasaraharja Putra
6. PT Asuransi Parolamas (interviewed)
7. PT Asuransi Sinar Mas Dipta
8. PT Asuransi Tripakarta
9. PT Asuransi Takaful Umum

Life insurance companies are:

1. PT Asuransi Jiwasraya
2. PT AJB Bumiputera 1912
3. PT Asuransi Sunlife
4. PT Asuransi Prudential Life
5. PT Asuransi Bakri Life
6. PT Asuransi Central Asia Raya (ACA)
7. PT Asuransi Eka Life
8. PT Asuransi Takaful Jiwa

Bumida Insurance¹⁵.

On 25 September 2008, one of the consultants (Rilus Kinseng) assisted by two PNPM staff (Asdiah and Hasta) visited Bumida Insurance Company. We met Mr Arief Rakhmadi¹⁶, Head of Bumida NTB Branch. Mr. Arief explained that the basic principle in insurance business is that the client is not allowed to get profit from the insurance. Insurance company only provides compensation for losses. Until now, Bumida NTB has no insurance program for agriculture (farm) business.

Actually, in a Food Security program in 2003 and 2004, Bumida insurance in Bali has designed an insurance product for agriculture, including rice cultivation. However, until now the program has not been implemented. One of the problems is about definition of “harvest fail” (*gagal panen*). Agreement has not been reached between insurance company and farmers as what does it mean by “harvest fail”. For instance, if production of rice declines from 7 tons to 5 tons per hectare does it mean a “failure” or “loss”, which must be reimbursed by the insurance company? In this discussion, Bumida insurance could not accept such as a production decrease as part of losses to be covered. Instead, Bumida propose that losses covered only total losses due to pests attack (“puso”).

Bumida provides transportation insurance, including transportation of agricultural products such as rice and cattle. For example, Bumida provides insurance for transporting cattle from Bima (Sumbawa). Bumida offers only all risks and total risks schemas. Under the total risks schema, if an enterprise or individual trader sends cattle through ship, and on the way several cattle die, the insurance will not cover them. However, if the ship sink and all cattle die, they will be covered. According to Mr. Arief, insurance premium for transportation is 1% per mil.

Bumida also has a join program with Kosgoro (PT Agro Bos) in providing life insurance for farmers in all over Indonesia. Under this schema, in East Lombok (Lombok Timur) they provide life insurance for maize cultivators.

Jasindo¹⁷.

On the same day (On 25 September 2008) we also visited Jasindo insurance company. Here we met Mr. Zainul Muqorobin (Robin)¹⁸, Head of Technical Unit. According to Mr. Robin, in the world, insurance in agriculture is known as “crop insurance”. However, in Indonesia it is not used yet.

Tobacco processing (“oven” curing or baking of tobacco leaves) is carried-out by individual farmers. According to Mr. Robin, there area around 12,500 ovens in Lombok, and one farmer may have two ovens. Jasindo in NTB provides insurance for tobacco farmers, but just in the

¹⁵ Address: Jl. Pejanggik No. 26, Mataram. Phone: (0370) 646013. Fax: (0370) 639233

¹⁶ Mobile phone: 0812 380 8408

¹⁷ Address: Jl. Pejanggik No. 12 A Pajang, Mataram, NTB 83126. Phone: (0370) 633 848, 629 422, Fax: (0370) 633 848.

¹⁸ His mobile phone: 0815 4711 9997

curing/baking process (“oven”). Baking tobacco is very high-risk activity, because it can burn either the tobacco or the “oven”. Such accidents very often happen. Mr. Robin says “every day there is a burning incident”. If that happens, it will cause great loss to the farmers (and tobacco enterprise). There is a famous joke in this matter. When tobacco fails (including burning), there are two possibilities for farmers: become foreign labour in Malaysia (TKI) or suicide. On the other hand, there are two possibilities for farmers when tobacco succeeds: pilgrimage to Mecca (*naik haji*) or get married again. Thus, tobacco farmers have big interest in insuring the tobacco baking process.

In general tobacco, farmers in Lombok become clients of several big tobacco enterprises such as PT Export Leave (formerly BAT), PT IDS (Phillip Morris) etc. For example, PT Export Leave has around 1,850 client farmers, CV Tresno Adi has around 700 farmers, PT Sedana Arif Musa has around 1,500 farmers, PT IDS has around 1,500 farmers and Tunggal Kayun has around 1,000 farmers. Until now, there are two tobacco enterprises that become Jasindo clients, namely PT Export Leave and CV Tresno Adi. They pay the premium to Jasindo, but actually it is the tobacco farmers who really pay.

Mr. Robin also explained that Jasindo provide insurance in transportation, including transportation of agricultural products such as cattle, rice, peanut, coffee, etc. For transportation, Jasindo only provides total risk schema insurance. In transporting cattle, for example, it covers only total losses due to accidents such as fire or sink. The premium is range between 0.3% and 1%, depends on factors such as climate condition (data from BMG), type and size of ship, age of ship, length of transportation route, route of transportation, etc.

Parolamas¹⁹

The team also visited Parolamas insurance company, as suggested by Mr. Arief of Bumida insurance. Here we only met Ms Nurmi, who is responsible for book keeping, because other higher-level staffs were not in the office. She said that the Parolamas in NTB only provides insurance related to losses in property (building), for example due to fire. However, Parolamas in central office (kantor pusat) does provide insurance in transportation of agricultural products, including cattle.

Central Village Cooperative Unit (Pusat Koperasi Unit Desa/PUSKUD) in NTT²⁰

Two consultants (Rohandi and Rilus Kinseng) visited PUSKUD on Tuesday 16 September 2008. We met Mr. Yos²¹ (Jemari Yoseph). He is the Deputy Director of the PUSKUD. On Friday 19 September, the three consultants (Roger Montgomery, Rohandi, and Rilus Kinseng) made a second visit. At this time we met Mr. Petrus Umbu²² and Mr Jemari Yoseph.

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²⁰ Address: Jl. Arif Rahman No 1, Kupang.

²¹ His HP: 08123787322

²² His HP: 08123 796059

The PUSKUD in NTT was established in 1982, as the association of village cooperative units. Since around 2002, one of the NTT PUSKUD core businesses is cattle fattening. This business is carried-out by developing partnerships with farmers. In this partnership system, one to three cattle are given by the PUSKUD to a farmer household to be raised (fattened). The farmer is responsible to raise the cattle until each of them reach at least 250 kg of weight.

PUSKUD also provides intensive assistance to the farmers, especially related to diseases. In this regard, PUSKUD employs “direct assistant staff” (similar to extension workers) to check the cattle regularly. Health-related treatments, such as vaccination, are carried-out by the field assistants.

Marketing of the cattle is done through the PUSKUD; buyers contact the PUSKUD and bargain the price with PUSKUD. When price is agreed, the buyers would come to the farmers’ location, and the buyer would pay directly to the farmer.

After deducted by total costs (price of the steer when given to the farmers plus others such as medicine etc), the net benefit will be divided between the farmer and the PUSKUD with 70% and 30% formula; meaning farmer get 70% and PUSKUD get 30%. For example, a steer with weight 150 kg is given to a farmer. Total cost of a steer plus medicine, etc is Rp 2 million. The farmer sells a steer when its weight is 250 kg at price Rp 15.000/kg. The farmer will get total Rp 3,750,000. This amount is deducted by total cost (Rp 2,000,000) equal to Rp 1,750,000. In this case, farmer will get 70% out of Rp 1,750,000 (equal to Rp 1,225,000) and PUSKUD get 30% (equal to Rp 525,000).

ANNEX 2-1: FOCUSED GROUP DISCUSSION (FGD) ON AGRICULTURE RISK

Kuanfatu Sub-District of Timor Tengah Selatan (TTS) District – NTT.

By Rohandi

1. Location

Discussion with PNPM/PPK SADI Team²³ at PNPM – NTT office in September 10, 2008; attended by Urbanus (acting Province Coordinator), Alex (staff), Regina Tan (SADI Specialist), Christianto (SADI Monitoring & Evaluation), and the World Bank Consultants (Roger Montgomery/Team Leader, Rilus and Rohandi); determined Kuanfatu Sub-district as sample location of focused group discussion (FGD) for the study. Kuanfatu is a sub-district located at Timor Tengah Selatan (TTS) District – East Nusa Tenggara (NTT) Province.

2. Level of FGD

The discussion forum designed that FGD would involve representatives from 8 villages within Kuanfatu Sub-district area. One village was selected to conduct deeper discussion at village level; then all of 8 villages' representatives were involved to discuss at sub-district level.

Date: 11 September 2008

Deep discussion conducted at Kuanfatu Village (the capital of Kuanfatu Sub-district) as village sample. FGD attended by 60 participants (26 women, 43%), consist of farmers' representatives from all sub-villages (dusun-dusun), heads of sub-villages, and some representatives of village office staffs.

Group discussion divided into 3 sub-groups with 20 participants each. Each sub-group discussion facilitated by one facilitator, i.e. Rohandi (consultant), Ibu Regina Tan (NTT SADI Specialist), and Bp. Joharjo (Kuanfatu SADI-FK)²⁴. Plenary discussion to clarify all issues from sub-groups. Discussion conducted at 16:00 to 20:00 PM (four hours).

Date: 12 September 2008

Discussion conducted at Sub-district (kecamatan) level. To get significant representatives from all villages within the sub-district area, the FGD linked-up to PPK-SADI Inter-Villages Discussion Forum (Musyawarah Antar Desa - MAD). There are 85 participants (38 women,

²³) PNPM stand for Program Nasional Pemberdayaan Masyarakat is Indonesian national development program on empowering community. The program consists of Kecamatan Development Program-KDP (Indonesian term is Program Pengembangan Kecamatan-PPK) specifically for rural area (PNPM Mandiri Perdesaan), other program for urban area called P2KP (PNPM Mandiri Perkotaan), and SPADA specific program for un-developed area of Indonesia. SADI stand for Smallholders Agriculture Development Initiative is a part of PNPM-PPK, a pilot project funded by AusAID.

²⁴) SADI-FK is facilitator kecamatan (sub-district facilitator) specifically for SADI program within the sub-district.

45%) represent their villages within the MAD. Name of villages sending their representations are: Kuanfatu, Kelle, Kusi, Kakan, Basmuti, Lasi, Olais, and Oebaki.

However, to ensure an active-interaction within the FGD, we asked for each village to determine its representatives to get 60 participants (at least 45% women) which divided into 3 sub-groups with 20 participants each. Each sub-group discussion facilitated by one facilitator, i.e. Rohandi (consultant), Ibu Regina Tan (NTT SADI Specialist), and Bp. Joharjo (Kuanfatu SADI-FK). Discussion was covered by Plenary-Discussion for all participants, facilitated by consultant (Rohandi). Discussion conducted at 09:00 AM to 16:00 PM with an hour lunch break. Discussion outputs of both village and sub-district level of FGD summarized on the table below.

3. Outputs of FGD

Discussion Issues	Summary of condition
I. GENERAL	
Kind of crops	<ul style="list-style-type: none"> Food crops Maize (main crops as main food), Cassava, sweet potato Vegetables Cabbage, string bean, peanut Fruit Banana, mango, orange (jeruk keprok), avocado, papaya Tree crops Coconut, tamarind, areca nut, candle nut, mahogany Livestock Cow, pig, goat, chicken
Land ownership and status	The ownership of land 0.5 to 7 hectares per family, in the average of 4 hectares per family. Most families own their land with no certificate. Generally, they only have “a letter” for tax payment.
II. PROBLEM IDENTIFICATION (Constraints and Risk)	
Farming/technical aspect	
Dry-land farming: <ul style="list-style-type: none"> Every year constraint #A Risk #1 	Rainy season <ul style="list-style-type: none"> All farmers’ land within the village is un-irrigated agricultural field. The farmers perceive that maize is the main crop, since it’s the main food for their families. Maize cultivation normally during the rainy season between Novembers to March. Occasionally the period of rainy season changes. During last five years, rainy seasons unpredictable, since it

	<p>sometime very short, i.e. between early Novembers to January. During this period the maximum harvest area decreased from 0.7 ha/family to less than 0.5 ha/family. Deputy of Camat who attended plenary discussion clarify that normally the area has dry-climate with 8 months dry season and 4 months rainy season.</p>
<ul style="list-style-type: none"> • Risk #2 	<p>Heavy wind</p> <ul style="list-style-type: none"> • Unpredictable that heavy wind damages maize farming in the end of January to early February. The wind breaks maize stem, and then makes them fall-down all at once. Farmers find their difficulty to avoid the wind attack since it unpredictable, and there is no relationship with the rainy season.
<p>Slope area, lack of terracing:</p> <ul style="list-style-type: none"> • Geographical constraint #B • Soil fertility decrease; Risk #3 	<ul style="list-style-type: none"> • Kuanfatu sub-district is hilly area. Most of agricultural field slope about 40%. • Big erosion during rainy season decrease soil fertility, since there is lack of terracing system within the farm.
<p>Shifting system:</p> <ul style="list-style-type: none"> • Lack of labour, Constraint #C • Risk to soil fertility, Risk #4 	<ul style="list-style-type: none"> • The participants of FGD confess that they do not cultivate all of their own land for maize crops. One family cultivates 0.25 – 0.7 ha although they have 5 hectares land or more. Lack of labour is the main constrain to cultivate more land. • They do farming in one location for two years, and then move to other location for next two years. Decreased of soil fertility and maize production is the main reason of the shifting.
<p>Tree crops effect to decrease maize yield:</p> <ul style="list-style-type: none"> • Risk #5 	<ul style="list-style-type: none"> • Farmers understand that cultivating maize around leafy tree crops effect to low production of maize.
<p>Lack of agricultural input (labour, fertilizer, pesticide, equipment):</p> <ul style="list-style-type: none"> • Labour, see Constraint #C • Occasional very short rainy season; Risk #6 • Lack of knowledge; constraint #D 	<ul style="list-style-type: none"> • More than 95% family only uses family's labour about 3-6 people per family. Within the very short rainy season of 3-4 months, each family able to cultivate 0.25 – 0.70 ha. • Late on cultivating maize (within the very short rainy season) effect to decrease production. • Farmers have not applied fertilizer and pesticide for food crops, fruits, and tree crops. Few farmer applied manure for vegetable. Most participants confess that they do not

<ul style="list-style-type: none"> • Lack of capital; constraint #E • Lack of inputs supply; constraint #F <ul style="list-style-type: none"> • Geographical constraint #G 	<p>know the dosage of applying fertilizer for all kinds of their crops.</p> <ul style="list-style-type: none"> • Lack of money to buy labour, fertilizer and pesticide is a classic main reason emerged during discussion. • No kiosk for agricultural inputs within this sub-district. • Equipments used by farmers consist of Crowbar, hoe, mattock and chopping knife. This is related to the condition of slope land, and scrub/underbrush area.
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<p>Seed availability (maize and tree crops):</p> <ul style="list-style-type: none"> • Annual constraint #H • Lack of supply and information on three crops seed or new plants, Risk #7 	<ul style="list-style-type: none"> • Farmers said that they applied un-qualified seed. They normally provide maize seed from their harvest for next year cultivation. Farmers hang on the seed in the kitchen during 7-9 months to have smoked every day from cooking activities. The Farmers claimed that the variety of their old maize is appropriate to the area; they are not interested to use a new variety from outside. • Farmers are interested to plant various kinds of tree crops which have higher economic value, e.g. Teak (Jati), Albizzia (<i>Sengon</i>), etc. However, they find difficulty to get seed or new plant of the tree crops.
<p>Limited variety of vegetables:</p> <ul style="list-style-type: none"> • Pest and disease, Risk #8 	<ul style="list-style-type: none"> • A specific nature of farmers is to follow their neighbour to plant the same crops. They are not confident to differ from others. Planting the same vegetables (for instance: Cabbage) together within the same period often to carry on high risk of plant disease and pest.
<p>Lack of guidance from agricultural extension officer (Penyuluh Pertanian Lapangan – PPL)</p> <ul style="list-style-type: none"> • Constraint #I 	<ul style="list-style-type: none"> • Farmers apply traditional agricultural system in the same manner as their forefathers done. There is very limited guidance from PPL on introducing agriculture technology.
<p>Livestock:</p> <ul style="list-style-type: none"> • Traditional system; constraint #J • Lack of grass during dry season; constraint #K • Disease of cows; Risk #9 	<ul style="list-style-type: none"> • Traditional system with no stable for cattle. Most farmers let their cows to look for grass/foiliages within the bushes, or to rein in them at certain place in the farm boundary where they can fetch grass or leaves by themselves. • This condition appears every year during dry season from May to October. There is few farmer anticipate the condition by planting some kind of legume trees, e.g. <i>Glyricidia</i> (Gamal) and <i>Leucaena</i> (Lamtoro). No farmer tried to cultivate grass for cattle. • Farmers cannot explain the name of disease attacks their cows. This generally make abscess around cows' head.
Production	
<p>Low production of maize:</p> <ul style="list-style-type: none"> • Related to constraint # (I, and D to H) 	<ul style="list-style-type: none"> • Applying very traditional farming system effects to low productivity. Equivalent to dry-shelled maize; production in range of 1 – 1.5 ton/ha. Families with 0.25 ha of cultivation have yields of 250 – 425 kg, while the families with largest cultivation of 0.7 ha have 700 –

	1.050 kg.
Occasionally surplus production of coconut, areca nut, and candle nut.	See marketing

<p>Short period of vegetable harvest:</p> <ul style="list-style-type: none"> • Annual constraint #L • Lack of information on pumping system for farming; Constraint #M • Surplus production; Risk #10 	<ul style="list-style-type: none"> • Cabbage is cultivated starting in the end of rainy season (normally in February) up to couple month in early dry season (March to May). String bean and peanut are cultivated as intercropping of maize. No kind of vegetable can be continued after May, as it too dry. • Some villages within the river bank (DAS) do not use remainder water of the river during dry season, as it is about 5 to 10 m deep under farming area. • Occasionally, surplus production of vegetables during March to April, while during August to February the villagers buy vegetable from outside (come from Kupang) for family consumption.
<p>Livestock:</p> <ul style="list-style-type: none"> • Limited amount of livestock ownership; constraint #N • Local traditional system of payment for livestock care-takers ; constraint #O 	<ul style="list-style-type: none"> • There are about 30% families have pigs, about 2-4 pigs/family. Few families have 1-2 cows/family. • Some poor families are paid by other families to take care of small amount (1 to 5) cows, as they do not have money to buy cows by themselves. The care-takers are normally paid by maize or other food-crops with unclear defined system of payment.
<p>Marketing</p>	
<p>Low price and seasonality of prices:</p> <ul style="list-style-type: none"> • Low price since surplus yield during harvest period; Risk #11 • Low price since farmers need cash immediately; Risk #12 • Low price of smelted ore of shelled candlenut; Risk #13 • Low price for very simple post harvest treatment; constraint #P 	<p>Cabbage.</p> <ul style="list-style-type: none"> • As to compare; that during March to April farmers sell cabbage by Rp.500,-/kg. It is often happened that the cabbage putrid since they are not sold (not in demand) for two days. While, during August to February the villagers buy cabbage from outsiders about Rp. 3000 to Rp. 7000/kg. <p>Candlenut.</p> <ul style="list-style-type: none"> • Within 2 months during harvest period, Candlenut price is Rp.1000,-/kg for un-shelled (intact); and Rp.3.500,-/kg for shelled with good quality. About three months after that period the price is normally increased in range of Rp. 5000 – 8000/kg for shelled with best quality. • The price decrease of 50-70% for low quality (smelted ore) of shelled candlenut. Farmers do not have any appropriate technology (or equipment) to produce better quality of shelled candlenut. <p>Tamarind.</p> <ul style="list-style-type: none"> • Post harvest treatment for Tamarind before selling is to expel the stone (seed). The price with no stone is Rp.1000/kg. Farmers do not have any other skill to treat

	tamarind on increasing the add value.
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<ul style="list-style-type: none"> • Low and fluctuates price; constraint #Q 	<p>Coconut.</p> <ul style="list-style-type: none"> • Coconuts are sold directly after harvest with very low and fluctuates price. Few family processed them become coconut oil, but the treatment still not gives a significant add value.
<p>Post-harvest treatment:</p> <ul style="list-style-type: none"> • Lack of skill on post harvest treatment; constraint #R 	<ul style="list-style-type: none"> • Lack of skill on post-harvest processing to increase the add value of agricultural yields. Farmers said that they want to have skill on post-harvest processing for banana, cassava, tamarind, coconut and candle nut.
<p>Price determination:</p> <ul style="list-style-type: none"> • Lack of price and market information; constraint #S • Marketing un-organized well; constraint #T 	<ul style="list-style-type: none"> • Middlemen define and control the crops prices. They come to the village to buy crops with no competition on price, so that the villagers sell their crops with no bargaining position, no choice on price determination. It looks the middlemen organized very well. The villagers cannot access the price information. They only knew the price from the middlemen. • In other side, the farmers are not organized at all on marketing their crops. Marketing is not organized by farmers group.
<p>Transportation:</p> <ul style="list-style-type: none"> • Lack of transportation to support crops marketing; constraint #U 	<ul style="list-style-type: none"> • It is need five hours by public bus from Kupang (the capital of NTT Province) to Kuanfatu. There is only one public bus daily, arrive at 08:00 AM from Kupang, and leave back to Kupang at 09:00 AM. Especially on Saturday, the market day for local village market, there are available three public bus and about three trucks for animal transportation.

III. Food availability condition (Constraints and Risk)	
<p>Maize-Storage:</p> <ul style="list-style-type: none"> • The local traditional storage system; constraint #V • Decrease food-availability; Risk #14 	<p>Round thatched grain storage building (Bale Bulat, Lumbung)²⁵</p> <ul style="list-style-type: none"> • Maize is the main food for the villagers. Each family has “Lumbung” for maize storage. Un-shelled maize is hung inside the Lumbung, while billowing smoke should be provided continuously, or at least three times daily to protect maize from pest (insect) attack. • Smoke-blackened maize is not been attacked. But smoke-free maize which is hung on the top of Lumbung is attacked by a kind of insect that farmers called <i>fufuk</i>. By this storage system farmers cannot protect their maize 100%, even though they burn up firewood in significant volume for more than six months.
<p>Food shortage:</p> <ul style="list-style-type: none"> • Constraint #W • Food shortage by level of maize harvest of each family; Risk #15 	<ul style="list-style-type: none"> • Farmers are aware of this happens every year, and well-understood of risk to their families life. They have very famous “Sobriquet” in local language for the period of food-shortage months: i.e. “<i>Fun am Nahas</i>” (the unlucky months). • Related to small size (0.25 – 0.7 ha/family) of maize cultivation and low production, generally each family has maize inside the storage for 6 – 9 month/year. That means there are 3 to 6 months of Food-Shortage yearly.
IV. Community Experience on depending family food supply	
Substitution food	The villagers consume Cassava, Banana, and Coconut to substitute maize as main food. They steam dried-cassava, and/or unripe banana, combine with grated coconut.
Changing food pattern or frequency	Besides substituting main food, most participants of FGD confessed that their families decrease frequency of eating during November to February. Part of them choose lunch and dinner, the others choose breakfast and dinner. These frequency decreases from normally they eat three times daily – breakfast, lunch and dinner. Specifically for Lasi, Olais, Basmuti and Oebaki villages, during food shortage months the villagers only have lunch daily. They drink tea or coffee for breakfast and dinner.
Selling tree crops and/or domesticated	Most farmers have tree crops and/or domesticated animal as

²⁵ Bale Bulat is local storage system for maize as main food-crop, owned by family. The other term generally use within Indonesia (specifically in Java, Bali and Nusa Tenggara islands) is Lumbung; it can be owned by family, farmers group, or upper level of villagers’ organization.

animal	reserve income sources. During food-shortage months, farmers sell tree crops harvest (candle nut, tamarind, mango, orange) and/or animal (chicken, goat, pig, and cow) to buy rice or maize from outside area.
Working as labour, etc.	<p>Inside the village, or in neighbour villages within the sub-district, the villagers work for richer families as farm labour; to start early land cultivation, farm cleaning, and weeding.</p> <p>Outside the sub-district, some villagers work as building labour. Very few skilled villagers work as building craftsmen outside the village. Youths normally go to Malaysia to work as farm labour.</p> <p>Some villagers work as firewood collector, and/or stone collector.</p>
V. Community Proposal to improve food sufficiently and economic condition	
Diversification of cash crops: <ul style="list-style-type: none"> To anticipate effect of Risk # 1, #2 	<ul style="list-style-type: none"> Mono-cropping of food crop (for instance: maize) during very short rainy season carries a high risk. Diversify farming with more than three kinds of cash crops (for instance: maize, peanut, string-bean, green peas, soybean, etc) will help farmers to increase their harvest, and avoid risk from disease and pest attack. Specifically for cassava, it should be planted in other area, as it has big and voracious roots.
Improvement of farmers' skill on farming system: <ul style="list-style-type: none"> To anticipate effect of Risk #3, #4, #5, #7, #8 	<ul style="list-style-type: none"> Participants propose crops diversification should be followed by improving farmers' skill on farming system: i.e. terracing, farm model, farm inputs application; and pest and disease control. All participants of FGD claimed that many farmers have already applied crops diversification, but they do not understand how to arrange among the crops, as they did not get any guidance on farm model.
Extending cultivation: <ul style="list-style-type: none"> To solve Risk #15 	<ul style="list-style-type: none"> Farmers dream to solve their problem of Food-Shortage by increasing their harvest through extending cultivation. However, they cultivated only 0.25 – 0.7 ha/family from an average of ownership of 4 ha/family. Two main constraints are very limited family labour (3 – 6 persons/family) and very short period of rainy season. The

	<p>condition of slope land (40%) is a specific obstacle of using hand tractor for land cultivation.</p> <ul style="list-style-type: none"> • The farmers propose to have any guidance or training on a specific farming technology on how to extend their cultivation. They still do not have any idea for this case. • Deputy of Camat advised to SADI or any other program to help farmers that education or guidance can be done through available 210 farmers groups (3.485 members) within the sub-district area.
<p>Pumping water system:</p> <ul style="list-style-type: none"> • To solve Risk #1, #10, #11, #15 	<ul style="list-style-type: none"> • There are some streams with water up to September every year. Pumping system can be applied to push water flowing from streams to farm within stream bank. Participants informed that at Kakan, Lasi and Kuanfatu villages there are some places within the stream bank with available water in the stream for along the year. • Technically, there is a very good example done by Bp. Zet Malelak (cell: 081339487046) at Dusun Uel, Desa Nunkurus, Kecamatan Kupang Timur, Kabupaten Kupang. He has been guiding farmers to dam up some points in the small stream and flow the water by pumping system to the farmers' cultivation. SADI farmers can be brought to visit the example for learning how it works technically. • Maize needs 3 to 4 months from cultivation to harvest. The latest harvest about week 3rd of March. Pumping system after rainy season will help farmers to do secondly cultivation of maize which starting around April and harvest in August. This will extend the availability of maize for farmers' family main food. Pumping system also will help farmers to extend the period of vegetables production; e.g. cabbage, string bean, etc.
<p>Post-harvest treatment:</p> <ul style="list-style-type: none"> • To solve Risk #11, #12, #13 • To solve Risk #14 	<p>Processing</p> <ul style="list-style-type: none"> • Farmers said that they have already submitted to SADI their proposal to have training on Food Processing to increase the add value of their crops. The proposal include processing of Tamarind, Candle nut, Banana and Cassava. <p>Storage system</p> <ul style="list-style-type: none"> • Farmers need training on storage system which can be applied more effective and efficient. Pilot of storage system (at least three families per village) is necessary to

	<p>show the effectiveness of the new storage system.</p> <ul style="list-style-type: none"> • In fact that traditional storage system cannot protect farmers' maize in 100% save, while for which they loss firewood in significant volume for more than six months.
<p>Agro-forestry:</p> <ul style="list-style-type: none"> • To solve #2, #4, #15 	<ul style="list-style-type: none"> • Farmers understand that many kinds of tree crops are compatible to their area. They have example of many tree crops have grown well within the area; i.e. candle nut, tamarind, some kind of fruits (orange, mango, etc), teak, mahogany, <i>Sengon</i>, etc. • Most participants of FGD proposed to have support on planting more tree crops within their land.

<p>Nursery:</p> <ul style="list-style-type: none"> • To solve Risk #7 	<ul style="list-style-type: none"> • All participants said that they find difficulty to get qualified seed and/or new plants. Farmers usually use local seed or new plants which are produced by them from their harvest. There is no kiosk to sell seed and nursery to provide new plant within the sub-district area. Few farmers who want to get better quality of seed or new plants bought them in Kupang or So'e. • The FGD forum proposed to establish a farmers group who take responsibility on producing seed and/or new plants. The group should create a Nursery, and specifically works to provide seed and/or new plants for other farmers groups within the sub-district area. The nursery should be treated as enterprise, located at Kuanfatu Village (the capital of Kuanfatu Sub-district); the group should work professional as entrepreneurs who sell their products to farmers, and supported by all farmers groups within the sub-district area.
<p>Marketing:</p> <ul style="list-style-type: none"> • To solve Risk #11, #12 	<ul style="list-style-type: none"> • Middlemen have large-scale opportunity to control crops prices as there are many constraints in farmers' side; e.g. lack of access on price information, lack of transportation, surplus crops during harvest period of vegetables, low quality of products since lack of post-harvest treatment, and marketing is not organized well. • The FGD forum proposed to establish a farmers group who take responsibility on marketing the crops from farmers groups within the sub-district area. The group should compete with middlemen to look for good market and price outside the area, inform to the farmers groups, then organizes the marketing process. The marketing activity should be treated as enterprise from which the members of this group obtain significant income. The marketing group should work professional as entrepreneurs who buy crops from farmers' groups, sell them with good price, and supported by all farmers groups within the sub-district area.
<p>Livestock</p> <ul style="list-style-type: none"> • To solve Risk #9 	<ul style="list-style-type: none"> • All participants propose to get training and support on livestock development. Few farmers have got information from outside Kuanfatu Sub-district that PUSKUD have applied a very good program to help farmers on livestock development (Cow), but they do not think any farmers within Kuanfatu sub-district have been involved.

ANNEX 2-2: FOCUSED GROUP DISCUSSION (FGD) ON AGRICULTURE RISK

Mollo Utara Sub-District of Timor Tengah Selatan (TTS) District – NTT.

4. Location

Based on discussion with Ibu Regina Tan (NTT-SADI Specialist) – at NTT Province PNPM²⁶ office in September 16, 2008; and coordination via telephone with PNPM field staffs; it was determined to visit Kecamatan Mollo Utara for villages FGD. Mollo Utara is a sub-district located at Timor Tengah Selatan (TTS) District – East Nusa Tenggara (NTT) Province.

5. Level of FGD

Original idea, the discussion designed to follow the process and level of FGD as done as in Kuanfatu sub-district, which FGD would involve representatives of villages within Mollo Utara sub-district area. One village to conduct deeper discussion at village level; then all of villages' representatives would be involved to discuss at sub-district level. However, the schedule of MAD agenda for the sub-district is postponed to the following week. Finally, it was decided to conduct FGD at two village samples; i.e. Desa O'besi and Desa Eonbesi.

Date: 17 September 2008

Discussion conducted at Dusun IV Desa O'besi. FGD attended by 9 farmers who were representing head of family (3 persons), housewife (4 persons), youth (1 person) and heads of sub-village (1 person). The other attendances are cadre, UPK members and PNPM/PPK-Facilitator. Discussion conducted at 15:00 to 18:00 PM (three hours).

Date: 18 September 2008

Discussion conducted at Dusun I Desa Eonbesi. FGD attended by 21 farmers (8 women, 38%) who represent all RT/RW within the village. The other attendances (4 persons) consist of head of UPK, SADI Penlok, SADI FK, and FKP.

Group discussion divided into 3 sub-groups with 7 farmers each; while other 4 participants were distributed to follow each of these sub-groups. Each sub-group discussion was facilitated by two persons each, one from consultant member and one from PNPM/SADI. Plenary discussion to clarify all issues from sub-groups, facilitated by Dominggus Oematar (FK-SADI). All discussion sessions were conducted at 09:00 AM to 13:00 PM (four hours).

²⁶) PNPM stand for Program Nasional Pemberdayaan Masyarakat is Indonesian national development program on empowering community. The program consists of Kecamatan Development Program-KDP (Indonesian term is Program Pengembangan Kecamatan-PPK) specifically for rural area (PNPM Mandiri Perdesaan), another program for urban area called P2KP (PNPM Mandiri Perkotaan), and SPADA specific program for un-developed area of Indonesia. SADI stand for Smallholders Agriculture Development Initiative is a part of PNPM-PPK, a pilot project funded by AusAID.

Discussion outputs from both villages' FGD summarized on the table below.

6. Outputs of FGD

Discussion Issues	Summary of condition
VI. GENERAL	
Kind of crops	<ul style="list-style-type: none"> • Food crops Maize (main crop as main food), Cassava, potato • Vegetables Kidney bean, Cabbage, carrot, string bean, peanut, onion • Fruit Banana, orange (jeruk keprok), avocado, papaya • Tree crops Coffee, Coconut, tamarind, areca nut, candle nut, mahogany • Livestock Cow, pig, chicken
Land ownership and status	The ownership of land 0.5 to 2 hectares per family. Most farmers have 0.7 ha/family. Not more than 25% families have land certificate. Generally, they only have “a letter” for tax payment.
VII. PROBLEM IDENTIFICATION (Constraints and Risks)	
Farming/technical aspect	
Dry-land farming: <ul style="list-style-type: none"> • Every year constraint #A • Risk #1 	<ul style="list-style-type: none"> • Rainy season All farmers’ land within the village is un-irrigated agricultural field. Rainy season about 5 months from November to March. Normally, the heavy rain falls during December to February. The main crop is maize, as it’s the main food for farmers’ families. Maize cultivation during Novembers to March. • Heavy wind Heavy wind damages maize farming in the end of January to early February. The wind breaks maize steam, and then makes them fall-down all at once. Farmers find their difficulty to avoid the wind attack since it unpredictable, and there is no relationship with the rainy season.

<p>Slope area, lack of terracing:</p> <ul style="list-style-type: none"> • Geographical constraint #B • Soil fertility decrease; Risk #2 	<ul style="list-style-type: none"> • Kecamatan Mollo Utara is hilly area. Most of agricultural field slope about 40%. • Big erosion during rainy season decrease soil fertility, since there is lack of terracing system within the farm.
<p>Limited land cultivation:</p> <ul style="list-style-type: none"> • Labour constraint #C 	<ul style="list-style-type: none"> • Most participants said they cultivate maize as main crop less than 0.5 ha/family, even for families who have more than 1 ha. Lack of labour is the main constrain to cultivate more land.
<p>Tree crops effect to decrease maize yield:</p> <ul style="list-style-type: none"> • Risk #3 	<ul style="list-style-type: none"> • Farmers explained that cultivating maize within the same land with tree crops (orange, avocado, coffee, Coconut, tamarind, areca nut, candle nut) effect to low production of maize.
<p>Lack of agricultural input (labour, fertilizer, pesticide, equipment):</p> <ul style="list-style-type: none"> • Labour constraint, see constraint #C • Occasional very short rainy season; Risk #4 • Lack of knowledge; constraint #D • Lack of inputs supply; constraint #E • Geographical constraint #F 	<ul style="list-style-type: none"> • Most family only uses family's labour about 3-5 people per family. Within the very short rainy season of 4-5 months, each family able to cultivate less than 0.5 ha. • Late on cultivating maize (within the very short rainy season) effect to decrease production. • Farmers have not applied fertilizer and pesticide for food crops, fruits, and tree crops. Few farmer applied manure for vegetable. Most participants confess that they do not know the dosage of applying fertilizer for all kinds of their crops. • No kiosk for agricultural inputs within this sub-district. • Equipments used by farmers consist of Crowbar, hoe, mattock and chopping knife. This is related to the condition of slope land, and scrub/underbrush area.
<p>Seed availability (maize and tree crops)</p> <ul style="list-style-type: none"> • Annual constraint #G • Annual constraint #H • Lack of supply and information on tree crops seed or new plants; Risk #5 	<ul style="list-style-type: none"> • Farmers said that they applied un-qualified seed. Farmers apply the same method as apply in Kuanfatu on preparing seed. • Most farmers prefer to plant variety of maize which only 72 to 75 days (early ripening variety). The other variety needs 90 days. The qualified seed for both varieties do not available within the sub-district, so that the farmers prepare their own seed from old harvest for next cultivation. • Farmers are interested to plant various kinds of tree crops which have higher economic value, e.g. Mahogany, Jati, <i>Sengon</i>, etc. However, they find difficulty to get

	seed or new plant of the tree crops.
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<p>Limited variation of vegetables:</p> <ul style="list-style-type: none"> • Disease and pest attack to mono-cropping; Risk #6 	<ul style="list-style-type: none"> • A specific nature of farmers is to follow their neighbour to plant the same crops. They are not confident to be different from others. Planting the same vegetables (for instant: Cabbage) together within the same period often to carry on high risk of plant disease and pest.
<p>Lack of guiding from extension officer (Penyuluh Pertanian Lapangan – PPL):</p> <ul style="list-style-type: none"> • Lack of guidance; constraint #I 	<ul style="list-style-type: none"> • Farmers apply traditional agricultural system in the same manner as their forefathers done. There is very limited guidance from PPL on introducing agriculture technology.
<p>Livestock:</p> <ul style="list-style-type: none"> • Traditional system on livestock; constraint #J • Lack of grass; constraint #K • Disease of cow; Risk #7 	<ul style="list-style-type: none"> • Traditional system with no stable for cattle. Most farmers let their cows to look for grass/foliages within the bushes, or to rein in them at certain place in the farm boundary where they can fetch grass or leaves by themselves. • This condition appears every year during dry season from May to October. There is few farmer anticipate the condition by planting some kind of legume trees, e.g. Gamal and Lamtoro. No farmer tried to cultivate grass for cattle. • Farmers cannot explain the name of disease attacks their cows. This generally make abscess around cows' head.
Production	
<p>Low production of maize:</p> <ul style="list-style-type: none"> • Related to constraint # (I, and C to G) 	<ul style="list-style-type: none"> • Applying very traditional farming system effects to low productivity. Equivalent to dry-shelled maize; production in range of 0.8 – 1.2 ton/ha. As most family cultivate less than 0.5 ha/family; so the harvest about 400 kg/family/year.
<p>Short period of vegetable harvest:</p> <ul style="list-style-type: none"> • Annual constraint #L • Surplus yield of vegetables; Risk #8 	<ul style="list-style-type: none"> • Kidney bean, string bean, peanut and onion are cultivated as intercropping of maize. Cabbage, carrot and potato are cultivated starting in the end of rainy season (normally in February) up to couple month in early dry season (March to June). No kind of vegetable can be continued after June, as it no water. • It occasionally happen that surplus production of vegetables during March to April.
<p>Livestock:</p> <ul style="list-style-type: none"> • Limited scale of pig ownership; constraint #M 	<ul style="list-style-type: none"> • All families have chicken. There are more than 50% families have 1-3 pigs/family.

<ul style="list-style-type: none"> • Lack of capital to buy cow for poor farmers; constraint #N 	<ul style="list-style-type: none"> • Only few families have cows. Some families are paid by other families to take care of cows, as they do not have money to buy cows by themselves.
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Marketing	
<p>Low price, seasonality and fluctuation of prices:</p> <ul style="list-style-type: none"> • Fluctuate price of coffee; Risk #9 • Very low local price within harvest period; Risk #10 • Low price since surplus yield during harvest period; Risk #11 • Low price since farmers need cash immediately; Risk #12 • Low price of smelted ore of shelled candlenut; Risk #13 	<p>Coffee</p> <ul style="list-style-type: none"> • The price fluctuates, controlled by middlemen in range of Rp. 5.000 - to Rp.10.000,-/kg. <p>Avocado</p> <ul style="list-style-type: none"> • This is specific crops with very low price. Within the harvest period the price is Rp.350,-/kg (or Rp. 1.000 - for 10 avocados equivalent to 3 kg). Out of harvest period, the price in Kupang Rp.3.500 - to Rp.5000/kg. <p>Vegetables.</p> <ul style="list-style-type: none"> • The case happens as same as in Kuanfatu sub-district. For example is cabbage; during March to April (surplus period) farmers sell cabbage by Rp.500,-/kg. It is often happened that the cabbage putrid since they are not sold (not in demand) for some days. While, during August to February the price in range of Rp. 3000 to Rp. 7000/kg. • The other case is carrot. Within the harvest period the price is Rp.500,-/kg. In September when the study conducted, the price Rp. 10.000,-/kg. <p>Candle nut.</p> <ul style="list-style-type: none"> • Within 2 months during harvest period, Candle nut price is Rp.1000,-/kg for un-shelled (intact); and Rp.3.500,-/kg for shelled. About three months after that period the price is normally increased in range of Rp. 6000 – 8000/kg for shelled with best quality. • The price decrease of 30-60% for low quality (smelted ore) of shelled candlenut. Farmers do not have any appropriate technology (or equipment) to produce better quality of shelled candlenut.
<p>Post-harvest treatment:</p> <ul style="list-style-type: none"> • Lack of skill on post harvest treatment; constraint #O 	<ul style="list-style-type: none"> • Lack of skill on post-harvest processing to increase the add value of agricultural yields. Farmers said that they want to have skill on post-harvest processing for banana, cassava, orange, avocado, carrot and candle nut.
<p>Price determination:</p> <ul style="list-style-type: none"> • Middlemen control the price; constraint #P 	<ul style="list-style-type: none"> • Middlemen define and control the crops prices. They come to the village to buy crops with no competition on price, so that the villagers sell their crops with no

<ul style="list-style-type: none"> • Marketing un-organized well; constraint #Q 	<p>bargaining position, no choice on price determination. It looks the middlemen organized very well.</p> <ul style="list-style-type: none"> • Farmers are not organized at all on marketing their crops. Farmers have no role on marketing process of their crops, since the marketing is not organized by farmers group.
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VIII. Food availability condition	
<p>Maize-Storage:</p> <ul style="list-style-type: none"> • The local traditional storage system; constraint #R • Decrease food-availability; Risk #14 	<p>Bale Bulat (Lumbung)²⁷</p> <ul style="list-style-type: none"> • This is the same case as at Kuanfatu. Maize is the main food for the villagers. Each family has “Lumbung” for maize storage. Un-shelled maize is hung inside the Lumbung, while billowing smoke should be provided continuously, or at least three times daily to protect maize from pest (insect) attack. • In fact smoke-blackened maize was not been attacked. But smoke-free maize which has been hung on the top of Lumbung is attacked by <i>fufuk</i> storage insects. By this storage system farmers cannot protect their maize in 100% save, while they use up firewood in significant volume for more than six months.
<p>Food shortage:</p> <ul style="list-style-type: none"> • Constraint #S • Food shortage by level of maize harvest of each family; Risk #15 	<ul style="list-style-type: none"> • Farmers are aware of this happens every year, and well-understood of risk to their families life. They have very famous “Sobriquet” in local language for the period of food-shortage months: i.e. “<i>Fun am Nahas</i>” (the unlucky season)²⁸. • Related to small size of most farmers’ maize cultivation (0.5 ha per family) and low productivity, generally each family has maize inside the storage for 7 – 8 months/year (March to September/October. That means there are 4 to 5 months of Food-Shortage yearly.

²⁷ Bale Bulat is local storage system for maize as main food-crop, owned by family. The other term generally use within Indonesia (specifically in Java, Bali and Nusa Tenggara islands) is Lumbung; it can be owned by family, farmers group, or upper level of villagers’ organization.

²⁸ A general term in Indonesia for food-shortage season is Musim Paciklik.

IX. Community Experience on depending family food supply	
Substitution food (and food pattern)	<p>Villagers do not decrease frequency of having meals for their families during food-shortage months; they are still having breakfast, lunch and dinner. They only change the pattern using substitution food.</p> <p>If within the normal condition they consume maize three times daily, during food-shortage they have breakfast with cassava and tea/coffee, lunch with cassava or rice, and dinner with rice/maize. Only few families who having meals with banana.</p>
Selling tree crops and/or domesticated animal	<p>During food-shortage months, farmers sell tree crops harvest (candle nut, coconut, areca nut, orange and coffee). In case some families do not have tree crops harvest anymore, while the food-shortage months remaining; the families normally sell animal (chicken, pig and/or cow).</p> <p>Selling tree crops harvest and/or animal to buy rice or maize from outside area. They prefer to buy maize, as it main food and cheaper than rice.</p>
Working as labourer	<p>Inside the village, or in neighbour villages within the sub-district, the villagers work for richer families as farm labour; to start early land cultivation, farm cleaning, and weeding.</p> <p>Outside the sub-district, some villagers work as building labour. Very few skilled villagers work as building craftsmen outside the village. Some youths go to Malaysia to work as farm labour.</p> <p>Some villagers work as firewood collector, and/or stone collector.</p>
X. Community Proposal to improve food sufficiently and economic condition	
<p>Intensification:</p> <ul style="list-style-type: none"> To decrease effect of Risk # 1, #2, #3, #4, #6, #8, #15 	<p>FGD participants proposed to have support on improving farmers' skill on farming system: i.e. terracing, farm model, fertilizer application and pest control. The farmers perceive that intensification will be easier than extending their cultivation area, as it is lack of labour.</p> <p>The farmers confessed that they have already done crops diversification, but it still do not effective as they are lack of skill on farm model, fertilizer application and terracing</p>

	system.
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<p>Seed / Seedling Nursery:</p> <ul style="list-style-type: none"> • To solve Risk #5 	<p>All participants said that they find difficulty to get qualified seed and/or new plants. Farmers usually use local seed or new plants which are produced from their-owned harvest. There is no kiosk/nursery provides seed and/or new plant within the sub-district area, even at So'e. Few farmers who want to get better quality of seed or new plants should bought them in Kupang.</p> <p>The FGD forum proposed to establish a farmers group who take responsibility on producing seed and/or new plants. The group should create a Nursery, and specifically works to provide seed and/or new plants for other farmers groups within the sub-district area. The nursery should be treated as enterprise, located at the Village (or at least at other village of Kecamatan Mollo Utara); the group should work professional as entrepreneurs who sell their products to farmers, and supported by all farmers groups within the sub-district area.</p>
<p>Agro-forestry:</p> <ul style="list-style-type: none"> • To solve Risk #1, #2, #6, #8, #15 	<p>Most participants proposed to have support on planting more tree crops within their land, as they perceive tree crops do not need much labour. Beside coffee, candle nut and orange, they are interested to plant teak, mahogany, <i>Sengon</i>, etc. for families' future saving.</p>
<p>Post harvest processing for vegetable, fruit crops, etc.:</p> <ul style="list-style-type: none"> • To solve Risk #8, #9, #10, #11, #12, and #13 	<p>This is post harvest treatment for vegetables, fruits, or other crops harvest. Farmers proposed to have training on processing, related to increase their crops add value.</p> <p>Vegetables. They proposed to be trained on how to treat vegetables in order to maintain it fresh. They think this is very important thing to increase farmers bargaining position during surplus production.</p> <p>Fruits. They proposed to have training on Fruit Processing to increase the add value of fruits harvest, specifically for orange, avocado, banana and papaya.</p> <p>Farmers also proposed to have training on post harvest processing of Coffee and Candlenut.</p>
<p>Pumping system:</p> <ul style="list-style-type: none"> • To solve Risk #4, #15 	<p>At Desa Obesi there are some small springs located about 7 meters lower than farming area. Farmers also informed there are some streams which have water up to September, but farming area located about 5 – 10 meters upper the water.</p> <p>Farmers dream to extend their vegetable harvest season up to September if the water can be pushed by pumping system</p>

	to flow up into their farm.
Marketing: <ul style="list-style-type: none"> • To solve Risk #8, #9, #10, #11, #12, and #13 	<p>Middlemen have large-scale opportunity to control crop prices as there are many constraints in farmers' side; e.g. no access to price information, surplus crops during harvest period of vegetables, low quality of products caused by lack of post-harvest treatment. Marketing is not organized well.</p> <p>The FGD forum proposed to establish a farmers group who will take responsibility on marketing the crops from farmers groups within the sub-district area. The group should compete with middlemen to look for good market and price outside the area, inform to the farmers groups, then organizes the marketing process. The marketing activity should be treated as enterprise from which the members of this group obtain significant income. The marketing group should work professional as entrepreneurs who buy crops from farmers' groups, sell them with good price, and supported by all farmers groups within the sub-district area.</p>

ANNEX 2-3: FOCUSED GROUP DISCUSSION (FGD) ON AGRICULTURE RISK

Narmada, Gerung and Bayan Sub-District of Lombok Barat District – NTB.

7. Location

In September 22nd, 2008, consultant team (Roger Montgomery/TL, Rilus, Rohandi) conducted meeting at NTB Provincial PNPM/PPK²⁹ office with the team of NTB-PNPM/PPK, which attended by Bp. Ridho Makruf (the province coordinator), Bp. Hasta Nugraha (NTB/PPK-SADI Specialist), Ibu Asdiah Triana (NTB/PPK-SADI Monitoring and Evaluation Specialist) and Bp. Lukman Taufik (PNPM/PPK District Facilitator). The meeting objective was to define FGD location, process and preparation. After coordination via telephone with PNPM/PPK-SADI field staffs at sub-district level; the discussion determined to visit three sub-districts of Lombok Barat district; i.e. Kecamatan Narmada, Gerung and Bayan.

8. Level of FGD

Fasting month is a prominent reason that formal and longer meeting at sub-district level could not be done. FGD was designed to conduct very informal at village level by meet the representatives of farmers groups at their origin location; could be at head sub-village residence, or farmers groups leader residence.

Selected village samples were Desa Selat for Narmada Sub-district, Desa Banyu Urip for Gerung Sub-district, and Desa Bayan for Bayan Sub-district. PNPM-SADI staffs at sub-district level would help to prepare the planned meeting for each location.

Date: 23 September 2008

Villagers' FGD was conducted at Merce sub-village of Desa Selat, Narmada Sub-district. FGD attended by 14 participants, consist of farmers' representatives (6 persons), head of sub-villages (2 persons), head of village (1 person), PPL (1 persons) and SADI field staffs (4 persons). Discussion conducted at 09:00 AM to 12:30 PM (three and half hours). After FGD, Roger Montgomery observed condition of farming with head village, PPL and head of farmers group.

Date: 24 September 2008

FGD was conducted at village office of Desa Banyu Urip, Gerung Sub-district. FGD attended by 13 farmers (4 women, 33%). The other participants were PjOK³⁰ and PNPM-SADI field team members.

²⁹) PNPM stand for Program Nasional Pemberdayaan Masyarakat is Indonesian national development program on empowering community. The program consists of Kecamatan Development Program-KDP (Indonesian term is Program Pengembangan Kecamatan-PPK) specifically for rural area (PNPM Mandiri Perdesaan), other program for urban area called P2KP (PNPM Mandiri Perkotaan), and SPADA specific program for un-developed area of Indonesia. SADI stand for Smalholder Agriculture Development Initiative is a part of PNPM-PPK, a pilot project funded by AusAID.

³⁰) PjOK Penanggungjawab Operasional Kegiatan; is the sub-district government staff who takes responsibility for PNPM/PPK implementation within the sub-district area.

Group discussion divided into 2 sub-groups with 6 farmers in sub-group 1 and 7 farmers in sub-group 2; while other participants were distributed to follow each of these sub-groups. Discussions were conducted at 09:30 AM to 13:00 PM (3.5 hours). After FGD, consultants (Roger Montgomery and Rilus) observed condition of farming with head of farmers group, village office staff and PNPM-SADI staffs.

Date: 26 September 2008

Two FGDs were conducted for Desa Sambik Elen of Bayan Sub-district; i.e. at Sambik Elen sub-village (group 1) and Barung Birak sub-village (group 2). There were 8 farmers participated at group 1 and 12 farmers (4 women, 33%) at group 2. FGD for group 1 was at 10 AM to 12:30 PM, while for group 2 at 13:00 to 16:00 PM.

Discussion outputs from 3 villages' FGD summarized on the table below.

9. Outputs of FGD at Narmada Sub-District (fertile and irrigated rice-field)

Discussion Issues	Summary of condition
XI. GENERAL	
Kind of crops	<ul style="list-style-type: none"> • Food crops (irrigated field) Paddy (main crop as main food), maize, cassava, sweet potato • Vegetables (irrigated field) Peanut, chilli, string bean, soybean, green bean • Fruit and tree crops (un-irrigated field, called kebun) Banana, papaya, rambutan (nephelium tree), coconut, jackfruit, mahogany, <i>Sengon</i>, • Livestock (mentioned with priority number of owner) Chicken, cow, duck, goat, horse
Land ownership and status	<p>About 30% of villagers have land with the ownership of 0.10 – 1.00 ha/family; most of them have in average of 0.30 ha/family. Generally, the status of land ownership by certificate.</p> <p>The other 70% of villagers consist of tenant farmers, sharecropper farmers, small traders, farm labourers, building labourers, craftsmen, and few government officers.</p> <p>According to the head village, the area of this village is 364 ha; consist of 120 ha irrigated rice-field, 14 ha un-irrigated tree crops farm (kebun) owned by villagers, 7 ha un-irrigated farm owned by government. Some 50 ha for community settlement, offices and other building. That</p>

means, more than 150 ha remaining as un-cultivated land,
still claimed as forest area.

XII. PROBLEM IDENTIFICATION (Constraints and Risks)	
Farming/technical aspect	
<p>Tunggro virus:</p> <ul style="list-style-type: none"> • Risk #1 	<ul style="list-style-type: none"> • The virus infected paddy within the area this year. According to PPL, the virus influencing paddy as a negative impact of applying un-recommended farming pattern (Paddy-Paddy-Paddy) for last 3 years continuously. The recommended farming pattern within the area is: Paddy-Paddy-Palawija. • A farmer who attending the discussion perceived that paddy is susceptible to disease carriers as an impact of soil damage. He advised that applying pattern of: Paddy-Palawija-Palawija will re-fertilize the land.
<p>Climate changes:</p> <ul style="list-style-type: none"> • Risk #2 	<ul style="list-style-type: none"> • Formerly, rainy season more than 6 months between August to March. During the last five years, rainy season started in November and finished around early March. Farmers find difficulty in predicting when the cultivation should be started.
<p>Livestock:</p> <ul style="list-style-type: none"> • Lack of guiding from government extension officer (PPL) on livestock diseases; constraint #A 	<ul style="list-style-type: none"> • Disease of cow. It is often that cows have low appetite, than become emaciated. Farmers do not have information what kind of the disease and how to solve the problem. • Disease of goat. During rainy season, generally goat infected by scab.
Production:	
<ul style="list-style-type: none"> • Risk #3 	Farmers explained that Tunggro had decreased yield of rice about 30%. This case had not carried on serious negative impact to food supply and socio-economic condition of the farmers' families, since they have no problem on crops harvest for next season.
Marketing	No problem on marketing
XIII. Food availability condition³¹	No problem on family food supply, no food-shortage
XIV. Community Experience on	Not necessary to identify, as the villagers have not

³¹) There is no food-shortage within the sub-district more than 30 years. Risk #1 and risk #3 has been solved by applying farming pattern of: paddy-paddy-palawija. While, risk #2 has not carried on large effect to crops harvest since the area is irrigated rice-field.

depending family food supply	experienced on food-shortage since 1968. Food shortage happened in 1967 when the same case happened within all provinces of Indonesia because of political crisis.
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XV. Community Proposal to improve economic condition	
Kiosk of farm inputs: <ul style="list-style-type: none"> No relationship with emerged risks 	<ul style="list-style-type: none"> Farmers proposed to get support on establishing the farmers' group Kiosk to provide farm inputs for the members. They would like to have right on buying agriculture inputs (fertilizer, pesticide, etc) directly from prime distributor, in order to avoid high price.
Organic fertilizer: <ul style="list-style-type: none"> No relationship with emerged risks 	<ul style="list-style-type: none"> Farmers proposed to get training and support on producing organic fertilizer.

10. Outputs of FGD at Gerung Sub-Districts (un-irrigated farming)

Discussion Issues	Summary of condition
I. GENERAL	
Kind of crops	<ul style="list-style-type: none"> Food crops Dry farming of Paddy (main food) Maize, cassava Vegetables String bean, peanut, soybean, winged bean (kecipir) Fruit Banana, papaya, mango Tree crops Coconut, cashew nut, tamarind, mahogany, teak Livestock Chicken, goat, buffalo, cow
Land ownership and status	The ownership of land 0.15 – 3 ha/family, average 0.5 ha/family. About 10% of land ownership by certificate. Generally, they only have “a letter” for tax payment.
II. PROBLEM IDENTIFICATION (Constraints and Risks)	

Farming/technical aspect	
<p>Dry-land farming:</p> <ul style="list-style-type: none"> • Land condition, constraint #A • Every year constraint #B 	<ul style="list-style-type: none"> • Dry-land (un-irrigated farming) is about 60% of total farming area within Banyu Urip village. • Rainy season during February to June (5 months). The heavy rain falls during March to May. Normally, farmers apply cultivation pattern of: Paddy–Palawija–Bero (leave). Within the higher and very slope area; farmers apply the pattern of: Maize – Palawija – Bero (leave).
<p>Slope area, lack of terracing:</p> <ul style="list-style-type: none"> • Geographical constraint #C • Soil fertility decrease, Risk #1 	<ul style="list-style-type: none"> • Un-irrigated area is hilly area. Most of agricultural field slope about 30%. • Big erosion during rainy season decrease soil fertility, since there is lack of terracing system within the farm.
<p>Tree crops effect to decrease rice and maize yield:</p> <ul style="list-style-type: none"> • Risk #2 	<ul style="list-style-type: none"> • Farmers explained that within the flat un-irrigated area; cultivating paddy or maize between the Alley of tree crops after 5 years age (for instance: coconut, cashew nut) effect to low production of paddy or maize. Within the area with this condition; farmers cultivate cassava.
<p>Low application of agricultural inputs (fertilizer, pesticide, equipment)</p> <ul style="list-style-type: none"> • Lack of buying capacity for fertilizer and pesticide; Risk #3 • Every year constraint #D 	<ul style="list-style-type: none"> • Farmers do not have higher buying capacity to fulfil government recommendation on fertilizers or pesticides application. However, farmers applied limited fertilizers as they are expensive. Actually, farmers understand very well on how to apply fertilizer and pesticide; and they always available within the area. • Within the slope area; equipments used by farmers consist of Crowbar, hoe, mattock and chopping knife. During land cultivation, farmers use more labourers from outside family. They cannot apply hand-tractor as applied as in the flat area.
<p>Limited new-plants (or seed) for Tree Crops:</p> <ul style="list-style-type: none"> • Lack of supply on tree crops seed or new plants; Risk #4 	<ul style="list-style-type: none"> • Some farmers have experienced with good success on tree crops, specifically cashew nut. A lot of other farmers would like to follow the success farmers to plant cashew nut, and other tree crops. They generally find difficulties to get qualified new-plants (qualified seed) of tree crops.
<p>Lack of guiding from extension officer (PPL) on tree crops farming:</p> <ul style="list-style-type: none"> • Constraint #E 	<ul style="list-style-type: none"> • PPL always guides farmers on cash crops farming. There is very limited guidance from PPL on introducing

	agriculture technology of Tree Crops Farming.
Livestock: <ul style="list-style-type: none"> • Disease of goat; Risk #5 • Every year constraint #F • Every year constraint #G 	<ul style="list-style-type: none"> • During rainy season, generally goat infected by scab. • Lack of grass for feeding. Lack of grass happens every year during dry season from July to January. There is few farmer anticipate the condition by planting some kind of legume trees, e.g. Gamal and Lamtoro. No farmer tried to cultivate grass for cattle. • Lack of guiding from extension officer (PPL) on livestock

Production	
Low production of paddy or maize: <ul style="list-style-type: none"> • Effect of low farm input; Risk #6 	<ul style="list-style-type: none"> • Applying very limited farm inputs (specifically fertilizers) on paddy or maize cultivation affect to low production of both kinds of crops. Paddy production only 3 tons/ha. Very few farmers who applied more fertilizers obtained 5-6 ton/ha. • Maize; equivalent to dry-shelled, production in range of 1.5 – 2.5 ton/ha. Few farmers who applied fertilizers as recommended by government; obtained 3-4 ton/ha.
Livestock: <ul style="list-style-type: none"> • Lack of capital to buy goats, buffaloes, and/or cows; constraint #H 	<ul style="list-style-type: none"> • All families have chicken. There are more than 30% families have 1-2 goat/family. Only few families have buffaloes, or cows. • Some of poor families take care of buffaloes or cows that owned by rich-outsiders. They generally apply sharecrop system (1:1).
Marketing	
Low price of paddy related to loan: <ul style="list-style-type: none"> • Loan during dry season; Risk #7 	Informal money lender <ul style="list-style-type: none"> • Within the dry-season or food-shortage months; a lot of farmers take loan from money lender for family food, children education, and for preparing land cultivation one month before rainfall starting, etc. • A case for example: Loan Rp.80.000,- in December when land cultivation starting. Farmer should pay-back by 100 kg dried-rice when he gets harvest in May. The rice market price in May Rp.150.000,-. This case means, the interest rate is 88% for six months, or 15% per month.
Price determination:	

<ul style="list-style-type: none"> • Middlemen to control price; Risk #8 	<ul style="list-style-type: none"> • The middlemen are actually the money lenders. They play very strong role on controlling and determining crops price of rice, maize, coconut and cashew nut. During dry-season, all prices define related to loan to the farmers. • The farmers can sell their crops with normal market price after they paid-back all of their loans. Generally, only 40% of remaining crops after harvest can be sold with normal market price.
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III. Food availability condition (Constraint and Risks)	
Food-Shortage: <ul style="list-style-type: none"> • Food shortage by level of cultivation area; Risk #9 	The harvest should be allocated for three main priority; i.e. paying loan to money lenders, family food and children education. There are three cases of food-shortage related to the large of cultivation area for paddy, as follows: <ul style="list-style-type: none"> • Farmer with cultivation 0.30 ha. Number of family members 5 persons. Rice available for 4 months, food shortage 8 months. • Farmer with cultivation 0.50 ha. Number of family members 4 persons. Rice available for 6 months, food shortage 6 months. • Farmer with cultivation 0.80 ha. Number of family members 6 persons. Rice available for 9 months, food shortage 3 months.
Rice storage: <ul style="list-style-type: none"> • No constraint or risk 	Farmers' families do not have special storage for rice. They just put the dried-rice in the Gunny Sack and put them in the room of their house. They said there is no problem on storage system, as long as they follow the DOLOG standard. Farmers are familiar with DOLOG standard on dried-rice. They cannot explain about degree of water content of their dried-rice, but by hold them on; they known well the quality of rice which will be received or rejected by DOLOG. This is the best quality of rice to be stored.
IV. Community Experience on depending family food supply	
Selling other crops and/or domesticated animal	During food-shortage months, farmers sell other crops harvest; e.g. maize, coconut, tamarind, papaya, banana or any kind of nut. Only few farmers have cashew nut harvest. Farmers also sell chicken and/or goat. Selling tree crops harvest and/or animal to buy rice. Few farmers, who have cow or buffalo, sell them only for specific necessity, e.g. children education.
Working as labour, etc.	Most farmers work as farm labour for irrigated farming inside or outside the village. Some skilled persons produce concrete brick, works as building craftsmen or building labourer. Women (some housewife) work as small trader, selling daily needs of villagers' families within the village or around the hamlet. Youths prefer to work as farm labourer in Malaysia.
Back to money lenders	It is still difficult to avoid those farmers' families back to money lenders, specifically a month before cultivation starting up to harvest time. At the critical period they

	cannot work as labour to get money from other families, since they should start to do their own farm cultivation. During the period farmers' families need money for farming cost, family food, and other needs.
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V. Community Proposal to improve food sufficiently and economic condition ³²	
Training on dry-land farm Intensification: <ul style="list-style-type: none"> • Address to solve Risk #1, #2, #9 	<ul style="list-style-type: none"> • Farmers proposed to have training on dry-land farm intensification. The training should contain: farm-model and water management. The training should be followed up by pilot of farm model and water management where farmer can learn and replicate to their farming area.
Tree crops diversification (Agro-forestry): <ul style="list-style-type: none"> • Address to solve Risk #1, #3, #6, #9 	<ul style="list-style-type: none"> • Farmers dream to have many kinds of tree crops within a unit of each family farm land. They proposed to get support on how to increase up their farm land, so that in a unit of each family farm land, there are significant number of coconut, cashew nut, teak, mahogany and other economical tree crops. Seasonally, they also get cash crops harvest from the same farm land.
Farmers Cooperation: <ul style="list-style-type: none"> • Address to solve Risk #3, #6, #7, #8, and #9 	<ul style="list-style-type: none"> • They proposed to have support on establishing "Farmers Cooperation" where they can sell their crops, buy farm inputs, buy daily needs, saving money and take loan, and all running with normal interest rate and owned by farmers groups.
Diversification of income sources: <ul style="list-style-type: none"> • Address to solve Risk #3, #6, #7, #8, and #9 	<ul style="list-style-type: none"> • To support the cooperation; farmers also proposed to have training or guidance on how to create diversification of income sources.

³²) Within FGD at Gerung Sub-District, there is no community proposal address to solve Risk #4 (lack of supply on tree crops seed or new plants) and Risk #5 (disease of goat).

11. Outputs of FGD at Bayan Sub-Districts (un-irrigated farming)

Discussion Issues	Summary of condition
I. GENERAL	
Kind of crops	<ul style="list-style-type: none"> Food crops Some dry-land paddy (main food) Maize, cassava Vegetables Peanut, string bean, kidney bean, winged bean (<i>kecipir</i>) Fruit Banana, papaya, mango, jackfruit Tree crops Cashew nut, coffee, coconut, mahogany, teak, <i>Sengon</i>, <i>kruing</i> Livestock Chicken, goat, buffalo, cow
Land ownership and status	<p><i>Barung Birak sub-village:</i> There are mix original and local trans-migrant inhabitants within this sub-village. About 25% of 197 families have farm land. The ownership 2 ha – 10 ha/family. The other 75% families work as tenant farmers or sharecropper farmers. There is available 200 ha un-cultivated land which controlled by government; claimed as forest land status.</p> <p><i>Sambik Elen sub-village:</i> All families have land, in average 1 ha/family. There is very few families have less than 1 ha (about 0.75 ha), and more than 1 ha (about 1.5 ha).</p>
II. PROBLEM IDENTIFICATION (Constraints and Risks)	
Farming/technical aspect	
Dry-land farming: <ul style="list-style-type: none"> Climate, land condition and limited crops; Constraint #A 	<ul style="list-style-type: none"> No irrigated farming within both sub-villages. There is normally 4 months rainy season every year; from December to March. Main crop is cashew nut. There are in small amount of banana, papaya, mango, jackfruit, coffee, and coconut. During rainy season, farmers cultivate cash crops: maize, peanut, cassava, and other kinds of bean. More than 50% farm land within the area is flat. The

	other is somewhat hilly, more and more slope within the vicinity of edge of Rinjani Mountain.
<p>Tree crops effect to decrease cash crops production:</p> <ul style="list-style-type: none"> Financial loss from cash crops harvest decreased after 5th year; Risk #1 	<ul style="list-style-type: none"> This is farmers' experience on cultivating seasonal multi cash-crops within the alley of cashew nuts. In the first year to the fourth year, farmers still have got harvest from cash-crops although the productivity lean to decreases by year. After the fifth year, harvest from cash-crops very low, then the farmers suffers a financial loss. So that; farmers need another land to cultivate seasonal cash-crops.
<p>Lack of agricultural input:</p> <ul style="list-style-type: none"> Lack of capital; Constraint #B 	<ul style="list-style-type: none"> Most farmers do not apply farm inputs (specifically: fertilizer) for both tree crops and seasonal cash crops. Only few farmers apply them with very low dosage; do not follow technical recommendation. Prominent reason of not applying fertilizer as much as recommended is lack of capital. Another reason is, they perceive that their farming land still fertile.
<p>Limited new-plants (seed) for Tree Crops:</p> <ul style="list-style-type: none"> Limited supply on tree crops seed or new plants; Risk #2 	<ul style="list-style-type: none"> Some farmers have experienced with good success on planting mahogany, teak, <i>Sengon</i> and kruing. A lot of other farmers are interested to follow the success farmers to plant the same tree crops. They generally find difficulties to get qualified new-plants (qualified seed) of tree crops.
<p>Lack of guiding from extension officer (PPL) on tree crops farming:</p> <ul style="list-style-type: none"> Constraint #C 	<ul style="list-style-type: none"> PPL always guides farmers on cash crops farming. There is very limited guidance from PPL on introducing agriculture technology of Tree Crops Farming.
<p>Livestock:</p> <ul style="list-style-type: none"> Disease of goat; Risk #3 Lack of grass; Constraint #D Every year constraint #E 	<ul style="list-style-type: none"> During rainy season, generally goat infected by scab. Lack of grass happens every year during dry season from May to November. There is few farmer anticipate the condition by planting some kind of legume trees, e.g. Gamal and Lamtoro. No farmer tried to cultivate grass for cattle. Lack of guiding from extension officer (PPL) on livestock
Production	
Low production of seasonal cash crops and tree crops:	

<ul style="list-style-type: none"> • Production decreased; Risk #4 	<ul style="list-style-type: none"> • Farmers in Barung Birak sub-village explained that paddy production 1.5 – 2 tons/ha; while maize 1 – 1.8 tons/ha. • Cashew nut production 1 tons/ha. Explained by farmers at both Barung Birak and Sambik Elen sub-village, cashew nut production decrease during last three years.
<p>Livestock:</p> <ul style="list-style-type: none"> • The poor, lack of capital to buy goats, buffaloes, and/or cows; constraint #F 	<ul style="list-style-type: none"> • Most farmers take care of buffaloes or cows that owned by outsiders. They generally apply sharecrop system (1:1). Only few families have their-owned buffaloes or cows; the ownership not more than 3 buffaloes or cows/family. • Less than 20% families have goats, the ownership about 2-4 goats/family. All families have chicken.
Marketing	
<p>Low price of crops related to loan:</p> <ul style="list-style-type: none"> • Loan during dry season; Risk #5 <p>The same case normally happens to all kinds of crops below:</p> <ul style="list-style-type: none"> • Cashew nut • Coffee • Rice • Maize • Peanut • Livestock (goat, buffalo, cow) 	<p>Informal money lender</p> <ul style="list-style-type: none"> • Within the dry-season when the villagers need money for buying rice, paying children education, and/or preparing land cultivation; most farmers take loan from money lender. They should pay-back the loan by kind of crops immediately after harvest. • <i>A case in Barung Birak sub-village:</i> Farmers got loan from money lender Rp.100.000,- in October. Farmer should pay-back with 100 kg dried-peanut when he gets harvest in March. The peanut market price in March Rp.300.000,-/kg. This case means, the interest rate is 200% for six months, or 33% per month.
<p>Price determination:</p> <ul style="list-style-type: none"> • Middlemen control the price of crops mentioned above; Risk #6 	<p>Role of Middlemen/money lenders.</p> <ul style="list-style-type: none"> • Middlemen control the price of mentioned crops through giving loan to the farmers. Farmers should pay-back the loan by crops following the price defined by middlemen. • The farmers can sell their crops with normal market price after they paid-back all of their loans.
III. Food availability condition (Constraints and Risks)	
<p>Food-Shortage:</p> <ul style="list-style-type: none"> • Every year food-shortage about four months; Constraint #G 	<p>The main food of the villagers is rice, while the main crop is cashew nut. As paddy needs more water compare to other crops, so that, there are few farmers cultivate paddy. Food shortage within this area is not related to rice harvest and storage, as most farmers cultivate non-paddy crops and sell the harvest to buy rice for food.</p> <ul style="list-style-type: none"> • The real indicator of ‘<i>Food-Shortage Month</i>’ within this area is a period when most farmers depend on the money lender to take loan for food. The period is during November to February/March (about 4 months).
IV. Community Experience on	

depending family food supply	
Working as labour, etc.	Most farmers work as farm labour for irrigated farming inside or outside the village. Some skilled persons work as building craftsmen or building labourer. Women (some housewives) work as small trader, selling daily needs of villagers' families within the village or around the hamlet. Youths prefer to work as farm labourers in Malaysia.
Firewood, coarse grass, stones	Few villagers collecting firewood, coarse grass, and/or stone to sell.

Back to money lenders	<p>During November to February/March, most farmers back to money lenders to get loan. Most of money lenders come from outside the village, generally from urban area.</p> <p>The other parties who often give loans to the farmers are organizations with names of Cooperation or Private Bank. They give loan with no related to crops. Below case as an example:</p> <p>Loan : Rp.120.000,- Payment: Rp.240.000,- (after harvest, about 6 months) This means the interest rate is 17%/month</p>
V. Community Proposal to improve food sufficiently and economic condition ³³	
<p>Training on dry-land farm Intensification:</p> <ul style="list-style-type: none"> • Address to solve Risk #1 and #4 	<ul style="list-style-type: none"> • Farmers proposed to have training on appropriate dry-land farm-model and water management. • Pilot of farm model and water management where farmer can learn and replicate to their farming area.
<p>Tree crops diversification (Agro-forestry):</p> <ul style="list-style-type: none"> • Address to solve Risk #1. #2 and #4 	<ul style="list-style-type: none"> • Support to farmers to apply Agro-Forestry Farming, where, there are significant number of various tree crops: coconut, cashew nut, teak, mahogany and other economical tree crops. When applicable, seasonally they also get cash crops harvest from the same farm land.
<p>Un-cultivated land for landless villager:</p> <ul style="list-style-type: none"> • Address to solve Risk #1 and #4 	<ul style="list-style-type: none"> • There are 200 ha un-cultivated land, while 75% of families in Barung Birak sub-village are landless. Support the landless families to have permit on cultivating the un-cultivated land is very strategic approach to increase the condition of villagers. • Using un-cultivated land for peanut cultivation which has

³³) Within FGD at Bayan Sub-District, there is no community proposal address to solve Risk #2 (lack of supply on tree crops seed or new plants) and Risk #3 (disease of goat)

	been supported by Garuda Food is a good strategy to help farmers, as long as involve the landless families.
Farmers Cooperation: <ul style="list-style-type: none"> • Address to solve Risk #5 and #6 	<ul style="list-style-type: none"> • The way to help farmers free from money lender step by step; it is very important to support them on establishing “Farmers Cooperation” where they can sell their crops, buy farm inputs, buy daily needs, saving money and take loan, and all running with normal interest rate and owned by farmers groups.
Diversification of income sources: <ul style="list-style-type: none"> • Address to solve Risk #1, #4, #5, #6 	<ul style="list-style-type: none"> • To support the cooperation; farmers also to have training or guidance on how to create diversification of income sources.

ANNEX 3: An MDG Scorecard for East Nusa Tenggara

Goal 1: Eradicate Extreme Poverty and Hunger,

Target 1: Halve the Proportion of People in Poverty

	Table App 2.1.1: Proportion of population below poverty line	1990 [baseline]	1996	1996*	1999*	2002*	2004*
	INDONESIA, NATIONAL AVERAGE	15.1%	11.3%	17.6%	23.4%	18.2%	16.7%
	East Nusa Tenggara avg.	24.1%	21.8%	20.6%	38.9%	30.7%	27.9%
01	<u>Sumba Barat</u>					<u>47.3%</u>	<u>42.0%</u>
02	<u>Sumba Timur</u>					<u>43.9%</u>	<u>40.0%</u>
03	Kupang					36.4%	32.7%
04	<u>Timor Tengah Selatan</u>					<u>42.7%</u>	<u>37.4%</u>
05	Timor Tengah Utara					31.8%	30.7%
06	Belu					18.5%	20.5%
07	Alor					30.1%	29.1%
08	Lembata					34.5%	34.6%
09	Flores Timur					18.9%	15.4%
10	Sikka					19.2%	19.2%
11	Ende					22.1%	20.9%
12	Ngada					16.9%	15.5%
13	Manggarai					35.5%	31.3%
14	Rote Ndao					n.a.	27.5%
15	Manggarai Barat					n.a.	29.1%
71	Kota Kupang (Kupang City)					11.5%	10.7%

Sources:

National and provincial averages: UNDP. February 2004. *Indonesia, Progress Report on the Millennium Development Goals*, Appendix Table 1.1 Numbers and Percentage Living below National Poverty Line, page 90, based on Susenas surveys by BPS

Kabupaten level data: BPS, *Data dan Informasi Kemiskinan Tahun 2002*, Buku 2: Kabupaten, p. 10 and Tahun 2004, Buku 2, Kabupaten, page 11

Bold, underlined: Kabupatens with headcount poverty rates greater than 40%.

* : Revised poverty line, based on new 1998 standard

Target 2: Halve the Proportion of People Who Suffer From Hunger

	Table App 2.1.2: Malnutrition; prevalence of underweight children, below age of five	1992 [baseline]	1995	1999	2002	2004	2005
	INDONESIA NATIONAL AVERAGE	35.5%	31.6%	26.4%	27.3%		
	East Nusa Tenggara average	46.4%	40.1%	33.2%	38.6%	n.a.	n.a.
01	<u>Sumba Barat</u>			<u>44.1%</u>	<u>40.3%</u>	n.a.	n.a.
02	Sumba Timur			31.9%	33.6%	20% ³⁴	21%
03	<u>Kupang</u>			<u>49.5%</u>	<u>41.8%</u>	n.a.	n.a.
04	<u>Timor Tengah Selatan</u>			<u>41.1%</u>	<u>50.5%</u>	n.a.	43%
05	<u>Timor Tengah Utara</u>			<u>51.8%</u>	<u>45.1%</u>	n.a.	n.a.
06	<u>Belu</u>			<u>55.5%</u>	<u>46.3%</u>	n.a.	n.a.
07	Alor			29.3%	37.6%	n.a.	n.a.
08	Lembata			n.a.	38.5%	n.a.	n.a.
09	Flores Timur			41.8%	37.7%	n.a.	n.a.
10	Sikka			25.7%	36.1%	n.a.	n.a.
11	Ende			38.2%	39.8%	n.a.	n.a.
12	Ngada			32.8%	27.7%	n.a.	n.a.
13	Manggarai			31.9%	32.4%	n.a.	n.a.
14	Rote Ndao			n.a.	n.a.	n.a.	n.a.
15	Manggarai Barat			n.a.	n.a.	n.a.	n.a.
71	Kota Kupang (Kupang City)			29.3%	33.9%	n.a.	n.a.

Sources:

National and provincial averages: UNDP. February 2004. Indonesia, Progress Report on the Millennium Development Goals, page 9 and Appendix Table 1.5: Prevalence of Underweight Children under 5 Years of Age, page 96 and following, based on Susenas surveys by BPS

Kabupaten level: BPS/Bappenas/UNDP. 2004. Indonesia Human Development Report 2004, The Economics of Democracy, Table 11: Human Poverty Index by District 1999 and 2002, page 144, based on Susenas surveys by BPS.

2004, 2005: ADB. September 23, 2005. Proxy Indicators for Poverty Measurement, Final Report of Team Leader, AOTA 3841-INO, Contract: COCS/03-859, vol. II, Annex 10: Results of BKKBN Family Prosperity and Health Service Infant Malnutrition Monitoring in Five Kabupatens, draft by Roger Montgomery

Bold, underlined: Kabupatens with year 2002 child malnutrition rates greater than 40%.

³⁴ Primary data, records of local health services

Goal 4: Reduce Child Mortality

Target 5: Reduce by Two-Thirds (by 2015) the Child Mortality Rate

	Table App 2.4.4: Infant mortality rate, under age 1 (per 1000 live births)	1991	1994	1997	2002	2004
	INDONESIAN NATIONAL AVERAGE	60	57	46	35	
	East Nusa Tenggara Prov. Avg BOYS					56
	“ “ GIRLS					42
01	<u>Sumba Barat</u> BOYS					<u>63</u>
	GIRLS					<u>47</u>
02	<u>Sumba Timur</u> BOYS					<u>61</u>
	GIRLS					<u>45</u>
03	<u>Kupang</u> BOYS					<u>64</u>
	GIRLS					<u>48</u>
04	<u>Timor Tengah Selatan</u> BOYS					<u>61</u>
	GIRLS					<u>45</u>
05	<u>Timor Tengah Utara</u> BOYS					<u>57</u>
	GIRLS					<u>43</u>
06	Belu BOYS					53
	GIRLS					39
07	<u>Alor</u> BOYS					<u>62</u>
	GIRLS					<u>46</u>
08	<u>Lembata</u> BOYS					55
	GIRLS					41
09	<u>Flores Timur</u> BOYS					53
	GIRLS					40
10	<u>Sikka</u> BOYS					55
	GIRLS					42
11	<u>Ende</u> BOYS					51
	GIRLS					38
12	<u>Ngada</u> BOYS					48
	GIRLS					36
13	Manggarai BOYS					54
	GIRLS					40
14	Rote Ndao BOYS					n.a.
	GIRLS					n.a.
15	Manggarai Barat BOYS					n.a.
	GIRLS					n.a.
71	Kota Kupang (Kupang City) BOYS					26
	GIRLS					20

Sources: National average: Indonesia, Progress Report on the Millennium Development Goals, February 2004, page 10 and (for 1991),ADB (Dec 2002) Enhancing the Fight Against Poverty in Asia and the Pacific: The Poverty Reduction Strategy of the Asian Development Bank, Appendix, page 26

Kabupaten data by sex: BPS-UNFPA, Laporan Indikator Data Base 2005, Lampiran Table 1.B.4: Ringkasan Indikator Database Kependudukan Tingkat Kabupaten/Kota, Provinsi Nusa Tenggara Timur, Tahun 2005

Bold, underlined: Kabupatens with scores higher than the provincial averages (42 for girls, 56 for boys) in year 2004.

ANNEX 4: THE WORLD BANK GROUP

OFFICE MEMORANDUM

WORLD BANK OFFICE, JAKARTA

DATE: August 4, 2010

TO: Roger Montgomery, Consultant

FROM: Scott Guggenheim, Principal Social Scientist

**SUBJECT: INDONESIA: Smallholders Agribusiness Development Initiative
Farm Risk Reduction Assessment for Nusa Tenggara Islands, Eastern Indonesia,
Terms of Reference**

Background

2. For the past several years the World Bank has worked with the Government of Indonesia to develop a portfolio of community-driven development (CDD) programs through the Kecamatan Development Project (KDP), a nationwide program to help poor villages and villagers learn to plan and manage locally appropriate development projects.
3. The government began to expand the program to cover the entire country by 2009. Government has, as well, introduced a smaller 3-1/2 year pilot to help address long-standing issues and constraints to agricultural production and rural poverty in Eastern Indonesia. The pilot, the Smallholder Agribusiness Development Initiative (SADI), is funded by AusAID under the Australia-Indonesia Partnership (AIP) and is currently operating in South Sulawesi, Southeast Sulawesi, West and East Nusa Tenggara (NTT and NTB). A successful 3+ year pilot is expected to lead to an additional 6-1/2 years for total program duration of 10 years.
4. The SADI pilot includes a component to disburse KDP grants to target agricultural communities to support the development of household-level economic production activities. The nature of the grants is to fund technical assistance, training and inputs. Implementation of this component, including strategic review of the Government of Indonesia (GOI) executed components, will be managed by the World Bank on behalf of AusAID.
5. There are two additional components of SADI with which the KDP community based agribusiness development component collaborates closely. These are first, an adaptive research and technology testing component assisted by the Australian ACIAR agricultural research group

and second, an agribusiness support activity for private entrepreneurs and investors supported by the International Finance Corporation, the private sector support group of the World Bank.

6. The overall program began in 2007. The World Bank and GOI worked together to finalize the pilot design of the government-executed KDP component of SADI. All three components of SADI are now underway and are collaborating closely on agribusiness strategy and activities in all four eastern provinces of Indonesia.

Discussion of the Risk Problem to be investigated:

7. **High level of risk in agriculture in Eastern Indonesia:** One major impediment to the successful development of smallholder agriculture in Eastern Indonesia is a higher degree of risk than normally associated with agriculture, although agriculture is perceived as a risky enterprise in any country. There are many types of agricultural risk. It has many causes, principal among which is variability in physical production due to erratic and unpredictable rainfall. Eastern Indonesia receives much less rainfall and has a longer and more pronounced dry season than experienced in the wetter islands of western Indonesia (Java, Sumatera). There is even speculation that, with global warming, the amount of rain falling on these eastern provinces has decreased and grown even more variable over time. This is a matter for investigation for empirical information. Because they are risk averse, they tend to use risk-averse management practices. Their average returns to resources used lead naturally to lower farm incomes. The main division of types of risk is along the following lines: yield risk, resource risk, and price risk. **Yield risk** is usually associated with weather (lack of water at appropriate times), but also with the availability of (and ability to buy) intermediate inputs. Catastrophic events such as storms, floods, drought and fire can reduce yields quickly and irreversibly. **Resource risks** include the unavailability of purchased inputs, but can also relate to lack of secure access to land, or lack of any documents providing formal ownership or guaranteed tenure to land. **Price risk** is evidenced in Eastern Indonesia by several symptoms: widely fluctuating prices during each year because of uniform harvest time (short rainy season, lack of irrigation, lack of transport facilities to markets). Another price risk facing Nusa Tenggara farmers (as shown in many previous studies) is the general low level of farm gate prices -- as a percentage of destination market prices. The net effect of the riskiness of agriculture in the eastern islands is that food availability and agricultural incomes -- already low -- fluctuate widely. This presents clear welfare problems for rural people in the islands: poverty, malnutrition, loss of assets and decreased employment opportunities. Near the end of each dry season there is increasing incidence of malnutrition; food shortages that formerly were occasional are now becoming chronic.

8. **Possible formal vis-à-vis informal interventions to reduce risk in agriculture in East Nusa Tenggara:** There are two main types of instruments for reducing risk: formal measures (types of insurance) and informal (social risk sharing). The formal measures aim either to transfer risk (to other individuals or institutions, completely outside agriculture) or to pool risk (among farmers themselves, across regions, across crops, or with other sectors of the economy). With formal measures there are two major drawbacks that give pause: moral hazard and adverse selection. **Moral hazard** means that farmers become less conscientious in trying to avoid loss because the crop is insured. **Adverse selection** means that insurance programs attract mainly farmers who have higher than average risk relative to the premiums charged. This second

problem arises if the insurer cannot accurately measure the actuarial risk they are insuring against. To overcome the reluctance of insurers to insure agriculture, many governments have provided subsidies, but once these start they are difficult to end. In the USA agricultural subsidies continue after 50 years of successful experience.

9. **Insurance not available:** In many agricultural regions in the developing world, there is a lack of formal measures such as insurance. Instead, rural people themselves have created a wide range of informal agricultural risk-sharing arrangements. The nature and breadth of informal measures in the Nusa Tenggara islands will be examined during the course of this study.

10. **Farmers' strategies to cope with risk and loss:** Existing informal risk-management strategies differ from loss-management strategies. **Risk management strategies** noted in the literature on agriculture in the developing world are efforts to prevent or at least minimize risk during the cropping season. **Loss management strategies** are different. These are after the loss has occurred, to protect the family and defend minimum consumption levels. Loss management strategies noted in a number of countries include the following: informal mutual aid, storage facilities, linkages of product markets with factor markets (through patron/client relationships), depletion of assets (selling livestock, on-farm food stocks, depleting family savings, sale of land or household items), labour market participation (off-farm employment, often involving out-migration). When all of the above fail, the final loss management strategy is to turn to public relief.

Responsibilities

In Indonesia (45 days):

11. **Assess where in the Nusa Tenggara islands the problem is most severe:** Examine the geographical spread of the problem of agricultural risk in the islands of East Nusa Tenggara. Examine indicators from climate data, income/poverty data and nutritional surveillance data sources.

12. **Formal risk reduction measures:** Assess the extent to which the insurance industry is either interested in, or capable of, assisting to reduce risk in agriculture. For which crops (or livestock)? Against which types of risk or loss? What has been the experience to date with formal measures (either private sector or government supported)? Can such formal risk reduction through either risk transfer (insurance) or risk pooling be proposed for East Nusa Tenggara islands, and if so, how?

13. **Informal risk reduction (management) methods.** Assess and report on existing risk reduction strategies and methods as currently used in East Nusa Tenggara islands.

14. **Informal loss management methods.** Assess and report on existing loss management strategies as used in East Nusa Tenggara.

15. **Based upon the assessments above, propose and assess new methods, either formal or informal to reduce the impact of agricultural risk, and therefore to raise farm incomes, and reduce both poverty and malnutrition.** This will include an evaluation of the following possible interventions (or investments, to be funded by villagers themselves, using KDP agricultural funding, and with technical assistance from SADI):

- [i] Mandatory savings
- [ii] Insurance policies for specific agricultural products, against specific risks
- [iii] Post harvest storage (along the lines of the former village level *Lumbung Desa* storage facilities of NTB), warehouse receipts (in conjunction with IFC/SADI)
- [iv] Increase and diversify sources of income through changes to crops, cropping patterns, input use, other agronomic practices,
- [v] Build up saleable assets by developing smallholder livestock, on-farm agro-forestry,
- [vi] Control and store water: ponds (*embung*), develop groundwater, simple irrigation schemes including drip irrigation to conserve water,
- [vii] Reduce incidence of losses to fire,
- [viii] Increase information on prices and increase access to markets,
- [ix] Other possible investments, actions, as identified during the study.

16. Carry out preliminary field assessments of possible innovative supporting experiments such as risk insurance or new channels for conveying market information that can subsequently be developed into pilot activities for SADI funding.

17. Report progress, including key issues, to local governments in Nusa Tenggara, the AusAID ANTARA office, the SADI team in Makassar, the World Bank KDP team leader and the WB sector coordinator for social development.

In home country, after return from Indonesia (15 days):

18. Undertake a desk/library study of both formal and informal agricultural risk reduction strategies that have been tried in other developing countries of Asia and Africa. Assess and report on successes and failures (and reasons for failure). Investigate the degree to which the experience might be applicable to farmers in eastern Indonesia.

Outputs

19. The primary output from this 60-day assignment will be a written report to the Bank suitable for sharing with the government that summarizes key recommendations made, including how they can be made operational in the context of KDP/SADI community drive development grants.

20. To the extent possible, your documentation should be made available in Indonesian as well as English, and you should supervise the quality of translation.

Reporting

21. This activity will be based in Kupang, East Nusa Tenggara. There, you will collaborate closely with Richard Manning, who is the coordinator for the Kupang Antara office. Scott Guggenheim is the overall sector coordinator who provides general oversight and must sign off on all fiduciary documents. Bolormaa Amgabazaar is responsible for the KDP program in eastern Indonesia, while Sentot Satria is the Jakarta-based team leader. Finally, Ms. Jacqueline Pomeroy coordinates the Makassar SADI office on behalf of AusAid aided by Mr. Bakhir Ali, the daily

technical manager for the World Bank SADI program in Makassar. You are expected to work on a collegial basis with all of these individuals throughout this assignment.

22. You will have a one field assistant to provide support in East Nusa Tenggara. Efforts are underway to identify and engage this individual. As required, short-term consultancies to assist with the early stages of the SADI program are also available. Secretarial and translation services can be provided through the AusAID ANTARA office in Kupang.

23. This sixty day assignment starts on August 19, 2008. The consultant is expected to depart for Indonesia in the middle of August 2008..

ANNEX 5: Letter from *Facilitator Kecamatan, Gerung, NTB*

To : Mr Roger Montgomery, Ph D

Di Jakarta

Dengan Hormat

Apa kabar Pak Roger, semoga bapak sampai di Jakarta dalam keadaan sehat dan selamat. Pak Roger, saat perjalanan kita menuju desa Banyu Urip Kecamatan Gerung untuk bertemu dengan kelompok tani, kita omong-omong masalah program, dan waktu itu saya sempat sampaikan beberapa hal :

1. Dalam paket yang di usulkan oleh masyarakat ada kegiatan study banding ke luar daerah (Pulau Jawa), karena Pulau Jawa di anggap sebagai daerah tujuan yang representatif atau sesuai dengan jenis usulan kelompok tani atau masyarakat desa. Tapi setelah selesai penyusunan Rencana Anggaran Biaya (RAB)nya ternyata Fasilitator Kecamatan atau Orang yang akan mendampingi study banding tidak boleh di biayai dari dana program. Jadi ada sesuatu yang **sulit dibayangkan jika beberapa orang masyarakat miskin pergi study banding tanpa harus di dampingi**. Pertanyaannya adalah : Siapa yang akan memfasilitasinya , berkaitan dengan Akomodasi dan konsumsi, siapa yang akan berkoordinasi dan berkomunikasi dengan dinas dan instansi terkait yang akan memperlancar proses dengan lembaga atau perusahaan tujuan study banding.
2. Dalam Implementasi kegiatan, **komponen transport** untuk peserta pelatihan yang nilainya tidak lebih dari Rp 20.000,-/ hari, ternyata tidak di perbolehkan, padahal seperti yang pak Roger lihat di desa bahwa jarak antara asal peserta pelatihan ke kantor desa (Lokasi kegiatan pelatihan Inclas) jaraknya mencapai sampai 15 Km, ini artinya masyarakat miskin sebagai peserta pelatihan butuh biaya transport. **Mohon penjelasan dan klarifikasi dari pak Bakir**

Saya juga perlu menyampaikan beberapa hal yang berkaitan dengan perkembangan program SADI di empat Propinsi sebagai lokasi Pilot Project. Selain mendapat informasi dari spesialis, kebetulan saya juga sering kontak dengan teman-teman FK di propinsi lain dan ternyata di masing-masing propinsi punya output yang berbeda dari beberapa alur tahapan padahal kita punya PTO yang sama. Sebagai contoh misalnya, menurut informasi dari spesialis money NTB di propinsi Sulawesi Selatan, ternyata 3 usulannya berasal dari kelompok-kelompok tani sehingga kalau di satu desa ada 10 kelompok tani maka usulan yang masuk dari desa yang bersangkutan sebanyak 30 usulan. Padahal di propinsi lain masing-masing desa hanya maksimal mengusulkan 3 usulan yang berasal dari MD 2 (Musyawarah Desa II) dan MKP (Musyawarah Khusus Perempuan).

Pertanyaannya adalah Mengapa ini mesti terjadi ? apakah karena ada perbedaan pemahaman tentang PTO atau karena tidak maksimalnya komunikasi yang di lakukan minimal di tingkat specialist Propinsi. Keluhan teman-teman FK, ini adalah Pilot Project setahu kita yang namanya Pilot Project semuanya harus maksimal termasuk Gaji. Gaji FK bulan April, Mei, dan Juni di bayar pada akhir bulan Juli. Dan bulan berikutnya tidak pernah ada kepastian paling cepat akhir minggu ke 2 setiap bulannya.

Saya kira ini yang dapat saya sampaikan sebagai tambahan informasi hasil kunjungan pak Roger dengan tim ke NTB khususnya di Kabupaten Lombok Barat kecamatan Gerung.

Mohon tanggapan dan new information tentang SADI

Salam

Abdullah

FK Kecamatan Gerung

Annex 6: Article on Share Cropping in Forestry

SUARA MERDEKA

Selasa, 14 Agustus 2007

PANTURA

Pencurian Kayu di BKPH Kesesi Tertinggi

- Selama 2007

KAJEN- Meski menurun dibanding tahun lalu, pencurian kayu di KPH Pekalongan Timur hingga pertengahan tahun ini masih terjadi. Pencurian di Bagian Kesatuan Pemangkuan Hutan (BKPH) Kesesi menempati angka tertinggi. Hingga Juli, 136 pohon telah dicuri oleh para pembalak hingga merugikan negara sekitar Rp 17 juta. Pencurian terbesar kedua dan ketiga berturut-turut terjadi di BKPH Paninggaran dan Bandar (Batang). Seperti diberitakan kemarin (*SM*, 13/8), kasus terakhir terjadi di Desa Ujungnegoro, Kesesi. Selain menyita belasan kayu Sonobrit, petugas Perhutani juga mengamankan mesin *circle*, yaitu kendaraan yang dimodifikasi menjadi mesin olah kayu *mobile* (bergerak atau bisa dipindah-pindahkan).

Terkait maraknya pencurian itu, Perhutani kemarin mengundang beberapa tokoh masyarakat Kesesi. Pertemuan juga dihadiri Kepala Desa Ujungnegoro (Kesesi) Casmadi, Ketua LMDH Wahyono, dan tokoh masyarakat Camu. Mereka sepakat bekerja sama menegakkan hukum dan mengamankan kawasan hutan. "Namun hingga kemarin belum ada warga yang mengaku memiliki kayu yang kami temukan," tutur Wakil Administratur KPH Pekalongan Timur Akhmad Taufik.

Bagi Hasil

Untuk mengamankan hutan di Kesesi, Perhutani berencana menggelar program penanaman yang akan dikelola bersama masyarakat. "Saat musim hujan, kami akan menanam lahan di hutan seluas 236 hektare," imbuhnya.

Jika kawasan hutan bisa dijaga dengan baik, masyarakat juga akan menerima bagi hasil. **[If the forest is maintained well, the people will receive a crop-share].**

"Jika masyarakat ikut mengelola penuh, maka bisa mendapat bagi hasil hingga 40 persen," jelas Taufik. **["If the people follow through and fully manage, they will receive a crop-share of up to 40%" explained Taufik].**

Demi sukseskan program itu, Perwira Pembina (Pabin) Jagawana AKP I Nyoman Landung berjanji akan meningkatkan patroli di wilayah hutan dan membina masyarakat sekitar.

Terkait temuan kendaraan yang telah dimodifikasi menjadi alat pengolah kayu, diakuinya memang dimiliki oleh banyak warga. Jika digunakan mengolah kayu legal, tak masalah. Namun, alat itu juga memudahkan aksi para pencuri kayu. Sebab setelah menebang pohon, mereka bisa langsung mengolahnya di hutan. "Begitu keluar hutan, mereka bisa dengan mudah membawa kayu yang sudah diolah," paparnya. (G16-65)

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ANNEX: 7 Scrambling for Albizzia Wood

By trubuson

Saturday, August 30, 2008 21:07:02



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After waiting for 5 years, finally H Undang Syaefudin, an Albizzia grower in Ciawi, Tasikmalaya Regency, West Java, can harvest 3 ha of Albizzia wood in May 2008. The population from one hectare is 600 trees of 16-20 m tall and 25 cm diameter. He gained IDR211.255.000 turnover from the selling of 270 m³ timber with a minimal diameter 19 cm and 50 m³ palette. The former was valued IDR650.000 and the later was IDR725.000 per m³.

With an average maintenance cost IDR1.200.000 per ha per year, Undang obtained IDR193.255.000 net profit. Growers like Undang are scattered in many regions. The reason is on account of Albizzia popularity for the last two years caused by deforestation rate that reaches 2,87-millions ha per year. Nature forest can no longer fulfil the wood needs and at the same time the demand for woods is also increasing. By utilizing a preserving technology, Albizzia woods can last for ten years.

On account of the high demand, there are many companies that are ready to accommodate Albizzia woods even for IDR450.000 per m³. Despite so, many wood processing producers are run short of supply. The Minister of Forestry, MS Kaban, made a prediction that Albizzia wood price will keep on rising and in the next five years it is estimated to be IDR1-million per m³. Cultivating Albizzia is relatively easy due to the high adaptability although pests and diseases are still aiming at the member of family Mimosaseae. (**Sardi Duryatmo**)

Source:

<http://www.trubus-online.com/mod.php?mod=publisher&op=viewarticle&cid=1&artid=215>

Becoming A Millionaire on Account of Albizzia

By trubuson,

Sunday, August 10, 2008 21:20:59



[Click to view other Photo...](#)

When the clove price sharply dropped to IDR1.100 from IDR10.600 per kg, Ikin Sodikin, a grower in Banjarnayar, Banjar Municipality, West Java, cut off the clove trees on his 11 ha land and altered them with Albizzia. He made a right choice for he harvested 5.500 trees, on the average of 17 m tall and diameter of 30—40 cm in 7 years later. From the 2.000 m³ selling, he obtained an IDR250-million turnover. Hitherto he has harvested for three times. In Gondosuli, Puspo Sub district, Pasuruan Regency, East

Java, Mahrus Solikin also replaced the fallen clove with Albizzia. Currently, he is managing 3.600 trees of 7 years old. From the amount, 1.600 trees was offered for IDR250-millions by a lumber company in Surabaya, East Java. Mahrus declined the offer because he believed that Albizzia wood price will rise to IDR700.000 in August 2008; in July 2008 the price is IDR650.000 per m³. With current price, IDR650.000, he will gain IDR780-millions. It is because from the 3.600 trees he had grown on his 7 ha land in 2001 can yield 1.200 m³. (**Sardi Duryatmo/ Reporter: Nesia Artdiyasa & Vina Fitriani**)

Source: <http://www.trubus-online.com/mod.php?mod=publisher&op=viewarticle&cid=1&artid=217>

Annex 8: El Nino Events [COLD AND WARM EPISODES BY SEASON]

CHANGES TO THE OCEANIC NINO INDEX (ONI)

DESCRIPTION: Warm (red) and cold (blue) episodes based on a threshold of +/- 0.5°C for the Oceanic Niño Index (ONI) [3 month running mean of extended reconstructed sea surface temperature (ERSST.v3) SST anomalies in the Niño 3.4 region (5°N-5°S, 120°-170°W)], based on the 1971-2000 base period. For historical purposes **cold** and **warm** episodes (blue and red coloured numbers) are defined when the threshold is met for a minimum of 5 consecutive over-lapping seasons. Note: **shaded periods** are El Nino events.

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
1950	-1.7	-1.5	-1.4	-1.4	-1.3	-1.2	-0.9	-0.8	-0.8	-0.8	-0.9	-1.0
1951	-1.1	-0.9	-0.7	-0.4	-0.2	0.1	0.3	0.5	0.6	0.7	0.7	0.6
1952	0.3	0.2	0.1	0.1	0.0	-0.2	-0.3	-0.3	-0.1	-0.2	-0.2	-0.1
1953	0.1	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.2
1954	0.3	0.2	-0.2	-0.6	-0.8	-0.8	-0.8	-1.1	-1.2	-1.1	-1.1	-1.0
1955	-1.0	-0.9	-0.9	-1.0	-1.1	-1.0	-1.0	-1.0	-1.4	-1.8	-2.0	-1.7
1956	-1.2	-0.7	-0.6	-0.6	-0.5	-0.5	-0.6	-0.8	-0.8	-0.9	-0.8	-0.7
1957	-0.5	-0.1	0.3	0.6	0.7	0.9	0.9	0.9	0.9	0.9	1.2	1.5
1958	1.7	1.5	1.1	0.7	0.5	0.5	0.4	0.2	0.0	0.0	0.2	0.4
1959	0.4	0.5	0.4	0.2	0.1	-0.2	-0.4	-0.5	-0.4	-0.3	-0.2	-0.3
1960	-0.3	-0.3	-0.3	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.2
1961	-0.1	-0.2	-0.2	-0.1	0.1	0.2	0.1	-0.3	-0.6	-0.6	-0.5	-0.4
1962	-0.5	-0.5	-0.4	-0.5	-0.4	-0.3	-0.2	-0.3	-0.4	-0.6	-0.7	-0.7
1963	-0.6	-0.3	0.0	0.1	0.1	0.3	0.7	0.9	0.9	0.9	1.0	1.0
1964	0.9	0.4	0.0	-0.5	-0.7	-0.7	-0.7	-0.8	-1.0	-1.1	-1.1	-1.0
1965	-0.8	-0.5	-0.2	0.0	0.3	0.7	1.0	1.3	1.5	1.6	1.6	1.5
1966	1.2	1.1	0.8	0.5	0.3	0.2	0.2	0.0	-0.2	-0.2	-0.3	-0.3
1967	-0.4	-0.5	-0.6	-0.5	-0.2	0.0	0.0	-0.2	-0.4	-0.5	-0.4	-0.5

1968	-0.7	-0.8	-0.8	-0.7	-0.4	0.0	0.3	0.3	0.3	0.4	0.7	0.9
1969	1.0	1.0	0.9	0.8	0.6	0.5	0.4	0.4	0.6	0.7	0.7	0.6
1970	0.5	0.3	0.2	0.1	0.0	-0.3	-0.6	-0.7	-0.7	-0.7	-0.8	-1.1
1971	-1.3	-1.4	-1.2	-0.9	-0.8	-0.8	-0.8	-0.8	-0.8	-0.9	-1.0	-0.9
1972	-0.7	-0.3	0.0	0.3	0.6	0.8	1.1	1.4	1.6	1.8	2.1	2.1
1973	1.8	1.2	0.5	0.0	-0.5	-0.8	-1.0	-1.2	-1.4	-1.7	-1.9	-2.0
1974	-1.8	-1.6	-1.2	-1.1	-0.9	-0.7	-0.5	-0.4	-0.5	-0.7	-0.8	-0.7
1975	-0.6	-0.6	-0.7	-0.8	-0.9	-1.1	-1.3	-1.3	-1.5	-1.6	-1.7	-1.7
1976	-1.6	-1.2	-0.9	-0.6	-0.5	-0.2	0.1	0.3	0.6	0.8	0.8	0.8
1977	0.6	0.5	0.3	0.2	0.2	0.4	0.4	0.4	0.5	0.7	0.8	0.8
1978	0.8	0.5	0.0	-0.3	-0.4	-0.3	-0.3	-0.4	-0.4	-0.3	-0.2	-0.1
1979	-0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.2	0.3	0.5	0.5	0.6
1980	0.5	0.4	0.3	0.2	0.3	0.3	0.2	0.0	-0.1	0.0	0.0	0.0
1981	-0.2	-0.4	-0.4	-0.3	-0.2	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	0.0
1982	0.0	0.1	0.2	0.4	0.7	0.7	0.8	1.0	1.5	1.9	2.2	2.3
1983	2.3	2.1	1.6	1.3	1.0	0.7	0.3	-0.1	-0.5	-0.7	-0.9	-0.7
1984	-0.4	-0.2	-0.2	-0.3	-0.4	-0.4	-0.3	-0.2	-0.2	-0.6	-0.9	-1.1
1985	-1.0	-0.9	-0.8	-0.8	-0.8	-0.6	-0.6	-0.5	-0.6	-0.4	-0.4	-0.4
1986	-0.5	-0.5	-0.3	-0.2	-0.1	0.0	0.2	0.4	0.6	0.9	1.0	1.2
1987	1.2	1.3	1.2	1.1	1.0	1.2	1.5	1.7	1.6	1.5	1.2	1.1
1988	0.7	0.5	0.1	-0.3	-0.9	-1.3	-1.4	-1.2	-1.3	-1.6	-2.0	-2.0
1989	-1.8	-1.6	-1.2	-0.9	-0.7	-0.4	-0.4	-0.4	-0.4	-0.3	-0.2	-0.1
1990	0.1	0.1	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4
1991	0.4	0.4	0.3	0.3	0.6	0.8	1.0	0.9	0.9	0.9	1.3	1.6
1992	1.8	1.7	1.5	1.4	1.2	0.9	0.5	0.2	-0.1	-0.1	0.1	0.3

1993	0.4	0.4	0.5	0.7	0.7	0.7	0.4	0.3	0.3	0.3	0.3	0.3
1994	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.7	0.9	1.3	1.3
1995	1.2	0.9	0.6	0.3	0.2	0.1	-0.1	-0.2	-0.5	-0.6	-0.8	-0.8
1996	-0.8	-0.7	-0.5	-0.3	-0.2	-0.2	-0.1	-0.2	-0.1	-0.2	-0.3	-0.4
1997	-0.4	-0.3	-0.1	0.3	0.8	1.3	1.7	2.0	2.2	2.4	2.5	2.5
1998	2.3	2.0	1.4	1.1	0.4	-0.1	-0.7	-1.0	-1.1	-1.2	-1.4	-1.5
1999	-1.5	-1.2	-0.9	-0.8	-0.8	-0.8	-0.9	-1.0	-1.0	-1.2	-1.4	-1.7
2000	-1.7	-1.4	-1.0	-0.8	-0.6	-0.6	-0.4	-0.4	-0.4	-0.5	-0.7	-0.7
2001	-0.7	-0.5	-0.4	-0.3	-0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2
2002	-0.1	0.1	0.2	0.4	0.6	0.8	0.9	0.9	1.1	1.3	1.5	1.4
2003	1.2	0.9	0.5	0.1	-0.1	0.0	0.3	0.4	0.5	0.5	0.6	0.4
2004	0.4	0.2	0.2	0.2	0.3	0.4	0.7	0.8	0.9	0.8	0.8	0.8
2005	0.6	0.5	0.4	0.5	0.5	0.5	0.5	0.3	0.2	-0.1	-0.4	-0.8
2006	-0.8	-0.6	-0.3	-0.1	0.2	0.3	0.4	0.5	0.7	0.9	1.2	1.1
2007	0.8	0.4	0.1	-0.1	0.0	-0.1	-0.2	-0.5	-0.8	-1.1	-1.2	-1.4
2008	-1.5	-1.4	-1.1	-0.7	-0.5	-0.4	-0.1					

NOAA/ National Weather Service
National Centers for Environmental Prediction
Climate Prediction Center
5200 Auth Road
Camp Springs, Maryland 20746
Page Author: Climate Prediction Center Internet Team
Page last modified: September 4, 2008

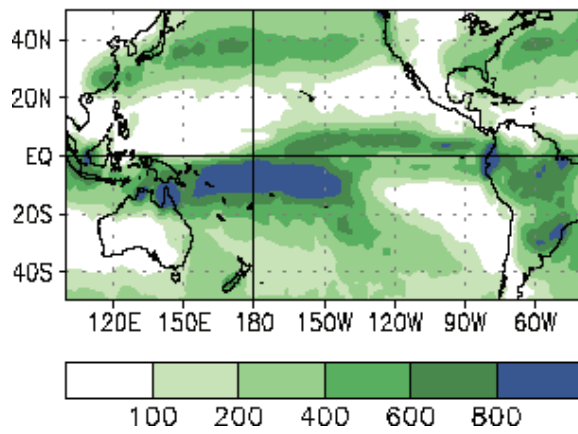
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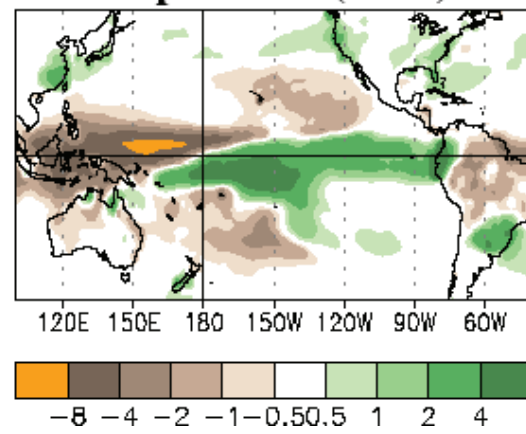
Source: NOAA NATIONAL WEATHER SERVICE, CLIMATE PREDICTION CENTER
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensoyears.shtml

Jan-Mar 1998 Precipitation (mm)

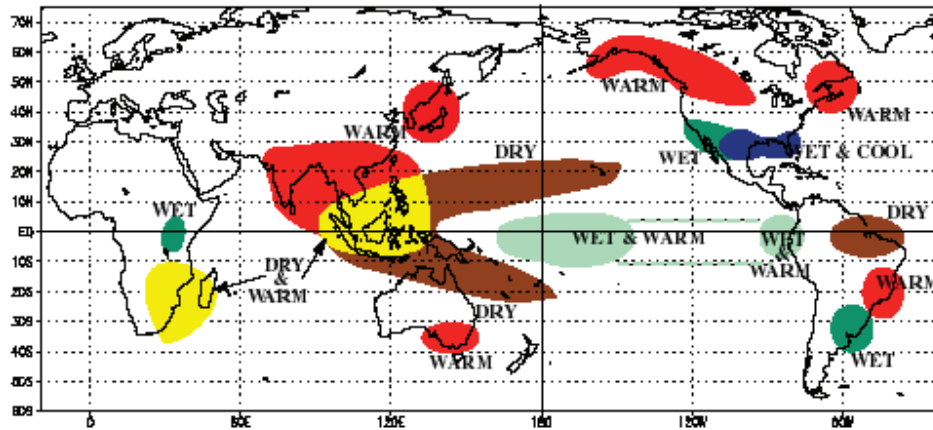
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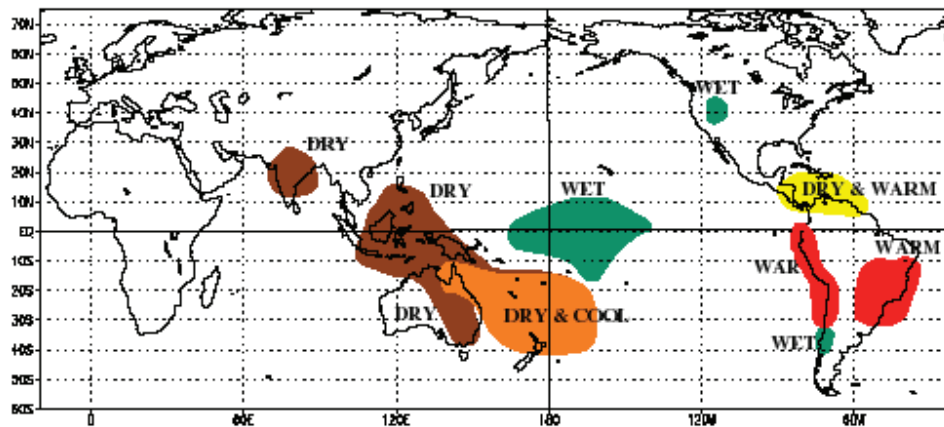
Departures (x100)



WARM EPISODE RELATIONSHIPS DECEMBER - FEBRUARY



WARM EPISODE RELATIONSHIPS JUNE - AUGUST



ANNEX 9: Back to Office Report No. 1

Roger D. Montgomery, UPI 152,402

Purchase Order: PO 007,717,434

Covers period: Monday 8 through Saturday 27 September, 2008

Background and Activities:

This consultant mobilised from London UK on Friday 22 August, 2008. The first two weeks were spent conducting interviews related to agricultural risk in Jakarta and assisting with the recruitment and mobilisation of two local consultants. Two such consultants, Mr. Rohandi and Dr. Rilus Kinseng mobilised by the 8th of September, so the team was able to proceed to the field the next day, Tuesday 9 Sept.

The period from 9 September through 27 September was spent in East and West Nusa Tenggara. While the main subject of the field visit was how to reduce risk and vulnerability, we were pleased to be able to observe and learn from the PNPM³⁵ methods and procedures as applied so far in the field of agriculture and agribusiness.

Tuesday 9 Sept: fly Jakarta to Kupang, Sriwijaya Air

East Nusa Tenggara (Kupang):

One of the objectives of the visit to NTT was to survey on-going agricultural and agribusiness activities, together with PNPM-SADI-NTT staff and to discuss what approaches to risk reduction appear to work and which do not. The PNPM staff are a bit isolated from the many other, on-going activities and it was an opportunity to visit and exchange ideas.

Wednesday 10 Sept: Meet with PNPM staff at their office³⁶. Former KorProv (Alman Hutabarat) had just been transferred to Sumatera. Met with Regina Tan³⁷ and Christianto³⁸ of SADI, as well as Urbanus, Dozi Amrosi, Yan and Suhaidi. Planned 3 day field trip for consultant Rohandi and Mrs. Regina to Kec. Kuan Fatu to discuss with PNPM participants their strategies for coping with risk, beginning next day. Planned visits to various govt and non-govt agencies in Kupang for consultants Rilus and RM for next few days.

In the afternoon a call was made upon the SekBer office of the provincial Bappeda: met with Ms. Eva Baros³⁹ and Danny Suhaidi. The team then moved into the Antara office space kindly prepared and provided by Mr. Richard Manning.

Thursday, 11 Sept: In the morning the team was briefed by Dr. Bill Ruscoe on maize storage problems and possible solutions. With Ruscoe a field trip was undertaken to the seed multiplication farm (*Balai Benih Induk*) at Taurus to discuss storage losses and to observe improved storage methods (storing dried shelled maize in drums). Drum storage is said to

³⁵ formerly Kecamatan Development Program

³⁶ Office: Jalan Anggur 10A, Naikoten. Across street from Pittrad Rileks, near school PGRI

³⁷ HP 081 237 94 622

³⁸ HP 081 353 755 786

³⁹ HP: 081 339 2127

decrease storage losses to *Fufuk* storage beetles (*Sytophyllus Mais*, *Sytophyllus Oryzae*). Storing maize dried to below 14% moisture content in drums dramatically reduces losses according to interviews. It is also said to save on the continuous burning of fuel wood to produce smoke, to drive off storage insects. The *BBI* farm uses a water pump to irrigate its maize under multiplication.

Friday 12 Sept: The BMG meteorology office was visited to obtain rainfall data for analysis of long term rainfall trends in five locations (4 kab of Timor and Bajawa on Flores)⁴⁰. The official gazetted cost for rainfall data would have been prohibitively expensive (Rp 50,000 for each year's records for each station), but fortunately we were able to exchange data. We provided them with historical, older data they did not have -- data from RePPPProT studies of the 1980s and obtained a much reduced cost.

FAO's Mr. Blasius Lemma⁴¹ was briefed on the project. He had formerly been a fellow professor together with Ms. Regina Tan at the university in Dili. Blasius was formerly the director of the East Java agricultural radio station, *Radio Wonocolo*⁴². See Box 2 at the end of this report for details on Radio Wonocolo.

FAO is cooperating in a joint UN effort together with World Food Program and UNICEF in Belu to improve food security and income continuity. The FAO is promoting agro-forestry (farmers growing forestry trees for sale), which was among our recommendations at the time that Rilus and the writer designed the project. Among the most popular tree species is *gmellina arborea*⁴³ which can be sold for about Rp. 250,000 (US\$30) per tree at maturity.

Blasius was unaware of the PNPM trial effort in the field of agriculture. He had not responded to newspaper advertisements by PNPM asking for expressions of interest in supplying training services this year, but will now do so.

On Friday afternoon visited the Min Agr. PIDRA project⁴⁴ (IFAD funded). The team was briefed by Edgar Tibologi⁴⁵ (Dodi), Benny Dasiofa⁴⁶, Odi Mesakh, Jans Koliham and Henry. This project uses participatory methods very similar to PNPM's, in areas known to be food short. It might have been useful to visit the field together with PIDRA implementers to compare experiences with PNPM, but unfortunately this project closes down next month.

⁴⁰ BMG: Purwanto 081 338 703 762; Apolinaris 081 339 415 708

⁴¹ HP 081 339 005 173

⁴² As we noted in our 1997/98 Ag Sector Strategy Review for the ADB: "One excellent and positive example of progress was found in Wonocolo in East Java, at the site of a former BIP agricultural information centre. There an *Instalasi* (belonging to the new AIAT system) has been able to undertake a significant development: an agricultural radio station which can be received all over Indonesia. It broadcasts in both short wave (64 meter band, 4698 kHz) and for East Java province, in the medium wave band (186 meters or 1602 kHz). It publishes a weekly program in advance, and has many daily programs presenting agricultural information".

⁴³ *Gmelina arborea*: *gambhar*, white beech, coomb teak, Malay bush beech

⁴⁴ PIDRA Jalan Untung Suropati, Air Nona.

⁴⁵ HP: 0811 382 798

⁴⁶ HP: 0852 530 373 62

PIDRA has worked to establish group storage (*lumbung kelompok*) and small savings-loan groups in 94 villages in 24 kecamatans of TTS⁴⁷, TTU, Alor, Sumba Timur and Sumba Barat. It worked eventually with 897 farmer groups (*kelompok tani*). At the Jakarta level, PIDRA is backstopped by the Food Security Agency (Djadi Purnomo of *Badan Ketahanan Pangan*), in contrast to the World Bank's choice of executing agency, the Agency for Human Resource Development (*Badan Pengembangan Sumber Daya Manusia*) for the implementation of its FEATI project, which is trying to rebuild the almost moribund agricultural extension system, which languished after decentralisation.

Saturday 13 September: A one day field trip was undertaken together with Christiano to the demonstration farm of NGO Lensa Mandiri⁴⁸. This NGO operates an approximately 10 hectare demonstration and production farm in Desa Sumlili, Kecamatan Kupang Barat. It regularly trains farmer groups and conducts visits for agricultural students. The farm is irrigated using two electric pumps for shallow wells. It is an excellent example of how pump irrigation can be put to profitable use and will feature in the final report of this mission. This NGO had seen the newspaper advertisements by PNPM asking for possible training institutions to register for consideration of inclusion in the project, but had not applied. They will now apply.

Sunday, 14 September: A field trip was made to Dusun Uel, Desa Nunkurus, Kecamatan Kupang Timur to visit the pump irrigated maize activities of Zet Melelak. This former taxi driver earned a Ph. D. in agronomy and is now a faculty member at Universitas Artha Wacana in the field of agriculture, but continues to operate his own farm and to assist and train neighbours. He employs a water pump (which he shares with neighbours) to irrigate second and third crops of maize after rainy-season rice. Much of the maize is processed into livestock feed and fed to chickens. He has convinced neighbouring farmers to also purchase and use water pumps. In the past Zet has collaborated with ACIAR's Colin Barlow on a project on Semau island. Zet regularly operates his own training courses for trainees sent by NGOs and various agricultural services within the province. Each course lasts six days (max ten trainees) and covers pump irrigation technology and maize growing. The training cost is minimal. Zet currently collaborates with approximately 17 local NGOs in NTT for his training course, most notably World Vision Indonesia, as well as the Dinas Tanaman Pangan Agr Service and the Balai DikLat Pertanian agricultural training service.

Zet has assisted his neighbours to plant agro-forestry species on vacant land; one neighbour had recently planted 300 mahogany seedlings. At an assumed maturity stumpage value of at least \$30 per standing tree⁴⁹, this represents an investment in an asset which will be worth approximately \$9000 to the farmer in about 12 years time. In years of very low rainfall, the villagers living near Zet rely upon salt production (their village is near the sea-coast), fisheries, brick-making and sand production from river beds.

Zet had been unaware of PNPM's process of assembling a long list of training providers, He had not applied to be considered for the long list of possible PNPM trainers to be engaged this year, but is willing to be considered.

⁴⁷ Phone number of responsible person in So'e: 0851 530 480 86

⁴⁸ HP: 0811 382 250; 0813 3940 7022; email: kwarusena@yahoo.com

⁴⁹ Assumes the mature tree [once harvested and cleaned] produces a second class log 2.5 meters long, diameter 40 cm therefore 0.31 cubic meters. Unit price of Rp.2,079,000 or \$225 per cubic meter cleaned, at saw mill, according to Perum Perhutani's web site.

Monday 15 Sept: worked in Antara office. Rilus visited insurance companies.

Tuesday 16 Sept: 9 am, with Bill Ruscoe, visited P2AT⁵⁰ ground water and pumped water development office. [Ruscoe had worked there in the past]. Met John Paiy, Eduardus Serang and Petrus Hanchi. This is a project of central government (Min Pubic Works) and has not been decentralised to either provincial or kabupaten level.

So far, P2AT have delivered and installed more than 800 water pumps (the majority for drinking water), mostly with Japanese assistance. Many wells drilled proved to be artisanal and flowed under pressure, not requiring pumps. The locations have been in Belu, TTU, TTS. They have experience in measuring recharge rates and consequent water debits that can be drawn down, and therefore appropriate power and pump requirements. They also have experience with deep tube wells, which require submerged pumps powered by electricity (either from the grid or from gen-sets). If reimbursed, they can do site investigations in PNPM locations, to test water quality and quantity. A typical investigation requires 2 or 3 persons for a 3 day field visit, during which they would bring their own pump to test the debit (supply). In their experience it is much more economical to pump from springs than from tube wells, especially deep wells. P2AT's staff had not responded to PNPM's newspaper advertisements asking for expressions of interest.

11am: attempted to visit the provincial forestry service (Dinas Kehutanan Propinsi⁵¹) but no senior officers present.

Wednesday 17 Sept: Departed Kupang for So'e for two day field trip to Kec. Mollo Utara. Met kabupaten PNPM officers, Ms. Ida Lama Belawa (formerly called KM Kab, now FasKab); Ms. Santule, FK in Amanuban Timur, Ms. Ima Betan (FK Amanatun Selatan), and Ms. Aci N'Daung, computer operator. Discussed the program with them (and the lack of agricultural PNPM staff at kabupaten level). Over the years the most popular PNPM programs have been rural roads, various buildings such as schools, *posyandu*, *polindes* health stations, scholarships and supporting teachers' wages.

In the afternoon we visited Mollo Utara's Desa Obesi, Dusun 4 in a mountainous area. This area formerly grew cattle, but no more. Livestock disease has taken its toll (*kepala bengkak*, "swollen head"). The farmers seem unaware that this is most likely to be SE (*Septicemia epizootica*) and that there is a vaccine available to prevent the disease.

The principle food crop for this village is maize, but they have an annual problem that destroys much of their crop: in every February there are predictable, very strong winds which knock down the plants. They need either very short stature maize or else very short season maize that can be harvested before the destructive winds come in February. When asked how often there was a "bad" year for weather/wind the villagers responded: "every second year: odd can't harvest / even can harvest". When asked what they were able to produce and sell in bad years they responded that they also had coffee, areca nuts (*pinang*), betel leaves/shoots (*daun sirih*), some mahogany trees and could also make sago starch from their *gewang* trees. Despite the fact that they now have a road to the kecamatan town, no *Angkot* vehicles yet serve the road. They must therefore still walk to market to sell produce, because an *ojek* motorcycle ride would absorb Rp.10,000 of their expected net earnings of about Rp.15,000. Overnight in So'e town.

⁵⁰ Phone: (0380) 832 905 or 833 627

⁵¹ Phone: (0380) 833 102, Ibu Leo, Ir Marten Pabiangan, Ir . Normalina Sembiring

Thursday 18 Sept: Returned to Mollo Utara to visit Camat, S. Makleat together with kecamatan PNPM staff, Yenny, Rita and Domi. This Camat is very enthusiastic about peanuts, vegetable production, livestock fattening and oranges. We discussed the problem of a rapidly spreading orange tree disease which is wiping out the trees (said to be caused by *phytophthora*, root rot, which is also known to attack tomatoes, papaya and cocoa) and the ineffective treatment that is being used: a mixture of lime (*kapur*) and copper sulphate (*belerang*). This treatment is quite old (known as Bordeaux mixture according to Bill Ruscoe) and must be applied well before the disease breaks out.

A meeting was held with a PNPM group in a village near the kecamatan. The farmers knew livestock prices, thanks to marketing assistance from PusKud. Local prices offered at the weighing station ranged from Rp 14,500 to Rp 14,700 per kg live weight. This compares favourably with international prices (in the USA, the live weight price for cattle at the Chicago Mercantile Exchange has recently been US\$ 0.9775 per lb, which converts to about Rp.20,000 per kg live weight⁵²).

This village also suffers from damage from strong winds during February each year. In defence they also plant sweet potatoes (*ubi jalar*), carrots, red beans and Japanese gourds (*labu jepang*) as alternative food crops and cash crops.

Friday, 19 Sept: The NTT PusKud office (provincial level cooperatives, now reputedly self-supporting) was visited. Met with deputy director Yoseph Jemari. This organisation (with assistance from Sam Filiaci⁵³ of the Cooperative League of the USA, now renamed National Cooperatives Business Association) has provided valuable assistance to cattle fattening and marketing. Assistance has been given by placing 20,300 head of cattle with farmers for fattening by stall feeding. This assistance has helped bring up farm gate prices and to break the former monopsonistic buying cartel by a selected few inter-island traders which previously existed in East Nusa Tenggara. The PusKud helps to provide insurance for livestock transported to Java (at an insurance cost of approximately Rp50,000 per head, out of a total transport cost of Rp.450,000 per head). The insurance is against total loss (boat sinking) but only if the livestock are shipped on metal boats, but not wooden *Expedisi* boats.

Friday afternoon the team, together with Ms. Regina Tan, visited the BPTP deconcentrated research centre at Naibonat. This group did a study for ACIAR on the supply chain for So'e's oranges (*jeruk keprok*) but appeared to be surprised at the serious outbreak of disease among the orange trees. The subject of the previous ADB funded Poor Farmer project (using methods very similar to KDP/PNPM) was discussed. It was proposed that PNPM farmers from Bajawa could be brought to Ende, a Poor Farmer kabupaten, to share experiences.

Saturday, 20 Sept: A dinner was held for all PNPM staff, together with Bill Ruscoe and Lensa Mandiri NGO staff.

Sunday, 21 Sept: Travel from Kupang to Mataram, via Den Pasar.

West Nusa Tenggara:

⁵² Asian Wall Street Journal, Friday-Sunday 3-5 October 2008.

⁵³ Email: clusa@idola.net.id, phone: 021 799 6867 or 0272 321 077.

Monday 22 Sept: Initial planning at the Mataram PNPM office⁵⁴ with Pak Ridho⁵⁵, SADI's Ibu Asdiah⁵⁶ and Pak Hasta Nugroho⁵⁷, plus Lukman Taufiq and others. Originally it had been planned to have one national meeting (for all four provinces) each year, and six months opposite, a regional meeting. We learned that the planned semi-annual regional meeting for the Nusa Tenggara region for 2008 had been cancelled.

The meeting at PNPM was followed by a courtesy call at the provincial Bappeda, with Ibu Yanti.

Tuesday, 23 Sept: A field trip was undertaken to Kec Narmada in Lombok Barat. A visit was made to Desa Selat, Dusun Merce together with Asdiah, Hasta, the kecamatan FK Fuad Wahrudin, the village facilitator FD Tri Rosita and the agriculture service's PPL, Wiyono.

When asked about risk factors facing the village's agriculture, the most prominent now is Tunggro a rice disease (turns red, stunted). The blame was put on a change in cropping pattern; in irrigated areas some farmers are attempting continuous rice planting /--rice--/--rice--/--rice--/ whereas before the local government had imposed a cropping pattern of /--rice--/--rice--/--secondary crop--/. It is the replacement of the third non-rice crop by rice that is believed to be the cause of the outbreak. There is a clear need for proper technological advice in this area.

The rains are said to be starting later each year, now often not before December. [This is an empirical fact, to be checked]. When faced with water shortages, drought, the fallback position is to plant sweet potato, cassava, or *Gewang* palms for sago starch. The village is heavily dependent upon its *sawah* rice fields, with little upland *ladang/tegal* fields, although there is a sizable allocation of land to home gardens (*pekarangan*).

Later in the day a visit was made to the BPTP research station where the team met with Dr. Ketut Puspadi⁵⁸, as the director, Dr. Dwi, was not there. The matter of Tunggro virus was discussed. Dr. Ketut agreed that the best method to control Tunggro was through proper cropping patterns (disallow continuous cropping of rice), but also by variety change. To replace the thirty year old IR-64 there are new varieties: Cigeles, Mekonga, Cibogo.

A number of other developments were discussed, including PT Garuda's contract farming for peanuts and its pricing and grading methods. Garuda Food's contract farming is proving popular in this area.

Wednesday, 24 Sept: A field trip was undertaken to Kec. Gerung, south of Mataram. Lowland Gerung is an irrigated rice area (at least for a first crop of rice), but the irrigation canal runs dry by August. Kec. Gerung also has a substantial hilly area around Gunung Sasak that is very dry. The team met with FK Abdullah Wildan⁵⁹, L. Husni Tamrin⁶⁰ who is the financial UPK, Nini Wardani⁶¹ (an agriculture graduate, but working on roads and bridges), Nurdin⁶².

⁵⁴ Jalan Sapta Pesona 66, Pagutan, Komplek Bumi Pagutan Damai.

⁵⁵ NEW HP number: 0819 1578 5945, old HP number: 0812 461 2785

⁵⁶ HP: 0813 3974 7650

⁵⁷ HP: 0819 1724 6501

⁵⁸ Email: ketutpusadi@yahoo.com. HP: 081 337 429 090

⁵⁹ HP 0818 369 514

In the drier upper regions of Gerung lack of water is a serious problem. To survive they plant one crop of rain fed rice, supplemented by various tree crops. The most successful tree crops are cashew nuts, coconut, quick growing teak (*jati Muna*, from the island of Muna in Sulawesi)⁶³.

Much of the unused, deforested land (*lahan tidur*) on the dry hills surrounding Gerung is owned by the Forestry Service. This service is now cooperating with local farmers, allowing them to plant forestry species on government land, on a share crop basis. This is an important development. See Box 1.

Box1: Kec. Gerung upland farmers have now obtained *usufructus* land-use rights (*hak pakai, hak guna usaha*) for a period of 30 years to plant this government-claimed area with fast growing timber and nut species such as cashew, mahogany, teak and *Sonokeling* (*Dalbergia latifolia*, often called Indian Rosewood or Black Rosewood...used for the necks of stringed instruments). When asked about terms and conditions for use of the government land we were told that an annual *Retribusi* of Rp 25,000 per farmer was required, and that at harvest the value of the timber harvested will be split 50% - 50%.

We requested a copy of any official document / contract from the Forestry Service which showed terms / rights / conditions in writing from the farmers, but all that the farmers could provide was an old 1991 planting schedule for an old ADB funded loan project for reforestation, clearly not relevant here.

The subject of household indebtedness arose several times during the discussions. The PNPM participants assembled admitted that almost everyone is in debt and that as many as 20% of farmers are in debt to *Rentenir* money lenders who charge exorbitant interest rates. Most rice farmers must sell their crops early (*ijon*, green, still standing) because of their indebtedness position.

Thursday 25 Sept: In the morning a visit was made to the Badan Ketahanan Pangan (food security agency). This agency is stressing diversification into non-rice crops.

The social forestry NGO SAMANTHA was next visited. This NGO is undertaking the DFID funded multi-stakeholder social forestry project. They were particularly well informed about forestry legislation and implementing regulations, and were particularly interested that villagers in Gerung had been able to obtain *usufructus* (*hak guna usaha, hak pakai*) rights with a 50% - 50% share crop available. Samantha staff mentioned that a local NGO, Koslata was working together with local government on drafting appropriate implementing regulations to formalise *usufructus* rights, and to provide umbrella legal protection for farmers planting agro-forestry species on government (forestry) land. This subject will be taken up again in the final report of this consultancy.

⁶⁰ HP 0817 570 0425

⁶¹ HP: 0818 545 396

⁶² HP: 081 805 775 904

⁶³ An ICRAF project in Lombok Tengah from 2000 to 2003 showed that among four teak varieties (Ngaliron, Muna, Padangan and local) that Muna had the best growing characteristics.

Later in the day the NGO Konsepsi⁶⁴ was visited again (had been visited in 2007 together with Mr. Bakir Ali). The legal basis for agro-forestry in Desa Sesaot on the slopes of Gunung Rinjani was discussed. The farmer group undertaking social forestry (*hutan kemasyarakatan*) had a contract (commitment) first from the Bupati, which was then authorised by the forestry service (*Dinas Kehutanan*). They were granted a “permit” (*ijin*), but not a “right” (*hak guna usaha, hak pakai*). They said they had benefitted from the visit by Bakir Ali in July 2008.

Friday 26 Sept: A field trip was made to the third kecamatan of Lombok Barat participating in PNPM SADI activities, Kecamatan Bayan, together with the IFC’s Giri Arnawa. Giri. The village visited, a former local transmigration site named Sambek Elen, is participating in contract farming for peanuts with Garuda Foods. The area of contract farming continues to grow each year. Both the PNPM kecamatan facilitator Mahrin⁶⁵ and the Garuda Food facilitator Ninggrasih⁶⁶ attended the meetings with villagers. Again as elsewhere on Lombok, indebtedness is a major problem. All households were said to be in a negative equity position, with many owing money to *Rentenir* loan sharks. A typical crop loan of Rp100,000_ must be repaid within 6 months by Rp300,000. Most farmers must sell their crops early, green. Garuda Food’s contract farming model with a cash advance is a significant improvement.

Risk is a constant concern in this village. There was a total failure of rice in 1982 (a severe El Nino year; see Annex 8, the NOAA time schedule of such events). The failure was made worse by the emergence of a rice pest (*ulat*). The farmers believe planting rice at the correct time is very important: planting in early December will lead to failure just as planting after Jan 10.

The farmers plant much cashew nut as an alternative source of income to food crops, but are very concerned about widely fluctuating prices. Two weeks earlier the price was Rp. 10,000 per kg but it suddenly fell to Rp. 6,000. They do not know or understand the cause of this fluctuation and have no source of information on world prices, Surabaya prices or Makassar prices.

The IFC makes available Makassar maize prices and cocoa prices using mobile phone technology⁶⁷, but not cashew nut prices. This subject, access to timely outside price information, will be taken up again in the final report of this assignment.

Discussion and Issues:

During discussions with **PNPM** implementers a number of issues arose about difficulties experienced to date. We advised the implementers that we would bring these issues to the attention of Ms. Jackie Pomeroy and Mr. Bakir Ali, who are much better placed to handle such matters (and that we were not so placed).

Nusa Tenggara Timur Province, Kupang:

⁶⁴ Office: Jl Bung Hatta II/4, Majeluk, Mataram. [0370] 627 386. Head: Eko Krismantono 081 803 160 899

⁶⁵ HP: 081 803 865 911

⁶⁶ HP: 081 936 738 970

⁶⁷ For Telekomsel systems such as Simpati SIM cards, text the following “CSP Kakao” or “IFC Jagung” to 9165. For other mobile phone operators, text the same message to 9168. The response is rapid.

[1] SADI-specific Manuals not yet used: Although a number of SADI specific guidance documents (such as PTO and a Positive List of suggested acceptable activities) were prepared last year in Makassar, they do not appear to have not yet taken effect. (The questions are: are they not yet official? authorised? distributed? Where is the problem?). The PNPM agriculture staff often must revert to the earlier set of PNPM Mandiri (roads and bridges) manuals for guidance rather than to specific SADI guidance.

[2] Disposal of equipment used during training: The NTT PNPM group working on agribusiness has received instructions that this year's BLM grants to villages can be used only for human resource development (training). They have interpreted this instruction very literally: if a training course requires equipment (such as training villagers on how to use a cashew nut sheller), the equipment can only be rented during training, and must be returned to Kupang after the training is completed. This is simply counter-productive and needs discussion and correction.

[3] Transport for PNPM SADI staff to remote sites poorly served by public transportation: The NTT office is convinced that the two project vehicles hired by the project may only be used within 30 km of Kupang, that the vehicles may not be used for field travel. And yet to reach Kuan Fatu kecamatan, Kab TTS on Timor Island (about 5 hours from Kupang on bad roads), there is only one bus each day, leaving Kupang at 3 am. After that there is no more public transport until the next day. Once in Kuan Fatu, the visiting provincial consultants have no access to a vehicle either for field visits (or for transport back to Kupang in case of emergency illness/accident) until the bus the next day.

When questioned as to legal basis for this 30-km-Kupang-radius limit, the PNPM staff showed a year 2003 KDP letter of instruction from NMC (signed by Pak Ibnu), indicating that project vehicles should only be used around the provincial capital. Kupang is actually well served with inexpensive AngKot public transport vehicles on almost all roads within the city. The existing 30 km restriction is counter-productive. It can be revoked, making project vehicles available to reach remote sites on the same island. If there is a question about how to cover the cost of extra fuel required for visits to distant sites or compensation for driver overtime/overnight, the consultants could use their daily ILT allowance to fund such, once this matter is clarified.

The unavailability of vehicles also means that during the very early processes of problem identification and project formulation, it is now yet possible to take villagers from TTS to investigate for themselves possible training locations closer to Kupang (such as those operated by Zet Malela, NGO Lensa Mandiri and others) in order to evaluate whether this is the kind of training they wish to consider and propose. Project vehicles could and should be available for this kind of information gathering visit early on.

[4] Strong coordination between PNPM and IFC; weaker coordination with BPTP.

It was clear that in NTT (and in NTB, see below) coordination with the IFC's representative was continuous and mutually helpful; however areas of mutual interest and joint activity are not yet clear. In NTB, coordination with the IFC's representative was close and continuous; he lives within walking distance of the PNPM office and visits frequently.

It was also clear that effective coordination between PNPM and the BPTP at Naibonat was minimal. During our joint discussion at Naibonat we reviewed possible areas of mutual interest and how prior experiences might be shared. It would appear that the most natural possibility of linkage between the BPTP and KDP-SADI would be jointly to learn from prior experience. This would involve a visit to the BPTP's ADB funded Poor Farmer project sites in Kab Ende next to

Kab Ngada (Bajawa). The ADB Poor Farmer project was modelled on KDP principles and methods (by this writer) and faced similar technological and implementation issues. There are mutual lessons to be learned and shared.

It was proposed and accepted that PNPM staff (from both province and Kab. Ngada) and representatives of participating villages in Ngada would visit successful Poor Farmer sites in Ende. The immediate question was how the unforeseen, unbudgeted costs involved in such a visit could be reimbursed. This is for the SADI office in Makassar to consider. One possibility would be to propose that Mr. Bakir Ali be granted a discretionary operating fund under his control to cover such unexpected and unplanned for minor costs, which should improve project implementation.

Nusa Tenggara Barat Province, Mataram:

A number of similar implementation issues arose during discussions with PNPM implementers in Mataram, as they had in Kupang. One was whether equipment used during training could be left behind at the end of a training course. The view in Mataram was that it could be left behind.

[5] Vehicles: The Mataram PNPM office was under the same impression as the Kupang office about use of project vehicles. They believe that project vehicles may not be used for extensive field trips. Therefore Mrs. Asdiah uses her own private car to reach Sumbawa Besar on Sumbawa Island, as well as kecamatan on Lombok Island. Mr. Hasta Nugroho has no car.

[6] Study Visits outside location, who may accompany the villagers: There is a question about who may accompany villagers on a *Studi Banding* (site visit to another location for training), when that is selected as a proposal and wins during inter-village discussions. See the attached letter from Abdullah Wildan, the kecamatan level facilitator in Gerung, NTB (Annex 5). The NTT Korprov office is operating under the assumption that the local kecamatan facilitator (FK) may **not be funded using BLM funds to** accompany a group sent on training. There is a clear need for the FK to accompany the group and to help clarify what the group is seeing, especially when there are language difficulties.

Also raised as an issue was whether the local transport allowance of Rp. 20,000 per individual villager trainee was adequate, given the high cost of using *ojek* motorcycle transport and the lack of alternative public transport to reach the training site.

Date: _____

Signature: _____

Box 2: The status of agricultural radio stations in the late 1990s:

**Box 3.2. Special Radio Station on Agriculture
at the Assessment Installation for Agricultural Technology [circa 1990s]**

The Ministry of Agriculture has two special Radio Stations for Agriculture Information (*Radio Khusus Informasi Pertanian* - RKIP). One is in **Wonocolo, East Java**, the other in **Palu, Central Sulawesi**. **RKIP Wonocolo** is managed by IP2TP, a working installation unit of BPTP Karangploso. This RKIP radio station was established in 1970. It can be heard on SW 64M and MW 200M. In theory, the broadcast can be received anywhere in the country. However, since the facilities/transmitter is already old (installed about 27 year ago), coverage has decreased.

The broadcast schedule is as follows: Monday through Thursday from 5:00 until 23:00 with 1.5 hours break; Friday through Sunday for twenty four hours. A specific 30 minute broadcast on agriculture is programmed once each day, called “agriculture technique” (*Teknik Pertanian*) at 19:30. The rest of the programming is agricultural information given indirectly through several presentation formats:

- *Sandiwara Radio* (drama, theatrical format)
- *Jawaban Surat* (answering letters)
- *Bingkisan untuk Ibu* (parcels for the women)
- *Siaran Pedesaan* (village broadcast)
- *Wayang Kulit Semalam Suntuk* (traditional Javanese shadow play)
- *Ketoprak* (humorous plays) and others.

These programs are intended to attract listeners who might be expected to be bored with straight news on agriculture only. In addition to the Wonocolo station, RKIP also has a Mobile Radio (“*Radio Keliling / Mobil*”). This mobile broadcast studio is used at specific field events, especially on introduction of technology applied by the farmers. RKIP cooperates with a radio owned by local government (*Radio Khusus Pemerintah Daerah* - RKPD) to broadcast cassettes recorded by RKIP.

Radio broadcasting is only one of the many tasks carried out by IP2TP Wonocolo. Other tasks are to conduct technological research and agricultural management. The results are disseminated to the farmers. Research results of IP2TP are published in the forms of brochures, newsletters and leaflets. Recent topics include:

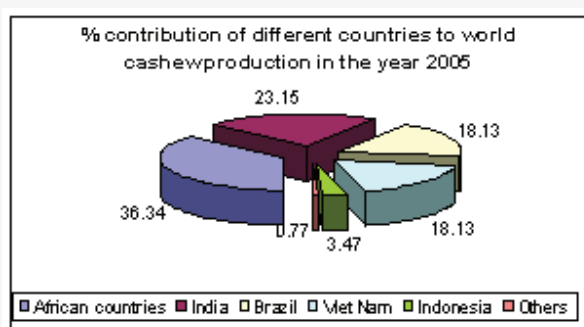
- *Teknik Budidaya Bawang Merah Di Luar Musim* (How to grow onions out of season)
- *Pembukuan Usaha Tani* (Books on agriculture)
- *Meningkatkan Produktifitas Ayam Buras* (Raising chicken productivity)
- *Embung Kolam Penampung Air* (Making ponds to conserve water)
- *Pemeliharaan Pedet Sapi Perah* (Taking care of your milk calves)
- *Berkebun Jeruk Besar* (Raising big oranges)
- *Perhitungan Marjin Pemasaran* (Estimating your marketing margin)
- *Peningkatan Produksi Ikan Nila*. (Growing Nile Perch Fish)

Source: ADB TA 2660-INO (March 1998), Agricultural Sector Strategy Review, volume B-6:
Decentralisation of Agricultural Support Services

ANNEX 10: CASHEW PRICE AND MARKET INFORMATION

from website: CashewInfo.Com, by Foretell Business Solutions, India

Background information: Cashew trees thrive in hot humid regions and hence are distributed in countries near the equatorial region. They are grown commercially in 32 countries around the world. India tops the list among the major cashew producers in the world, in terms of both raw cashew nut production and kernel production. Out of the total world raw cashew nut production of 1,575 to 1,600 thousand tons, 400 - 500 thousand tons, that is about 25 – 30 % is produced in India. India is followed by Brazil and Viet Nam. African countries like Ivory Coast, Tanzania, Guinea Bissau, Benin, Nigeria, Mozambique, Senegal and Kenya also produce raw cashew nuts. Put together, African countries add around 500 thousand tons of raw nuts to the world cashew basket every year.



Cashew growing regions in India

In India, cashews are grown widely in states like Maharashtra, Andhra Pradesh, Orissa, Kerala, Tamil Nadu, Karnataka, Goa and West Bengal. Apart from these traditional cashew-growing states, cashews are also being grown to a certain extent in states like Gujarat and Assam where a spurt in the area under cashew cultivation has been seen of late.

Seasonality

Cashew season extends from March to June in India and Viet Nam. In Brazil, the crop is harvested during November - February. The following calendar shows the cashew seasonality in different origins.

Country	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
India												
Brazil												
Viet Nam												
Ivory Coast												
Tanzania												
Guinea Bissau												
Indonesia												
Benin												
Nigeria												
Mozambique												
Senegal												
Kenya												
Ghana												

Processing is one of the important steps in the cashew supply chain. Cashew processing actually includes the various steps and the processing methodology used varies from region to region. In Brazil, mechanical processing is done, while in India, processing is highly labour oriented. Even inside India, there are differences in the processing methods used in different regions. For example, in Mangalore region of Karnataka, steam boiling method is followed while in parts of Orissa and Andhra Pradesh, drum roasting method is followed. After processing, the kernels evolve and these are then graded according to their size, shape and colour, as wholes, splits, broken, butts, scorched butts etc. Wholes are again classified as W320s, W180s, W450s etc., according to the number of whole kernels per pound (0.45 kg). The edible cashew nuts are available in around 26 - 33 different grades. The wholes are sold as snack food while the split nuts are generally used as ingredients in other foodstuff.

Prominent processors

Among the cashew producing countries, India, Brazil and Viet Nam again are the major processors. African countries do very less of processing and more than 90 % of the raw nuts produced in Africa are exported to India. Only now, efforts are going on to increase the processing activity in Africa. Among the countries, India stands first in processing. India processes around 950 thousand tons of cashew nuts every year though it produces only around half of the quantity that it processes. Due to the large processing capacity in India, the country imports raw nuts from African countries and sometimes from Viet Nam. Viet Nam processes 400 thousand tons of cashews every year while Brazil processes around 250 thousand tons.

General price information:

Raw cashew nut prices range between Rs.35 to Rs.45 per kg in India. For raw nuts from African countries, prices range between 0.35 – 0.5 US \$/kg. Cashew kernel prices generally are in the range of \$ 1.3 / lb to \$ 3/ lb for the different grades. Prices of RCNs are influenced by crop scenario in all major origins including African countries, which determine availability in addition to other factors like exchange rates of currencies, export duties for raw nuts etc. Again raw nut prices influence kernel prices, which are also moved by demand factors.

Cashew Week, is the only one of its kind newsletter, exclusively designed to give you information on Cashew markets in India and abroad updated on a weekly basis.

Cashew Week provides a rich and exhaustive info as follows:

- **Market reports** from different cashew growing regions from **India** (like **Karnataka, Andhra Pradesh, Orissa, Kerala and Tamil Nadu**), **West Africa and Viet Nam**,
- A **special coverage** on different aspects covering cashew crop and trade.
- Updates on **currency movements** along with an outlook on Rupee movement against the US Dollar.
- **FOB prices** for different grades of cashews exported from India along with an outlook on prices.
- Data on **RCN prices and grade wise prices** of cashew kernels at different primary markets and secondary markets in India and abroad.
- Details on the latest happening in the cashew industry with **news coverage/expert views/articles** on matters that would be of concern for the cashew industry.
- A glimpse in the major upcoming **Trade Events**
- Guidelines for exporters

The subscribers to Cashew Week, will also get daily updates on prices, views, news and articles. The subscribers are also entitled to **post buy/sell enquiries for FREE** on Trade Enquiry Section. The subscribers are also open to asking specific market related queries to our analysts.

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Indian Cashew Handbook 2002 (click for details)	Brief about Indian Cashew Industry, processing, export trends, RCN import trends and so on	USD 125
Cashew Handbook 2008 - A Global Perspective	click for details	USD 199

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For any specific requirements and consultancy services write to
mktg@fbspl.com

For further details contact Mr Rajat Sabharwal at +91 93425 40609

Examples of on-line BUY orders on CashewInfo.com:

Buy

1. We can supply RCN with following specifications:

Origin : Guinea – Bissau.
Quantity : 1000 MT (in partial shipping) .
KOR : 52/54 .
Moisture : Max 9% .
Account : 190/220 .
Price : 510 USD/TM FOB Bissau.

[Contact](#)

2. We can supply cashew kernel of following specifications:

Origin : Panruti Region.
Quantity : 3 containers per month (minimum) .
Grades : W320, W240, SW, LWP and other .
Price : To be provided on request .

[Contact](#)

3. We can supply cashew kernel of following specifications:

Origin : Myanmar.
Quantity : 14MT.
Moisture : 5% .
Grades : W210 7MT price 5.8 US\$ per kg (FOB).
W240 7MT price 5.2 US\$ per kg(FOB).
Packing : 10kg (vacuum pack) x 2 = 20kg (carton).

[Contact](#)

Source:© 1999-2006 Copyright Foretell Business Solutions Private Limited
http://www.cashewinfo.com/home.asp?file_id=about_cashew

¹ This livestock disease is suspected to be *Septicaemia epizotica*

² WFP Jakarta: Mr. Bradley Busetto, (mobile +62 812 105 64 93).

³ WFP Kupang: phone: +62 380 - 833 467; fax: +62 380-825 433.

⁴ WWF “Climate Change Scenarios for Indonesia”, by the Climatic Research Unit, University of East Anglia, Norwich, UK (<http://www.cru.uea.ac.uk>),

⁵ Naylor, Rosamond L et al, “Assessing Risk of Climate Variability and Climate Change for Indonesian Rice Agriculture”, **Proceedings of the National Academy of Sciences**, pages 7752-7757, May 8, 2007. Available online at WWW.pnas.org/cgi/doi/10.1073/pnas.0701825104

⁶ Naylor, *ibid*, page 7753

⁷ Historical rainfall data from 1880s through 1985: **Regional Physical Planning Programme for Transmigration** (RePPProT), Review of Phase 1 Results (*Tinjauan Hasil Hasil Tahap 1*), Maluku and Nusa Tenggara, Volume 2, Annexes 1-5, March 1989, Land Resources Department ODNRI, Overseas Development Administration, Foreign and Commonwealth Office, UK. These were done for the *Direktorat Bina Program, Direktorat Jendral Penyiapan Pemukiman, Departemen Transmigrasi*, Jakarta. One full set of the maps and data still exists in the archives of the University of Greenwich, Chatham Maritime, on the outskirts of London, UK. The set is maintained by Robert Ridgway. Email: r.b.ridgway@greenwich.ac.uk

⁸ According to L. R. Oldeman and Darmiyati Sjarifuddin, the actual evapo-transpiration water requirement for rice is 185 mm per month. For maize it is 95 mm per month, for soybeans 85 mm and peanuts 90 mm per month. See *An Agroclimatic Map of Sulawesi*, Contributions, Central Research Institute for Agriculture, Bogor, Number 33 (1977), page 11.

⁹ See ADB TA 3957-INO (March 2005) page 9 for a description of the need for *Bank Subuh* by a poor family whose monthly expenditures are always greater than their income in Lombok, NTB province. ADB TA 3957-INO (March 2005), *The Integration of Poverty Considerations Into Decentralized Education Management, Participatory Poverty Studies in Four Locations: A Summary Report*

¹⁰ World Bank (Jan 19-20, 2005), *Indonesia: New Directions*, The World Bank Brief for the Consultative Group on Indonesia, page 74

¹¹ Suara Merdeka, 14 August 2007

¹² Samanta: Mataram, Jl. Swaramahardika IV No 23 B. Phone/fax: (0370) 635 288. Email: foundation@samanta.or.id. Web site: www.samanta.or.id.

¹³ Mr. Zet Malelak is well known as the “innovator” who promotes the use of pumps to irrigate agricultural plots in order to plant maize in Uel area. Maize production in Uel has increased significantly since this irrigation method was practiced by many farmers in Uel. Zet Malelak HP: 081339487046

¹⁴ Fufuk has been identified as caused by *Sytophyllus Mais*, *Sytophyllus Oryzae*, storage pests by Dr. Bill Ruscoe, World Bank consultant in Kupang.

Annex 12 a: MONTHLY CLIMATE DATA KOTA KUPANG
DATA MONTHLY RAINFALL KOTA KUPANG

Nama Stasiun : Sta Met El Tari Kupang Station: 470a
 Kecamatan : Maulafa location: 10° 11' South, 123° 34' East
 Kabupaten : Kupang elevation: 2 meters

Bulan / Tahun	JANUARI			FEBRUARI			MARET			APRIL			MEI			JUNI			JULI			AGUSTUS			SEPTEMBER			OKTOBER			NOPEMBER			DESEMBER			Total Rainfall
	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX				
Mean [1879-1941] Number of observations	386			347			234			65			30			10			5			2			2			17			83			232			1413
	63			63			63			63			63			63			63			63			63			63			63			63			
Mean [1972-1985] Number of observations	470			554			338			45			36			38			7			0			0			11			111			234			1844
	9			5			7			5			5			4			4			2			4			6			6			6			
1996	267	18	43	478	19	129	263	14	111	39	9	19	7	3	5	0	2	0	0	2	0	0	3	0	0	0	0	42	3	28	137	12	47	478	18	102	1711
1997	276	19	51	793	24	108	263	14	111	5	1	5	2	1	2	12	6	5	1	1	1	0	0	0	0	0	0	0	0	0	134	10	56	219	15	60	1705
1998	563	15	198	306	17	57	139	13	43	116	14	49	11	3	10	3	3	2	28	5	12	0	0	0	0	1	0	70	7	38	309	17	59	273	18	82	1818
1999	444	24	72	702	26	111	452	22	190	111	13	39	0	1	0	0	3	0	0	1	0	0	1	0	0	0	0	61	5	31	185	13	46	221	22	36	2176
2000	577	28	164	592	24	121	440	24	114	164	18	38	76	14	26	0	1	0	0	0	0	0	0	0	0	0	0	26	4	26	157	18	37	161	11	60	2193
2001	365	25	160	322	19	85	139	19	25	19	5	9	0	2	0	49	4	36	19	5	10	0	1	0	0	0	0	30	5	16	192	16	50	274	21	56	1409
2002	235	26	43	550	23	115	233	11	56	50	5	43	0	0	0	0	0	0	0	0	0	0	0	0	43	2	38	0	0	0	134	7	47	148	18	52	1393
2003	314	18	79	714	22	195	316	16	54	28	2	27	0	4	0	21	6	10	0	3	0	0	0	0	0	1	0	56	5	27	107	9	23	666	25	118	2222
2004	96	17	21	467	23	133	249	16	66	0	1	0	13	1	13	0	0	0	0	0	0	0	0	0	0	0	22	3	22	104	10	59	324	20	55	1275	
2005	253	17	79	229	13	125	198	15	46	35	8	17	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	23	6	7	92	14	33	300	24	35	1131
Mean [from 1996 through 2005]																																					1703
	339			515			269			57			11			9			5			0			4			33			155			306			
Coefficient of Variation:	45%			37%			40%			96%			215%			184%			210%						316%			73%			41%			51%			23%
Explanation	CH : Curah Hujan, RAINFALL, in mm HH : Hari Hujan, NUMBER OF RAINY DAYS MAX : Curah Hujan Maksimum, MAXIMUM RAINFALL IN ONE DAY 2 : Serious El Nino event nationwide in Indonesia 0 : Lesser El Nino event																																				

Sources:

Historical data until 1985: Regional Physical Planning Programm for Transmigration (RePProT), Review of Phase 1 Results (Tinjauan Hasil Hasil Tahap 1), Maluku and Nusa Tenggara, Volume 2, Annexes 1-5, March 1989
 Modern period: Badan Meteorologi dan Geofisika, Stasiun Meteorologi, El Tari, Kupang

ANNEX 11: List of Persons Met and Briefed, contact points, phone numbers

Location Agency, Office	Name	Phone Number
1. JAKARTA based:		
World Bank	Scott Guggenheim	021 314 8175
	Victor Bottini	081 198 9073
	IFC: Adam Sack	[021] 5299 3001
	IFC: Ernst Bethe III	0811 462 237
	IFC: Grace Ratnowati	0817 6797 009
	Ekart O Hartmann	ekart.hartmann@gmx.net
	Heinrich (Heinz) Unger	unger.heinz@gmail.com
	Mark Hayton, GTZ	022 203 2138
DSF	Office	[021] 314 8175
	Leni Dharmawan	[021] 314 8175
	Lily Hoo	0813 8523 0522
Ausaid	John Palmer (fisheries)	0813 9889 3060
	John Ackerman (agriculture)	081 1196 321
Nat'l Mgt Consultants for KDP	Ibnu Taufan (Team Leader)	0816 940 0978
	Suudi Noor (infrastructure spec)	0813 2883 3789
	Agung Hamengku Budi (microfinance)	0816 193 3579
	IT: Adi	0817 910 5478
	Anthony Torrens (M+E)	0816 961 720
	Lily Basri (trainer, met in Makassar)	0812 803 9360
	Nofrizal (trainer, met in Makassar)	0812 659 4783
	Soenoe Widjajanti (public educ spec)	081 665 3190
	Lendi Wahyu Wibowo (drafter of official documents for PMD)	
AMARTA (DAI / Usaid)	Jocevine Michelsen	0817 497 81 86
	Endah Setyorini	021 571 3548
	Mark Birnbaum	0811 193 574
	Resianri Triani	resianri.triane@dai.com
	[Asosiasi Kopi Special]	021 571 3548
	Pantjar Simatupang	0812 110 7115
MOTT MACDONALD	David Parry	+44 181 774 2000
ADB	<i>Poor Farmer Income Improvement Project (KDP model), Min Agriculture</i>	
	Eko Ananto, LitBang Pertanian [not yet]	081 1111 552; (021) 7818 446; 7883 8415
	Mr. Chong ADB consultant [not yet]	0811 865 853
	Pantja Wardhani ADB/IRM	021 251 2721
DFID	Jennifer Stuttle	(44) (20) 7023 0814
	NUSRA agroforestry: Hasbi Berliani [not yet]	081 237 52 077
SMERU	Soedarno Sumarto	[021] 391 8604; 0813 1120 1130
	Sri Kusumastuti Rahayu	0812 105 2051
IHS	Insan Harapan Sejahtera consult.	[021] 798 6750 [office]
	Peter Gardiner	0812 1053 513; [021] 797 2705 [home]
	May Ling Oey	0811 154 290

2. MIN AGRICULTURE RESEARCH, JAKARTA

Ministry of Agriculture	Ade Tunus, Staf Ahli	081 908 295 946
	Ning Pribadi	office: 021 3267 6290
		081 183 1935; [021] 780 4367
	Ratna	email: 081 218 99 335; [021] 780 4196
		Kaman Nainggolan
		0811 979 785
	Djadi Purnono, PIDRA (IFAD)	0811 987 478
	021 780 4227	pidrabimas@centrin.net.id
	Dr Mat Syukur [PUAP]	0812 940 2663
	Ato Suprpto	0811 890 667
	Tahlim	08 1111 7633

ANNEX 11: List of Persons Met and Briefed, contact points, phone numbers

Location Agency, Office	Name	Phone Number
	Titin [Food Security]	0816 721 423
	Ahmed Suryana	08 1111 7655
GAPPI [Gabungan Purasahaan Perunggasan Kamar Dagagang dan Industri]	Don P Utoyo	021 7063 8830
	Don P Utoyo	081 2940 2663
3. MAKASSAR and S Sulawesi based:		
KDP Provincial	Agusman, Kor Prov	0812 934 0365
	Momon Darsono, admin	0815 2423 9871
	Bakhtiar M A Saleh, training	0815 2414 3025
	Kartika 9secretary)	
	Mulyadi (computer operator, MIS data entry)	
	Adi Suryadi	
Bakti / Sofei [WB]	Office: Jl Dr. Soetomo No 26	0411 365 0320
	Zusanna Gosal	0813 55 11 99 80
	Suhaeni Kudus	0811 46 66 56
	Robert Brink	[0411] 365 0320
	Petrarca Karetji	081 141 5716
SADI	Suli	0811 417 677
	Rini	0811 410 3786
	Henky	0812 442 6010
	Zainal, Eda (admin)	081 2427 0971
	Bakir Ali	0812 935 9576; 0251 658 128 [Bogor home]
	Jacky Pomeroy	08 11 88 55 50; [0411] 425 2841 [office]
	Dunaidi Karmen [ADHI]	0811 470 133
ACIAR	Peter Horne	0811 468 529
	Luthfi Fatah	0815 2830 7633
5. KUPANG and NTT based:		
Bappeda	Ir Benny R. Ndoenboey	0380 822 968; 828 655
	Ibu Eva Barus	
World Bank consultant	Bill Ruscoe ruscoe@kupang.wasantara.net.id ruscoe@gmail.com awruscoe@yahoo.com	HP: 0812 377 6820 Home: (0380) 825 149 PO Box 1040, Kupang, 85010, NTT
Livestock trader [interisland]	Noh Burain	0852 3919 8642
Kor Prov consult	<i>Jl Anggur 10A, Naikoten 1, Kupang, 85118</i> Alman Hutabarat, head (transferred) Regina Tan (Ag/SADI) Christianto [M+E/SADI]	[0380] 823 937 081 339 404 289 081 2379 4622 0813 3130 8099
	Tyas, support staff Ibu Rose, secretary	
Kab KDP Consultants	Ngada/Flores, KM Kab: Edward Kabosu Ngada/Flores, KTek Kab: Bambang Sutiono TTS/Timor, KM Kab: Ibu Ida Lamabelawa TTS/Timor, KTek Kab: Dadang Agus	081 2379 8165 081 339 449 217 085 253 150 095 081 339 421 991
BPTP Naibonat [km 32 from Kupang]	Dr Joko Triastono [head] Jenny Banoet Don Bosco Ir Debora Kana Hau M. Si	081 22 751 894 081 339 333 554 081 552 72 836 (0380) 833 766; 0813 3946 7646 debora_nulik@yahoo.com

ANNEX 11: List of Persons Met and Briefed, contact points, phone numbers

Location Agency, Office	Name	Phone Number
PUSKUD	Jemari Yoseph SE, Dir Usaha	0380 831 750, 833 330
BMG meteorology Lasiana	Purwanto Apolinaris	081 338 703 762 081 339 415 708 aplinaris_gem@yahoo.com
P2AT groundwater office	John, Eduardus Serang Petrus, Hanchi	0380 832 905, 833 627
Save the Children	Chrystal Holt	0380 830 206 chrystalholt@gmail.com
NGO: Yayasan Lensa Mandiri	<i>Jl. El Tari II, No 105X, Fatululi</i> Gonzalo Sada, head Catherine Sena Alex Sena	0813 3940 7022 0811 382 250 0813 3918 9259
Ausaid office: Antara	Manning, Richard Schottler, John Ibu Henny Nggades Ulla Keech-Marx AusAID	08111 81 254 0815 1164 5684 0811 800 313
IFC	IFC: Henra Agustiana	0812 261 4165
FAO	Blasius	0813 3900 5173
World Food Program	<i>Jalan Sam Ratulangi [near Antara Office]</i>	phone: 0380 - 833 467; fax: 0380 – 825 433
PIDRA project [IFAD] upland agriculture project	Mr. Alimin Yahya Benny	? 0852 530 373 62
6. MATARAM and NTB based:		
BPMD province	<i>Jalan Pendidikan No 43</i> Dr. Joharudin, Kepala Badan Drs. I Wayan Ruspan, Bidang Ekonomi Suryadi, staff	[0370] 633 644
Kor Prov consult	<i>Jalan Sapa Pesona 66, Pagutan, Komplek Bumi Pagutan Permai</i> Ridha, Kor Prov Lulul Indradi, SMIS Aris Munandar, M+E Ibu Asdiah Triana [SADI Monev] Hasta Nugroho [SADI agribusiness]	0812 461 2785; 0819 1578 5945 [new] 0370 644 186 0813 3974 7650; 0819 1762 0612 0819 1724 6501
IFC Mataram	Giri Arnawa	0812 388 2364
KM Kab KDP	Dompu: Rusdi [not yet met] Lukman Taufik, Selong, Lombok Timur Lalu Zainuddin (Selong, Lombok Timur, former FK)	0813 3922 5388 081 854 40 96
BPTP, Narmada	Dr. Ir. Dwi Praptomo Dr. Ketut Puspadi	0812 717 7930 Email: ketutpusadi@yahoo.com HP: 081 337 429 090
Badan Urusan Ketahan Pangan NTB	Ir Wirham	0370 623 935; 081 237 83172
NGO Konsepsi [formerly was local branch of Jakarta based LPPES]	<i>Jl Bung Hatta II/4, Majeluk, Mataram</i> Eko Krismantono Junaidi Mohataquidin Rajmat Sabani	[0370] 627 386 081 803 160 899
NGO Pusat Studi Pembangunan [PSP]	<i>Jl Kesra Raya 24 Perumnas, 83115</i> Mahrin Ika Yenny	[0370] 621 086 081 915 921 436 psp-ntb@indo.net.id
NGO Samanta		

ANNEX 11: List of Persons Met and Briefed, contact points, phone numbers

Location Agency, Office	Name	Phone Number
Car Rental + Driver	Made	0812 3725 415

Annex 12 b: DATA CURAH HUJAN BULANAN KABUPATEN TIMOR TENGAH SELATAN
MONTHLY CLIMATE DATA KAB TIMOR TENGAH SELATAN (So'e)

Nama Stasiun : SMU Karya SoE
 Kecamatan : Mollo Selatan
 Kabupaten : T T S

Station: 471a
 location: 09 52' South, 124 16' East
 elevation: 1000 meters

Bulan / Tahun	JANUARI			FEBRUARI			MARET			APRIL			MEI			JUNI			JULI			AGUSTUS			SEPTEMBER			OKTOBER			NOPEMBER			DESEMBER			Total Rainfall
	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX				
Mean [1922-1984] Number of observations	251			240			227			117			83			45			47			11			16			49			137			260			1483
	50			51			50			49			49			48			44			42			40			46			46			47			
1996	274	20	54	415	18	70	166	13	55	42	10	12	82	8	20	10	2	7	5	1	5	68	3	36	0	0	0	14	3	10	212	8	60	489	22	88	1777
1997	506	17	80	535	22	80	61	3	22	19	6	5	40	6	12	33	3	20	21	3	15	0	0	0	0	0	0	0	0	14	4	5	520	22	95	1749	
1998	158	11	78	297	18	72	223	14	40	288	15	120	97	9	28	31	5	8	190	5	75	0	0	0	2	1	2	120	7	35	438	24	48	145	15	24	1989
1999	596	26	100	226	13	55	590	25	63	298	12	74	155	11	32	249	11	43	53	6	12	23	3	15	0	0	0	123	6	67	260	15	76	351	17	68	2924
2000	284	15	65	307	17	42	459	18	78	512	14	98	376	16	121	52	7	19	0	0	0	0	0	0	0	0	0	156	6	43	283	15	86	125	6	55	2554
2001	509	15	156	136	9	28	686	19	80	130	4	57	0	0	0	62	5	40	0	0	0	0	0	0	57	2	45	245	8	89	316	9	72	225	6	51	2366
2002	814	18	107	387	18	90	306	10	85	289	6	175	30	5	15	0	0	0	0	0	0	0	0	0	84	2	68	0	0	0	222	6	65	390	9	91	2522
2003	230	9	76	290	8	157	353	11	100	69	10	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	157	2	80	266	3	98	1216	17	223	2581	
2004	101	15	29	158	7	41	101	13	15	161	11	31	28	2	20	37	3	20	25	2	123	0	0	0	7	1	7	27	1	27	202	3	90	147	11	29	994
2005	93	7	24	248	17	34	35	5	16	34	4	11	29	4	16	64	8	27	195	16	41	10	1	10	12	1	12	7	2	4	47	4	21	95	13	28	869
2006	93	7	24	248	17	34	35	5	16	34	4	11	29	4	16	64	8	27	195	16	41	10	1	10	12	1	12	7	2	4	47	4	21	95	13	28	869
Mean [from 1996 through 2006]	333			295			274			171			79			55			62			10			16			78			210			345			1927

Explanation: CH : Curah Hujan, RAINFALL
 HH : Hari Hujan, NUMBER OF RAINY DAYS
 MAX : Curah Hujan Maksimum, MAXIMUM RAINFALL IN ONE DAY
 2 : Serious El Nino event
 0 : Lesser El Nino event

Sources: Historical data until 1985: RePProT, Review of Phase 1 Results (Tinjauan Hasil Hasil Tahap 1), Maluku and Nusa Tenggara, Volume 2, Annexes 1-5, March 1989
 Modern period: Badan Meteorologi dan Geofisika, Stasiun Meteorologi, El Tari, Kupang

Annex 12 c: DATA CURAH HUJAN BULANAN KABUPATEN TIMOR TENGAH UTARA
MONTHLY CLIMATE DATA KAB TIMOR TENGAH UTARA (Kefa)

Nama Stasiun : Oeninaat Station: 473a
Kecamatan : Kota Kefa location: 09° 27' South, 124° 28' East
Kabupaten : TTU elevation: 1000 meters

Bulan / Tahun	JANUARI			FEBRUARI			MARET			APRIL			MEI			JUNI			JULI			AGUSTUS			SEPTEMBER			OKTOBER			NOPEMBER			DESEMBER		
	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX			
Mean [1931-1983]	229			230			180			93			93			53			33			10			5			20			131			265		
Number of observations	24			24			24			23			23			23			23			23			23			23			23			23		
1996	209	23	42	162	3	61	58	10	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	133	7	59	397	19	46	
1997	285	19	66	473	23	45	24	5	12	30	8	6	39	4	15	31	13	6	0	0	0	0	0	0	0	0	0	0	0	41	4	26	102	13	33	
1998	179	9	34	160	12	36	87	9	21	56	6	19	78	5	34	14	1	14	21	3	14	0	0	0	17	1	17	35	2	24	133	12	31	168	11	40
1999	210	13	58	243	9	52	169	10	26	112	13	21	56	2	45	8	4	6	30	3	16	0	0	0	0	0	0	10	3	4	112	13	26	155	17	39
2000	183	22	36	696	15	63	732	14	98	109	16	32	661	15	97	153	5	55	0	0	0	0	0	0	0	0	0	1	1	1	105	9	36	206	15	43
2001	250	11	52	248	11	40	22	7	9	22	5	7	32	8	6	62	7	10	30	3	14	0	0	0	0	0	0	96	4	34	146	6	51	258	15	50
2002	717	14	69	955	15	102	593	9	72	90	7	22	621	2	364	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	9	186	20	111	
2003	390	19	72	955	15	72	322	6	64	242	8	43	0	0	0	352	7	62	32	5	29	6	1	6	4	1	4	40	1	40	64	5	34	78	8	34
2004	88	9	24	182	12	41	502	11	54	36	11	9	56	3	22	56	2	34	0	0	0	0	0	0	0	0	0	2	1	2	93	7	43	214	15	58
2005	298	14	50	386	15	44	56	8	18	2	1	2	43	3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	9	36	206	15	62	
Mean [1996-2005]	281			446			257			70			159			68			11			1			2			18			95			197		

Coefficient of Variation:

Explanation:

CH : Curah Hujan, RAINFALL
HH : Hari Hujan, NUMBER OF RAINY DAYS
MAX : Curah Hujan Maksimum, MAXIMUM RAINFALL IN ONE DAY
2 Serious El Nino event
0 Lesser El Nino event

Sources:

Historical data until 1985: RePProT, Review of Phase 1 Results (Tinjauan Hasil Hasil Tahap 1), Maluku and Nusa Tenggara, Volume 2, Annexes 1-5, March 1989
Modern period: Badan Meteorologi dan Geofisika, Stasiun Meteorologi, El Tari, Kupang

Annex 12 d: DATA CURAH HUJAN BULANAN KABUPATEN BELU
MONTHLY CLIMATE DATA KAB BELU (Atambua)

Nama Stasiun : Atambua Station: 474a
Kecamatan : Kota Atambua location: 09° 06' South, 124° 54' East
Kabupaten : Belu elevation: 325 meters

Bulan / Tahun	JANUARI			FEBRUARI			MARET			APRIL			MEI			JUNI			JULI			AGUSTUS			SEPTEMBER			OKTOBER			NOPEMBER			DESEMBER			Total
	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	Rainfall			
Mean [1920-1984] Number of observations	292			248			234			127			56			35			22			7			14			36			134			242	1447		
	38			37			37			36			36			33			32			31			32			32			33			33			
1996	310	9	93	306	16	52	710	13	140	77	4	25	56	2	31	0	0	0	0	0	0	0	0	0	0	0	106	4	35	282	8	90	1903	20	515	3750	
1997	939	19	178	1124	14	197	270	17	51	78	16	10	0	0	0	64	3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	519	15	79	2994	
1998	258	9	115	459	12	163	399	18	82	559	16	80	106	8	41	107	5	37	38	5	21	0	0	0	0	0	267	11	95	508	18	80	312	12	90	3013	
1999	629	21	127	908	24	252	354	13	64	351	11	80	0	0	0	42	2	35	0	0	0	0	0	0	0	0	105	3	51	63	2	38	521	17	91	2973	
2000	243	26	26	69	13	26	65	9	15	66	10	16	48	9	22	0	0	0	16	2	9	0	0	0	0	0	0	0	0	13	4	4	213	16	33	733	
2001	137	22	19	189	18	29	123	8	33	113	14	35	4	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96	15	18	175	14	55	837	
2002	261	18	70	284	23	80	153	16	35	226	13	56	36	6	20	0	0	0	0	0	0	0	0	0	2	1	2	17	3	10	65	12	22	259	14	90	1303
2003	261	18	70	284	23	80	153	16	32	226	13	56	36	6	20	0	0	0	0	0	0	0	0	0	2	1	2	17	3	10	65	12	22	259	14	90	1303
2004	462	16	112	1062	21	157	479	19	113		4	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	353	14	38	2356	
2005	285	18	97	145	15	84	120	12	46	56	9	31	27	8	11	6	2	4	0	0	0	0	0	0	0	0	93	2	93	180	12	94	420	17	81	1332	
Mean [1996-2005]	379			483			283			195			31			22			5			0			0			61			127			493			2079

Coefficient of Variation: 63% 82% 72% 87% 108% 171% 232% 211% 142% 126% 103% 52%

Explanation: CH : Curah Hujan, RAINFALL
HH : Hari Hujan, NUMBER OF RAINY DAYS
MAX : Curah Hujan Maksimum, MAXIMUM RAINFALL IN ONE DAY
2 Serious El Nino event
0 Lesser El Nino event

Sources: Historical data until 1985: RePProT, Review of Phase 1 Results (Tinjauan Hasil Hasil Tahap 1), Maluku and Nusa Tenggara, Volume 2, Annexes 1-5, March 1989
Modern period: Badan Meteorologi dan Geofisika, Stasiun Meteorologi, El Tari, Kupang

Annex 12 e: MONTHLY CLIMATE DATA KAB NGADA, PULAU FLORES
DATA CURAH HUJAN BULANAN KABUPATEN NGADA

Nama Stasiun	: Bajawa	Station: 465
Kecamatan	: Ngadabawa	location: 08° 47' South, 120° 58' East
Kabupaten	: Ngada	elevation: 1250 meters

Bulan / Tahun	JANUARI			FEBRUARI			MARET			APRIL			MEI			JUNI			JULI			AGUSTUS			SEPTEMBER			OKTOBER			NOPEMBER			DESEMBER			Total Rainfall
	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX	CH	HH	MAX				
Mean [1910-1978] Number of observations	364			335			300			152			91			46			50			23			14			53			140			315			1883
	48			47			47			47			48			45			44			43			43			46			46			41			
1996	290	17	70	414	19	64	131	8	80	36	5	17	42	10	25	7	1	7	0	0	0	23	3	23	0	0	0	81	6	38	143	12	35	553	22	145	1720
1997	321	20	37	402	15	100	50	3	35	134	8	60	66	1	66	80	13	11	44	6	32	0	0	0	0	0	0	0	0	0	7	1	7	329	14	47	1433
1998	241	18	40	331	16	69	215	14	30	113	3	89	188	7	67	0	0	0	214	9	75	19	3	12	94	6	27	153	8	71	418	21	47	285	16	49	2271
1999	433	21	36	335	18	32	314	20	35	175	18	21	20	3	11	0	0	0	0	0	0	0	0	0	0	0	0	28	2	17	118	6	36	376	13	64	1799
2000	361	18	45	353	15	42	669	22	55	298	10	42	6	2	4	6	2	4	0	0	0	0	0	0	0	0	0	15	3	8	120	7	36	288	10	60	2116
2001	307	9	69	152	9	39	314	14	40	57	5	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	4	28	540	14	100	368	15	70	1800
2002	507	20	62	119	15	14	241	15	31	192	15	41	25	5	11	79	9	15	210	11	28	17	2	9	76	4	38	37	2	21	59	2	32	257	22	31	1819
2003	531	18	72	437	20	65	236	11	49	297	6	63	118	13	21	107	10	37	91	7	29	0	0	0	0	0	0	7	3	7	0	0	0	495	14	76	2319
2004	737	18	89	446	22	58	380	19	64	428	13	111	178	18	49	214	13	34	51	2	43	68	2	61	0	0	0	59	4	25	216	5	64	376	16	48	3153
2005	568	17	84	213	21	27	505	17	84	69	8	15	18	2	13	166	9	31	100	6	28	10	3	5	3	1	3	133	6	47	414	10	121	485	17	68	2684
Mean [1996-2005]	430			320			306			180			66			66			71			14			17			58			204			381			2111
Coefficient of	36%			37%			59%			70%			107%			118%			117%			154%			208%			90%			93%			26%			24%

Coefficient of Variation:		-66%	37%	59%	70%
Explanation:	CH	: Curah Hujan , RAINFALL			
	HH	: Hari Hujan , NUMBER OF RAINY DAYS			
	MAX	: Curah Hujan Maksimum , MAXIMUM RAINFALL IN ONE DAY			
	2	Serious El Nino event			
	0	Lesser El Nino event			

Sources: Historical data until 1985: RePPoT, Review of Phase 1 Results (Tinjauan Hasil Hasil Tahap 1), Maluku and Nusa Tenggara, Volume 2, Annexes 1-5, March 1989
Modern period: Badan Meteorologi dan Geofisika, Stasiun Meteorologi, El Tari, Kupang

Annex 13: Basic Prices of Logs, from Perum Perhutani, Java

BASIC PRICE OF SENGON (*Albizzia, Paraserianthes falcataria*)

GRADE	LENGTH (M3)	unit	Price per M3/sm (IDR x 1,000)					
			DIAMETER (CM)					
			5 - 9	10 - 15	16 - 19	20 - 29	30 - 39	40 - Up
FIRST	> 1,00	M3	-	102	217	-	-	-
	1,00 - 1,90	"	-	-	-	287	323	374
	> 2,00	"	-	-	-	332	369	405
SECOND	> 1,00	M3	-	56	199	-	-	-
	1,00 - 1,90	"	-	-	-	265	297	340
	> 2,00	"	-	-	-	-	-	-
	fire wood		5 - 9	10 - 15	> 16			
	1,00	Sm	30					
	0,50	"		30				
	< 1,00	"			47			

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BASIC PRICE OF JABON (*Anthocephalus sp.*, Laran Tree, Kadam) LOGS

GRADE	LENGTH (M3)	unit	Price per M3/sm (IDR x 1,000)					
			DIAMETER (CM)					
			5 - 9	10 - 15	16 - 19	20 - 29	30 - 39	40 - Up
FIRST/PERTAMA	> 1,00	M3	-	73	155	-	-	-
	1,00 - 1,90	"	-	-	-	205	239	277
	> 2,00	"	-	-	-	237	273	300
SECOND/ KEDUA	> 1,00	M3	-	40	142	-	-	-
	1,00 - 1,90	"	-	-	-	189	220	252
	> 2,00	"	-	-	-	217	248	277
	fire wood		5 - 9	10 - 15	> 16			
	1,00	Sm	20					
	0,50	"		20				
	< 1,00	"			31			

Marketing Director
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Annex 14: Prices of Mahogany Logs, according to Perum Perhutani [2007]

BASIC PRICE of MAHOGONY LOG

For Java Forest Management Units

GRADE	LENGTH (M)	PRICE PER m3 (x 1,000)					
		DIAMETER : IN CM					
		< 19	20-29	30-39	40-49	50-59	60-up
First	0,50 - 0,90	332	554	830	1,163	1,329	1,536
	1,00 - 1,90	454	757	1,362	1,907	2,179	2,519
	2,00 - 2,90	554	923	1,661	2,325	2,657	3,072
	3,00 - 3,90	637	1,061	1,910	2,674	3,056	3,533
	4,00 - keatas	692	1,153	2,076	2,906	3,322	3,841
Second	0,50 - 0,90	297	495	742	1,039	1,188	1,373
	1,00 - 1,90	406	676	1,217	1,704	1,948	2,252
	2,00 - 2,90	495	825	1,485	2,079	2,375	2,747
	3,00 - 3,90	569	949	1,707	2,390	2,732	3,159
	4,00 - keatas	619	1,031	1,856	2,598	2,969	3,433
Third	0,50 - 0,90	252	419	629	881	1,007	1,164
	1,00 - 1,90	344	573	1,032	1,444	1,651	1,909
	2,00 - 2,90	419	699	1,258	1,761	2,013	2,328
	3,00 - 3,90	482	804	1,447	2,026	2,315	2,677
	4,00 - keatas	524	874	1,573	2,202	2,516	2,910
Fourth	0,50 - 0,90	211	352	528	740	845	978
	1,00 - 1,90	289	481	867	1,213	1,430	1,647
	2,00 - 2,90	352	587	1,057	1,480	1,744	2,008
	3,00 - 3,90	405	675	1,215	1,702	2,005	2,309
	4,00 - keatas	440	734	1,321	1,850	2,180	2,510

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Annex 15: Timber Prices for *Dalbergia* Logs

Source: Perum Perhutani web-site, January 2008

15a. Selling Price for SONOBKIT (*Dalbergia Latifolia*, East Indian Rosewood) Logs

GRADE	LENGTH (M3)	PRICE PER M3 (1000s RUPIAH)					
		DIAMETER (CM)					
		> 19	20 - 29	30 - 39	40 - 49	50 - 59	60 +
First	0,50 - 0,90	212	354	590	767	944	1,150
	1,00 - 1,90	354	590	983	1,278	1,574	1,918
	2,00 - 2,90	472	787	1,311	1,705	2,098	2,557
	3,00 - 3,90	519	865	1,442	1,875	2,307	2,813
	4,00 +	547	912	1,520	1,978	2,434	2,966
Second	0,50 - 0,90	195	325	542	704	867	1,056
	1,00 - 1,90	325	542	903	1,173	1,445	1,760
	2,00 - 2,90	433	722	1,204	1,565	1,925	2,348
	3,00 - 3,90	477	795	1,324	1,721	2,118	2,582
	4,00 +	503	838	1,397	1,815	2,235	2,723
Third	0,50 - 0,90	169	281	469	610	751	915
	1,00 - 1,90	282	470	783	1,016	1,252	1,525
	2,00 - 2,90	375	626	1,043	1,355	1,668	2,033
	3,00 - 3,90	413	688	1,147	1,491	1,835	2,236
	4,00 +	435	726	1,210	1,573	1,936	2,358
Fourth	0,50 - 0,90	130	217	362	470	578	704
	1,00 - 1,90	217	362	603	783	964	1,175
	2,00 - 2,90	289	482	803	1,044	1,285	1,565
	3,00 - 3,90	318	530	883	1,149	1,413	1,722
	4,00 +	335	558	931	1,211	1,490	1,816

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Annex 15: Timber Prices for *Dalbergia* Logs

Source: Perum Perhutani web-site, January 2008

15b. Selling Price for SONOKELING (*Dalbergia sp*, Javanese Palissander) Logs

GRADE	LENGTH (M3)	PRICE PER m3 (IDR x 1,000)					
		DIAMETER (CM)					
		> 19	20 - 29	30 - 39	40 - 49	50 - 59	60 +
First	0,50 - 0,90	318	531	884	1,150	1,416	1,725
	1,00 - 1,90	531	885	1,475	1,917	2,361	2,877
	2,00 - 2,90	708	1,180	1,967	2,557	3,147	3,825
	3,00 - 3,90	779	1,298	2,163	2,812	3,461	4,219
	4,00 +	821	1,368	2,280	2,966	3,650	4,450
Second	0,50 - 0,90	292	487	812	1,056	1,300	1,583
	1,00 - 1,90	488	813	1,355	1,760	2,167	2,640
	2,00 - 2,90	650	1,083	1,806	2,348	2,888	5,322
	3,00 - 3,90	715	1,192	1,986	2,581	3,178	3,872
	4,00 +	754	1,257	2,095	2,723	3,352	4,084
Third	0,50 - 0,90	253	422	703	915	1,126	1,372
	1,00 - 1,90	423	704	1,174	1,525	1,877	2,287
	2,00 - 2,90	563	938	1,564	2,032	2,503	3,049
	3,00 - 3,90	619	1,032	1,721	2,237	2,753	3,354
	4,00 +	653	1,089	1,814	2,359	2,903	3,537
Fourth	0,50 - 0,90	195	325	542	706	867	1,056
	1,00 - 1,90	325	542	904	1,174	1,446	1,762
	2,00 - 2,90	434	723	1,204	1,566	1,928	2,348
	3,00 - 3,90	477	795	1,324	1,723	2,119	2,583
	4,00 +	503	838	1,396	1,816	2,235	2,725

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Annex 15: Timber Prices for *Dalbergia* Logs

Source: Perum Perhutani web-site, January 2008

15c. Price for SONO KEMBANG (*Pterocarpus Indicus*, Amboyna, Andaman Redwood) Logs

GRADE	LENGTH (M3)	PRICE PER m3 (IDR x 1,000)					
		DIAMETER (CM)					
		> 19	20 - 29	30 - 39	40 - 49	50 - 59	60 +
First	0,50 - 0,90	159	265	442	575	708	862
	1,00 - 1,90	265	442	737	958	1,180	1,439
	2,00 - 2,90	354	590	983	1,278	1,574	1,918
	3,00 - 3,90	389	49	1,081	1,406	1,730	2,109
	4,00 +	410	684	1,140	1,483	1,825	2,225
Second	0,50 - 0,90	146	244	406	528	650	792
	1,00 - 1,90	244	406	677	880	1,084	1,320
	2,00 - 2,90	325	542	903	1,174	1,444	1,761
	3,00 - 3,90	358	596	993	1,290	1,589	1,936
	4,00 +	377	629	1,048	1,361	1,676	2,042
Third	0,50 - 0,90	127	211	352	457	563	686
	1,00 - 1,90	211	352	587	762	939	1,143
	2,00 - 2,90	281	469	782	1,016	1,251	1,525
	3,00 - 3,90	310	516	860	1,118	1,376	1,677
	4,00 +	327	544	907	1,179	1,452	1,769
Fourth	0,50 - 0,90	98	163	271	353	433	528
	1,00 - 1,90	163	271	452	587	723	881
	2,00 - 2,90	217	361	602	783	964	1,174
	3,00 - 3,90	238	397	662	861	1,060	1,292
	4,00 +	251	419	698	908	1,117	1,362

Direktur Pemasaran,
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