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## CHAPTER 1. PRICE AND WELFARE DYNAMICS IN RURAL MADAGASCAR

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### Introduction

This first chapter discusses the situation of prices and welfare in rural Madagascar through an analysis of the data on the availability and prices of goods and of the perceptions of evolutions in welfare. By comparing agricultural wages and consumer prices, we are also able to deduct conclusions on the evolution of the welfare of one of the poorest groups in rural areas, i.e. the unskilled wage laborers.

### 1. Transport prices

*a. Transport costs have risen steadily since 2001. They were in 2004 30% higher than in 2001 and 13% higher than in 2003. This seems mostly due to changes in the oil prices.*

Oil prices have gone up significantly in international markets in the last year. The price per barrel has been hovering around 50\$ in recent months. This increase in oil prices combined with the devaluation of the local currency<sup>1</sup> has not been without consequences in Madagascar as the prices of gasoil in local currency more than doubled compared to two years ago.<sup>2</sup>

The increase in gasoil prices seem to have led to a steady increase in transport costs since 2001. We asked in the commune survey how much it would cost to transport a bag of 50 kgs of rice from the commune to the nearest urban center.<sup>3</sup> The results in Figure 1 show that prices in the dry season increased by 30% compared to three years ago. While the average price difference in transport costs between wet and dry season is 14%, the price increase for both periods from 2001 to 2004 is similar in magnitude.

*b. Government interventions might have reduced the price hikes as the travel time between communes and major towns declined by 10% in the country overall. The population of about one third of the communes is able to travel faster to major towns compared to 3 years ago.*

The government made transport infrastructure improvement one of the key policies in their poverty reduction strategy paper (PRSP). The government further liberalized the transport market and gave tax breaks for the import of trucks. While it is difficult to separate out the effects of the individual interventions, these investments seem to have paid off and might have reduced the increase of transport costs.

The overall time to travel to major towns was reduced by 1,1 hour in the dry season and 1,7 hours in the rainy season. Overall, it decreased from 13,3 hours to 12,2 hours. These numbers indicate to what extent the situation changed but they also show the work still ahead as most communes can still be considered quite remote. In 32% of the communes, a reduction of the travel time was noticed. This compares to an increase of travel time in 4% of the communes. So, while transport costs in the country overall increased, physical remoteness decreased.

### 2. Prices of consumption goods

*a. Prices of consumption goods have risen significantly since last year. This is especially so for the imported goods as their price rose by about 35%. The rise seems due to changes in exchange rates.*

We will look at the evolution of prices of different types of consumption goods. To make interpretation easier, we separate between imported goods and locally produced goods. Figure 2 shows the average price evolution of the imported goods, represented by sugar, kerosene and vegetable oil (although the last one is locally bottled). The price

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<sup>1</sup> The exchange rate depreciated from about 1200 Ariary/\$ at the end of 2003 to 2000 Ariary/\$ at the end of 2004, i.e. a change of 40%.

<sup>2</sup> Prices for fuel were 1104 Ariary/l in January 2003. This compares to 1738 Fmg/l in January 2005, i.e. an increase of 57%, and to 840 Fmg/l at the end of 2002, i.e. an increase of 107%.

<sup>3</sup> Defined as the capital of the province as well as Morondava, Fort Dauphin and Antsirabe.

increase compared to the same period last year is 35%, 41% and 30% respectively.<sup>4</sup>

*b. The prices of locally produced products are up but by a lesser percentage of about 20%.*

Figure 3 shows the price evolution of some locally produced goods. They include salt, charcoal and meat. Their prices increased by 15%, 18% and 20% at the end of 2004 compared to the end of 2003. While their prices increased, due to the higher cost of primary products and transport, the price hikes are lower than those of imported goods. Finally, some consumption goods, such as the socially marketed Sur'Eau, did not change prices over the period studied.

### 3. Prices of rice

*a. Prices of rice at the end of 2004 almost doubled compared to the same period of the previous year.*

The price of rice, the most important staple in Madagascar, increased by 91% for the country as a whole when we compare the lean period price of 2003 and 2004. The large price rise is found consistently in all provinces (Figure 4). Compared to the lean period of 2003, the harvest prices (April-June) seem to have changed very little. This is abnormal as rice prices normally decline significantly after harvest (Minten and Barrett, 2005; Moser *et al.*, 2004).

The largest price rise was found in the province of Fianarantsoa - also the poorest province of Madagascar (Razafindravonona *et al.*, 2001) - where rice prices in the lean period this year were almost as expensive as in the province of Antsiranana, which has traditionally the most expensive rice in the country. The cheapest rice is found in the province of Mahajanga (Map 1). This might be explained through the harvesting at the end of the year in some parts of the province (such as the Marovoay area). It is also explained by the bad transport conditions that limit rice exports during the wet season.

There is no or little change in the availability of imported rice in the rural communes compared to last lean period. Imported rice was and is available in about one third of the rural communes. It seems that incentives for imports towards rural communes have not changed compared to last year.

Imported rice is most readily available in the provinces of Antananarivo (because of easy access) and Antsiranana (because of its higher wealth and demand). When imported rice is available, prices differ little from those for local rice. Imported rice prices are lowest in Antananarivo and highest in the provinces of Toliara and Antsiranana. These price differences reflect differences in transport costs and market access. Imported rice is also more readily available in the lean period compared to the harvest period.

*b. The price hike in 2004 seems due to bad production because of the effect of the cyclones and due to the increase in international prices. The majority of the rural - as well as urban - population suffers from these high prices in the lean period.*

The price hike in rice prices seems to be explained by a combination of factors. First, the overall rice price in Madagascar is linked with the international price as Madagascar imports each year about 200,000 to 300,000 tons of white rice. Second, as exchange rates depreciated, this further led to an increase of the price in local currency. Third, the cyclones Gafilo and Elita had a significant negative effect on the local production level. The majority of the communes state that they were hit by at least one of these cyclones and that harvest levels were affected for a large part of the population. As rice prices are in a significant number of communes formed through local production conditions only, this might have led to further increases.

Most people in rural areas are net buyers of agricultural products in the lean period. This is especially so for rice. A question was asked to the percentage of people that are net buyers or net sellers of rice during the four quarters of last year. The numbers illustrate the large seasonal swings. About half of the rural households were stated to be sellers of rice in the harvest period (Figure 5). However, 70% of the rural population is estimated to be a buyer of rice during the lean period and only 8% of the households sell rice. While this pattern of selling and buying is the same each year, the numbers are a bit more extreme this year (Figure 5).

Malagasy communes also show a pattern of seasonal flow reversals in rice. While 66% of the communes state to have exported rice after the main harvest in April-June, 51% of the communes imported rice at the end of the year (Figure 5). These statistics show to what extent also rural areas are currently suffering from the high price of rice and other agricultural products as they are often net buyers in this period.

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<sup>4</sup> This survey confirms the price hikes noted by INSTAT in urban areas. INSTAT estimates price inflation in 4 urban areas between November 2003 and November 2004 at 27% (INSTAT, Nouveaux Indices à la Consommation, December 2004).

*c. In response to this price hike, local and central authorities started to intervene in rice markets. The central government negotiated the import of rice from Thailand and distributed it at a fixed price of 700 Ariary per kg, significantly below the market price.*

As the rice prices started increasing and the welfare effects of this increase were apparent, the government tried to put downward pressure on rice prices. For example, the Minister of Commerce negotiated a deal with Thailand for the import of 100,000 tons of rice at the price of 260\$/ton into Madagascar. It has been reported that about 40% of that rice has currently arrived in Madagascar.

This rice is being distributed by private companies at the price of 700 Ariary per kilo, i.e. significantly below market prices. This has led to huge demands for this type of imported rice. The government therefore resorted in general to a rationing scheme: a limited quantity is sold per person (3 to 5 kg) and significant opportunity costs are required for queuing. While the imported rice was for sure welcome, the distribution has however been largely focused on the big urban centers. This rice is rare in the smaller urban centers and non-existent in rural areas. There have also been complaints about the quality of the imported rice. In response, households that have access to this rice often mix the imported with locally produced rice.

*d. Local authorities have in some areas forbidden the export of rice from their fivondronana.*

In an effort to control price hikes in their regions, some local authorities (often the 'sous-prefet') have started to prohibit or limit the export of rice from their fivondronana through the use of 'barrières économiques'. For example, traders that export rice from the Lac Aloatra area need a special authorization to export rice to Antananarivo. Mostly only larger traders and traders that are original from the area itself are given this type of permission. In some areas in the province of Antsiranana and Mahajanga, rice trade is limited to 5 bags per truck. This is for example the case in the Sofia region (the fivondronana of Befandriana Nord, Madritsara, Bealanana) and the Sava region (the fivondronana of Vohemar and Andapa).

These prohibitions in rice trade have had the intended effect and have led to a relatively lower rice price in these fivondronana where the prohibition of rice exports was the case. On the other hand, it led to higher prices in rice importing regions. For example, while transport costs between Andapa and Sambava

are about 80 Ariary per kg, rice prices were in the latter about 800 Ariary per kg higher. Prices in Sambava were reported to be almost as high as 4000 Ariary/kg at the end of December. These local regulations might therefore have exacerbated rice price volatility in the country as a whole.

#### **4. Prices of other agricultural products**

*a. The price hike did not only happen for rice. The rise was almost equally high in other agricultural produce markets.*

Given the importance of rice in the diet and agricultural production systems in Madagascar, it seems that it is the price setter for agricultural produce (Ravelosoa *et al.*, 1999). Prices of other agricultural products followed the trend that was noticed for rice and paddy (Figure 6). The price of maize increased by 58% compared to the same period of the year before while the price of cassava increased by 69%.

*b. The price of cattle increased by 33% between the end of 2003 and the end of 2004.*

Cattle are an important asset in rural areas. The prices might be an important indication of the extent of a general inflationary environment. Their average prices increased by one third compared to the same period last year. This hike was the same in about all the provinces, except for the province of Antsiranana where the prices were high, but stable.

#### **5. Agricultural wages**

*a. Agricultural wages show a nominal increase. However, wages do not follow the inflationary trend of 'Produits de Première Nécessité' (PPN) and food products, indicating a reduction of purchasing power of the poorest part of the population in 2004 compared to the same period one year and four years earlier.*

Agricultural wage labor is mostly done by the poorest group of the rural population (Minten and Barrett, 2005; Randrianarison, 2003). The evolution of wages is therefore an indication of poverty in rural areas (Map 2). Overall, nominal agricultural wages show an upward trend in most provinces compared to the same period last year (Figure 7): wages are up by 22% for males compared to 20% for females. An analysis by province shows that the only exception is the province of Antsiranana where wages are stable or on the decline.

Table 1: Evolution of purchasing power of agricultural wage laborers

Equivalent of a day of wage labor	Oct- Dec 2000	Oct- Dec 2003	Oct- Dec 2004	Change 2004-03 (%)
...in kgs of rice	3.08	2.81	1.78	-37%
...in kgs of cassava		6.98	5.00	-28%
...in kgs of sugar	1.30	1.19	1.07	-10%
...in kgs of salt	4.90	4.08	4.23	+4%
...in l of vegetable oil		0.89	0.82	-8%
...in l of kerosene		1.69	1.45	-14%

Source: Commune survey, 2004 and Commune Census, 2001

To get at the evolution of purchasing power of agricultural laborers, we divide the wages they earn by the price of consumption goods. We see a clear worsening of purchasing power in rural areas compared to the situation of one year and four years earlier. With their current salary, agricultural laborers can buy 37% less rice, 28% less cassava, 8% less vegetable oil, 10% less sugar, 14% less kerosene but 4% more salt than with the salary they earned one year ago (Table 1). Compared to four years ago, they are even worse off. As we do not know the exact consumption bundle of agricultural laborers, these numbers are a crude indication of the evolution of their purchasing power. In any case, the ratios indicate that the effects of the shocks have been seriously felt in rural areas and continue to show their impact now.

*b. Using agricultural wages as an indicator, the province of Fianarantsoa is worst off.*

A regional analysis of the ratio of wage over rice (as indicator of food prices) and over sugar (as indicator of PPN) in Table 2 shows that the province of Fianarantsoa seems to be in worst shape. While this province was before already the poorest of Madagascar as shown by Razafindravonona *et al.* (2001) and as shown by the lowest level of purchasing power of wage laborers (their salary only buys them 2.2 kgs of rice compared to 3.1 kgs nationally), this situation has further deteriorated over the last four years along the other provinces as indicated by the high change in purchasing power in rice (a decline of 46% compared to 42% nationally) (Map 3 and 4 show the situation in 2004 and 2000 by region). Wage laborers in Fianarantsoa earn 34% less, in rice equivalents, than the national average.

Smaller decreases over the period 2000-2004 were noticed with respect to sugar equivalents. If measured in these units, purchasing power declined by 17% nationally. The strongest decreases of purchasing power in terms of rice as well as sugar were noticed in the Antsiranana province as they declined by 60% and 43% respectively. However, the province of Fianarantsoa is still the poorest, even in sugar equivalents.

Table 2: Level and evolution of purchasing power of agricultural wage laborers by province (comparing Oct-Dec 2000 and 2004)

Province	... in kgs of rice		
	Oct-Dec 2000	Oct-Dec 2004	Change (%)
Antananarivo	2.69	2.01	-25%
Fianarantsoa	2.19	1.18	-46%
Toamasina	2.77	1.89	-32%
Mahajanga	4.05	2.31	-43%
Toliara	3.28	2.29	-30%
Antsiranana	5.12	2.06	-60%
<i>Madagascar</i>	<i>3.07</i>	<i>1.78</i>	<i>-42%</i>

Province	... in kgs of sugar		
	Oct-Dec 2000	Oct-Dec 2004	Change (%)
Antananarivo	1.28	1.23	-4%
Fianarantsoa	0.86	0.78	-10%
Toamasina	1.24	1.02	-17%
Mahajanga	1.63	1.15	-29%
Toliara	1.29	1.45	+13%
Antsiranana	2.20	1.24	-43%
<i>Madagascar</i>	<i>1.30</i>	<i>1.07</i>	<i>-17%</i>

Source: Commune survey, 2004 and Commune Census, 2001

*c. Different factors explain the difference in purchasing power of the different communes. They include among others remoteness, education of the population, the type of agriculture, population density and access to cattle.*

'Real' wages, measured as wages divided by rice prices, in the last quarter of the year were regressed on different determinants of demand and supply. The results (not reported) indicate the significant effects of remoteness. The least remote areas have real wages about 25% higher than the most remote ones in the lean season. Higher population density leads to lower wages. A doubling of the population density reduces the real wages by about 9%.

The presence of labor-intensive cash crops, cloves and vanilla, also leads to higher real wages. Curiously, mining activities do not have the same effect. If anything, they have a negative effect, likely because the prospect of finding valuable stones induced excess seasonal migration by the poor, creating an overabundance of unskilled laborers relative to the limited absorptive capacity of the mining industry. The resulting seasonal excess supply of workers puts downward pressure on overall real wage levels.

Finally, more livestock in the commune improves the purchasing power of the agricultural wage laborers. This might be through the important indirect effects of livestock on rice productivity (Minten and Barrett, 2005).

## 6. Impact on welfare

a. *The majority of communes say that welfare indicators are now worse than last year and three years ago. Purchasing power has declined significantly for most communes.*

While the previous analysis gives us an idea of how the situation of the poorest in rural areas changed after the large shocks in 2004, we also want to know how the population as a whole fared. We tried to get a sense of the extent of the change through the use of qualitative questions for different welfare indicators.

A first question was asked on how the focus group felt the purchasing power of the people in the commune evolved. They had to rank the evolution from 1 to 5, corresponding to a ranking of 'a lot higher' to 'a lot lower' (Table 3). The results indicate the deteriorating situation in rural areas in Madagascar. 5% of the communes state that their purchasing power improved compared to last year. 14% estimated that it is about equal. Almost 81% thinks that it has gotten worse. The results are even worse when compared to the same period in 2001 as 84% of the communes estimate that the situation became worse. It seems that the subsequent shocks in the last three years have taken a heavy toll on the welfare of the people in rural areas.

Table 3: Evolution of purchasing power of the people of the commune in 2004 (as stated by focus groups – in %; 100% = all communes)

	% of the communes that state that the situation in 2004				
	improved		is the	deteriorated	
	a lot	a bit	same	a bit	a lot
<i>Compared to 2003</i>					
Antananarivo	0	3	7	82	7
Fianarantsoa	0	2	27	62	9
Toamasina	0	16	18	64	2
Mahajanga	0	0	3	86	10
Toliara	0	0	13	75	12
Antsiranana	0	9	0	52	39
<i>Madagascar</i>	<i>0</i>	<i>5</i>	<i>14</i>	<i>71</i>	<i>10</i>
<i>Compared to 2001</i>					
<i>Madagascar</i>	<i>0</i>	<i>7</i>	<i>9</i>	<i>47</i>	<i>37</i>

Source: Commune survey, 2004

b. *As most people in rural areas are net buyers of agricultural products in the lean period, a large majority suffers from the high prices. This is apparent in the nutritional and food security indicators. These have deteriorated significantly.*

The high prices and the net buying status in the lean period have had significant consequences on the nutritional status of the population. Only about one quarter of the communes state that the situation is about equal or better than last year (Table 4). Three

quarters of the communes feel and state that the situation has degraded.

Table 4: Evolution of the nutritional situation of the people of the commune (as stated by focus groups – in %; 100% = all communes)

	% of the communes that state that the situation in 2004				
	improved		is the	deteriorated	
	a lot	a bit	same	a bit	a lot
<i>Compared to 2003</i>					
Antananarivo	0	4	16	76	4
Fianarantsoa	0	3	11	82	5
Toamasina	0	6	34	58	2
Mahajanga	0	3	21	76	0
Toliara	0	0	19	77	4
Antsiranana	4	0	4	26	65
<i>Madagascar</i>	<i>0</i>	<i>3</i>	<i>18</i>	<i>70</i>	<i>8</i>
<i>Compared to 2001</i>					
<i>Madagascar</i>	<i>0</i>	<i>4</i>	<i>16</i>	<i>48</i>	<i>32</i>

Source: Commune survey, 2004

Especially the province of Antsiranana seems to have suffered as more than 90% of the communes mention that the situation has deteriorated. This might be linked to the low prices that are fetched for vanilla this year.<sup>5</sup> However, this province started from a relatively higher level (Razafindravonona *et al.*, 2001). The situation is more worrisome in Fianarantsoa where the base was much lower and where 87% of the communes note a deterioration.

A further question was then asked to the focus group to evaluate which percentage of the population had no problems with food, the percentage that had temporary problems to have enough to eat and those that had continuous problems. This was asked for the same period in 2004 and, using recall questions, for 2003 and 2001 (Table 5). The results show how the percentage of people that had no food problems has steadily dropped, by 11% now compared to 3 years ago. The percentage that has permanent problems to have enough food increased by 3% between 2001 and 2004.

Table 5: Percentage of perceived poor and rich people (as stated by the focus group)

% of people that...	November		
	2001	2003	2004
have enough to eat	24	18	13
have temporary problems to have enough to eat	62	67	69
have permanent problems to have enough to eat	13	14	16
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>

Source: Commune survey, 2004

Finally, focus groups were asked on the percentage of people that ate less than three meals in the month of November. They were asked how this proportion of the population has evolved over the last three years. This number increased for the country as a whole

<sup>5</sup> Dried vanilla was sold at 60,000 Ariary/kg in 2004. This compares to 250,000 Ariary/kg in 2003.

from 32% in 2001 to 36% in 2003 to 42% in 2004.

While focus group interviews is not the ideal survey method to evaluate the welfare and food security situation of a country, the different indicators show however a consistent picture and illustrate to what extent rural areas have continued to fare badly in recent years.

*c. While economic conditions deteriorated in all of the country, access to social services improved on the other hand. Especially the education sector has shown large and positive developments.*

Two further questions were asked on the perceived evolution of the health status of the population and of childrens' school enrollment. The results show that the local population feels this situation improved compared to one year and three years earlier (Table 6).

Table 6: Perceived evolution of school enrolment and health status of the population (in %; 100% = all communes)

	% of the communes that state that the situation in 2004				
	improved a lot	a bit	Is the same	deteriorated a bit	a lot
<i>Change in the enrollment of kids in school in 2004</i>					
Compared to 2003	4	81	14	1	0
Compared to 2001	36	58	5	1	1
<i>Change in the health status of the population in 2004</i>					
Compared to 2003	0	41	47	11	1
Compared to 2001	17	46	23	11	3
<i>Change in mortality of new-borns in 2004</i>					
Compared to 2003	9	46	40	4	1
Compared to 2001	32	31	31	5	2

Source: Commune survey, 2004

The population perceives that their health status improved since last year and especially since three years ago. 41% of the communes estimate that the situation now is better than last year. 47% of the communes think it is the same while 12% thinks it got worse. The perceived change in child mortality numbers is similar.

The education sector gets high marks and the investments that have been done seem to show results in the sector. A high 94% of the rural communes believe that more children are now in school compared to three years ago. This number is still 85% of the communes if the situation in 2004 is compared with 2003. This indicates how the investments in the education sector (reduction in school fees, the 'kit scolaire', etc.) seem to have led to higher enrolment rates and this despite the economic

problems and the inherent drop in demand for school services.

## 7. Priorities for interventions

Finally, the focus groups were asked to rank the priorities for investments by the government. They were given twelve options (education, health, security, transport, agriculture, environment, water, energy, a reliable justice system, nutrition, access to credit and improved land tenure). The results are shown on Figure 8. They illustrate again that improved transport is a top concern for a significant number of rural communes: 26% of the communes rank transport as their most important intervention. The second most important interventions are agriculture and health. The interventions that are least asked for are, surprisingly, access to credit and improved land tenure.

These results are consistent with the priorities stated during the commune census of 2001 (Minten *et al.*, 2003). In this census, agriculture and roads came out on top. The priorities were grouped by region and are presented geographically on Map 5. The results show the clear spatial trends in priorities. The west of the country complains about the security situation, the south-east asks for investments in health, the north feels that isolation is a major constraint and the central highlands and the east consider agricultural investments to be the priority.

## 8. Conclusions

While economic growth has been estimated at 5.4% in 2004, it did not help the majority of the rural population. The results of the 2004 communal monitoring survey show that the effects of the different shocks have had a large and negative impact on prices and welfare indicators. The lean period in rural areas this year seems to be harder than last year. Inflation in consumption goods outpaced revenues and has led to a decrease in purchasing power for a significant part of the rural population.

Using agricultural wages as an indicator, purchasing power has declined by 37% this year compared to the same period last year. The poor are poorest in the province of Fianarantsoa while they are best off in the province of Mahajanga.

On the other hand, government interventions seem to be paying off as access to social services has improved dramatically and transport time overall has decreased. However, further investments in transport are asked for

as it is stated to still be the main priority of rural communes in Madagascar.

Given the methodology used (focus groups and qualitative questions), these results are only indicative and more in-depth research is clearly needed. This is planned by INSTAT using the new national household survey that was fielded at the end of 2004. Further close monitoring of the situation seems necessary as to better gauge the effects of external factors and investments of the government.

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Figure 1: Transport costs of goods to urban centers

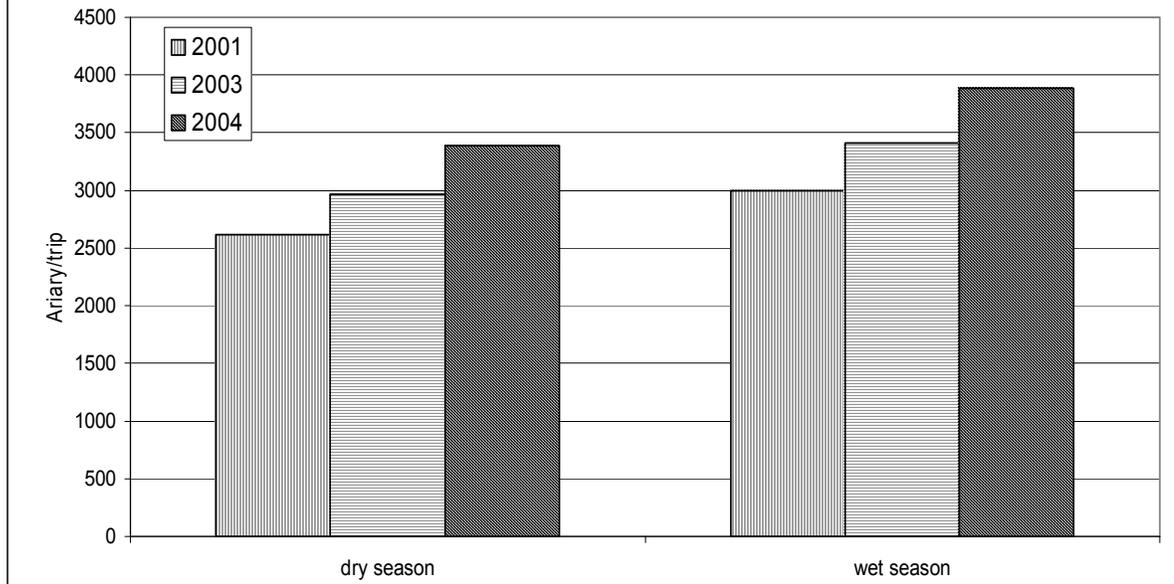


Figure 2: Prices of 'Imported' consumption goods

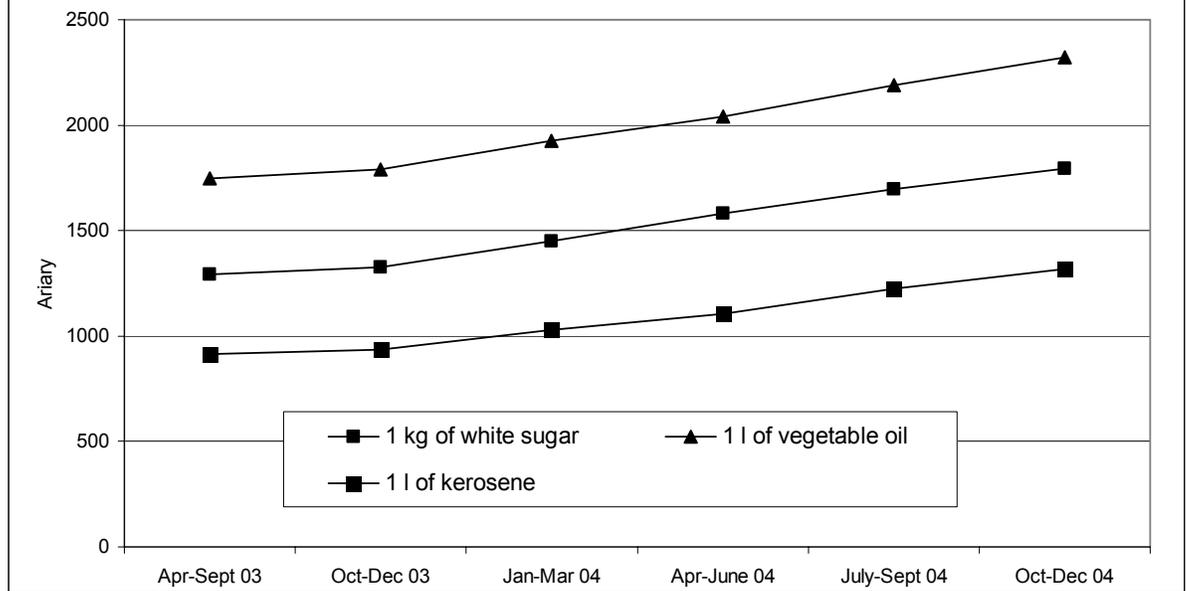


Figure 3: Prices of locally produced goods

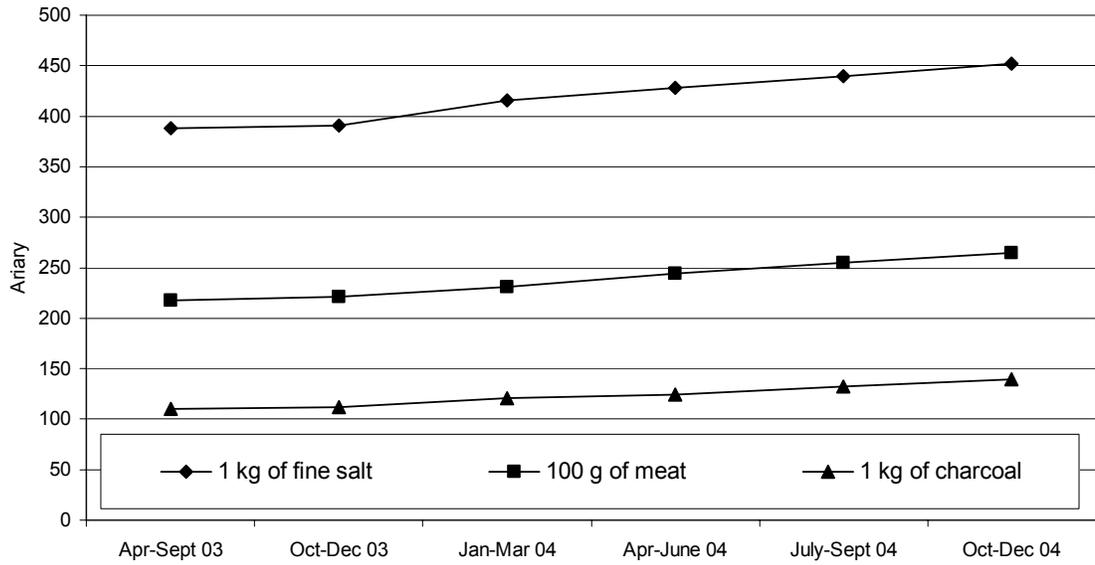


Figure 4: Prices of white rice (quality C2)

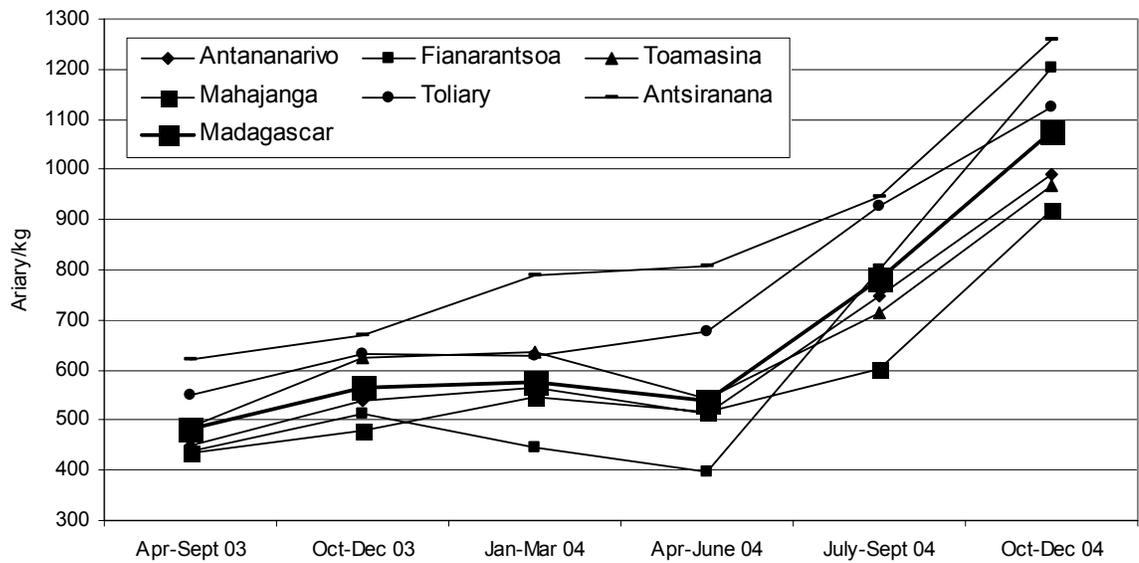


Figure 5: Seasonality in rice trade

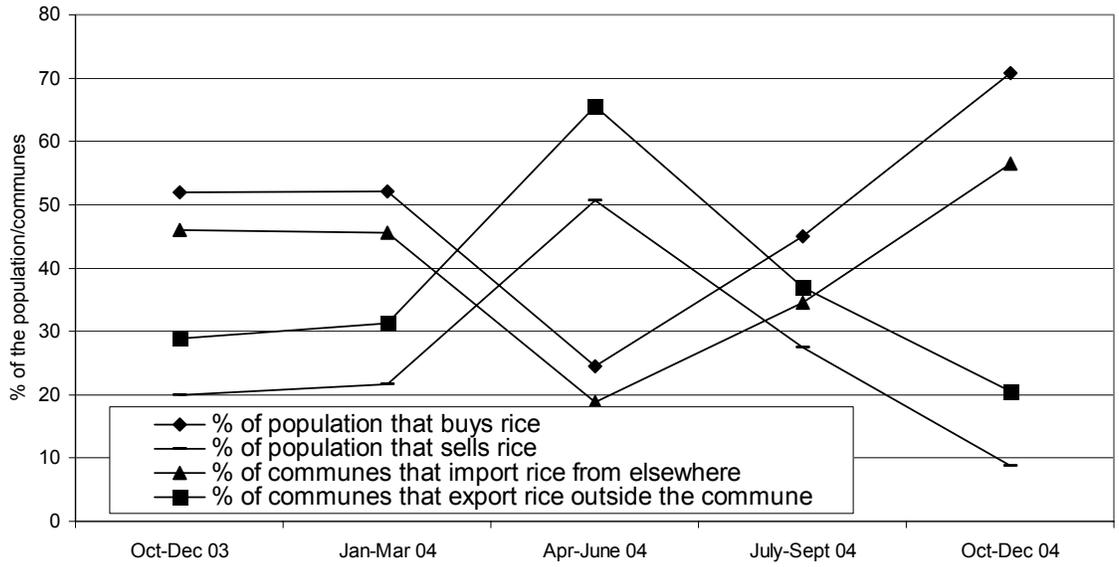


Figure 6: Agricultural producer prices for major crops

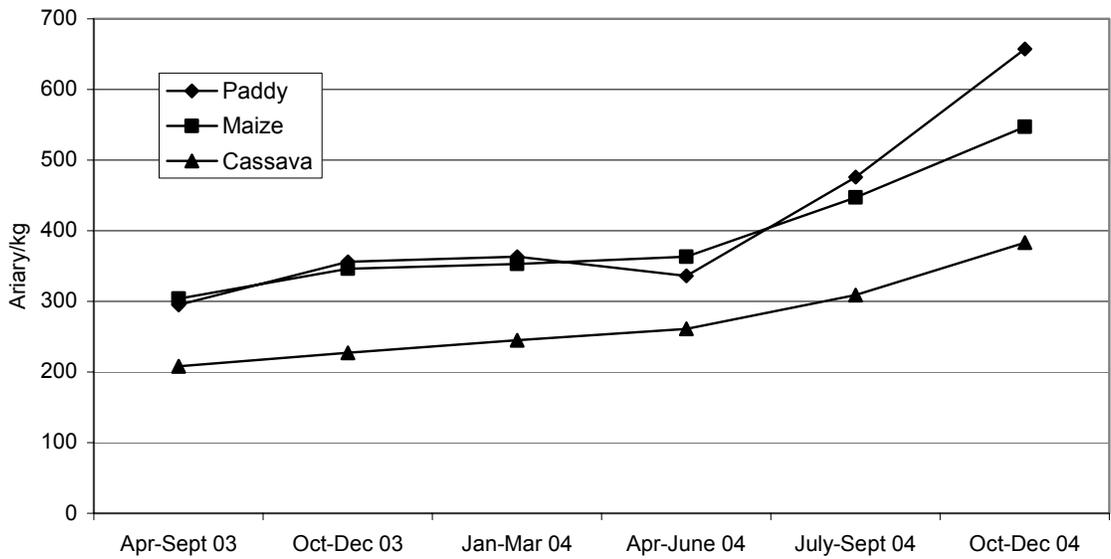


Figure 7: Wages for daily agricultural wage laborers

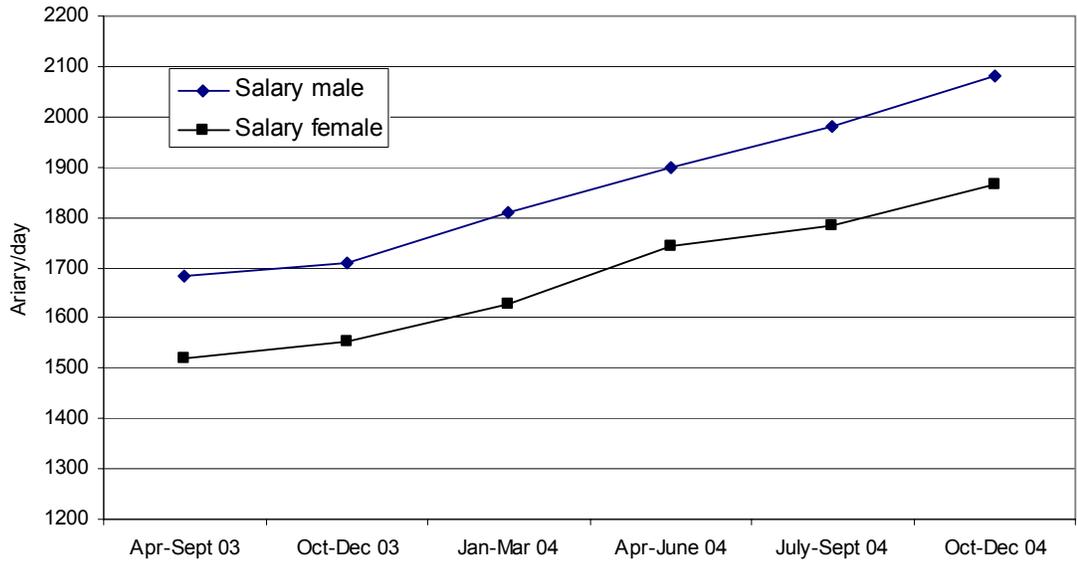
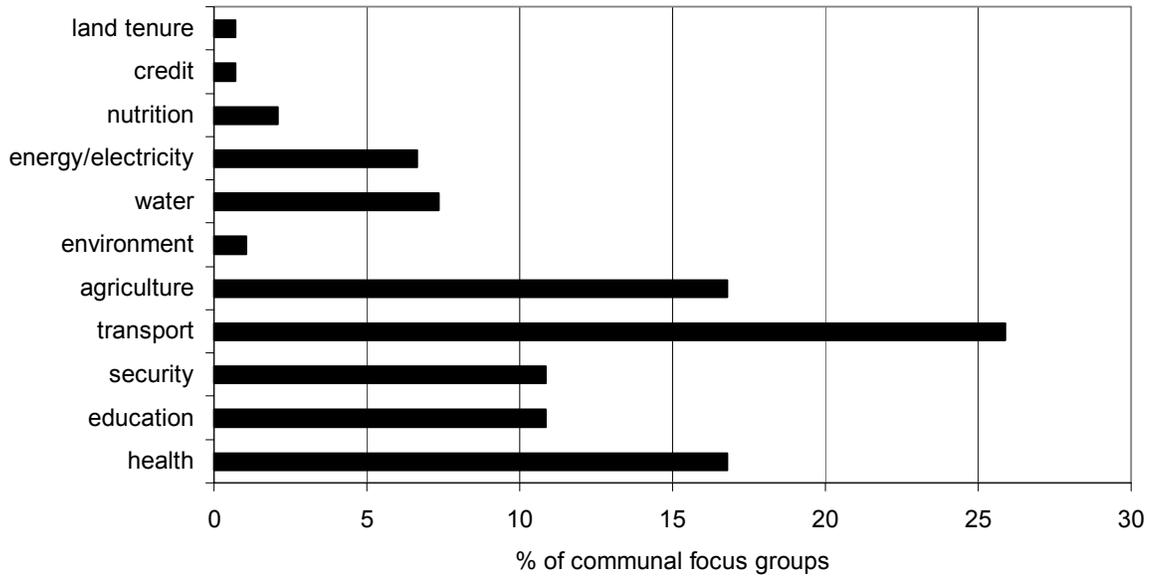
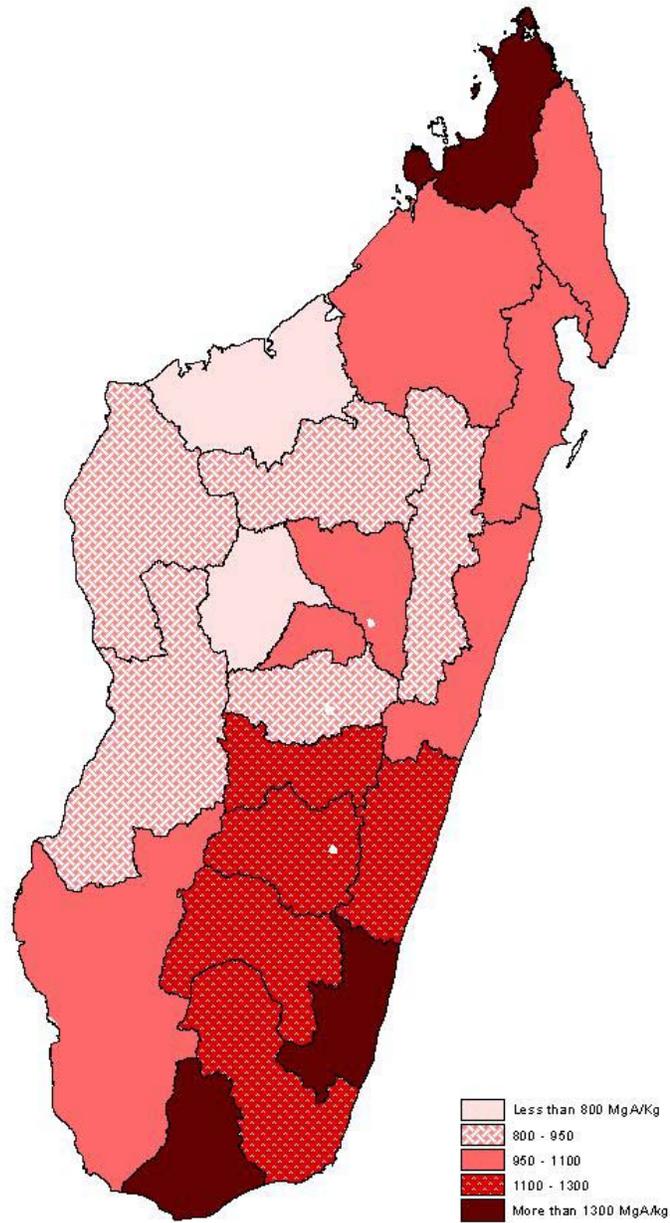


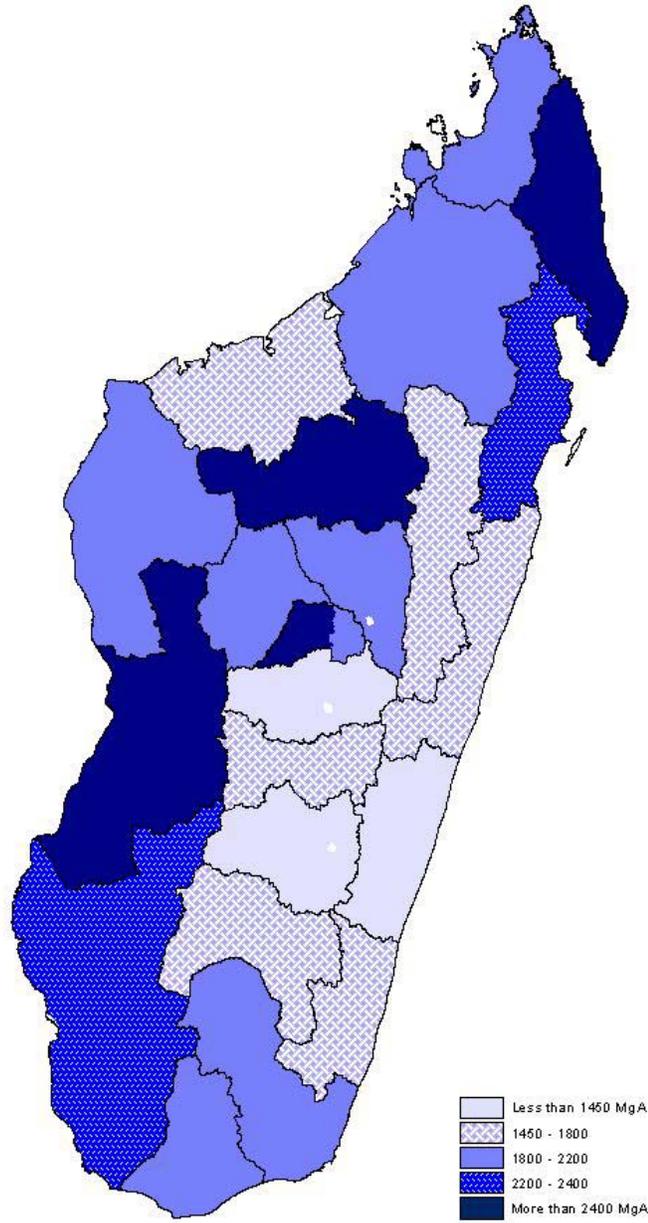
Figure 8: First priority for government interventions



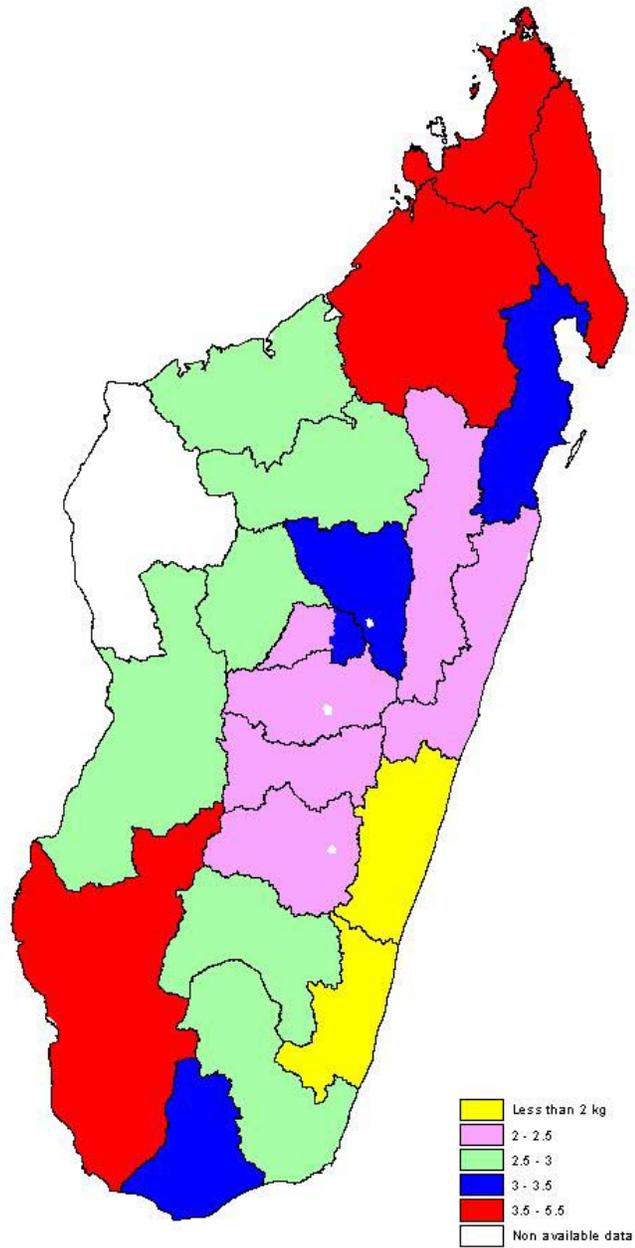
Map 1 : RICE PRICES (MgA/kg) - NOVEMBER 2004



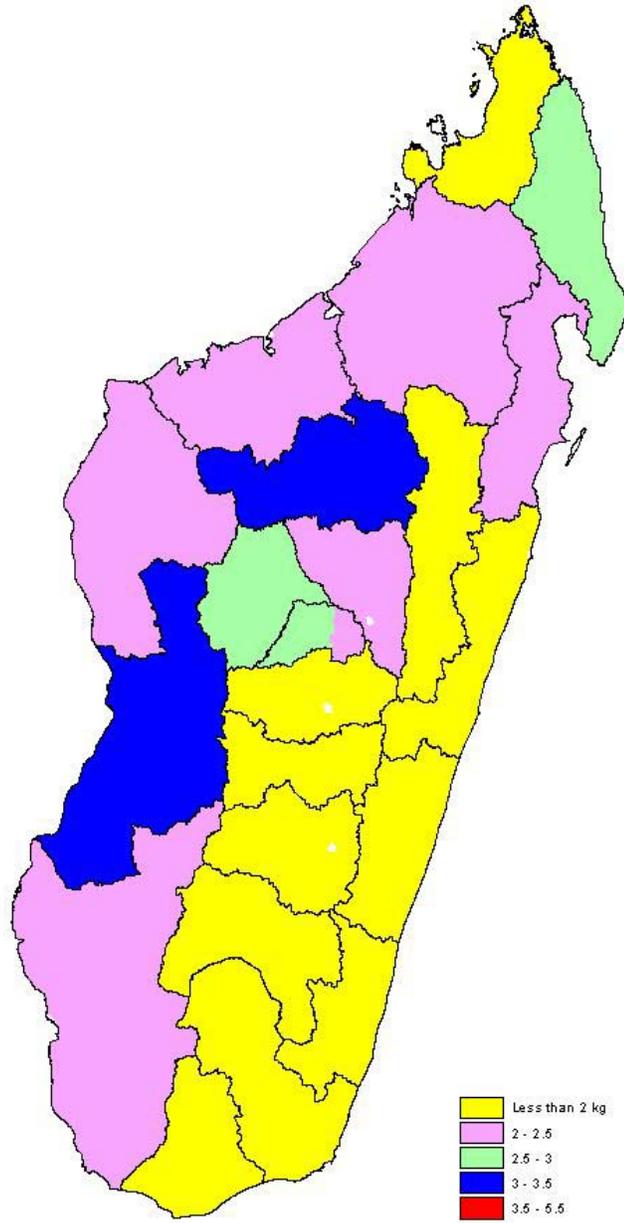
**Map 2 : AGRICULTURAL WAGES - NOVEMBER 2004**  
(in MgA/day)



**Map 3 : PURCHASING POWER AGRICULTURAL WAGES - NOVEMBER 2000**  
(in kgs of rice)



**Map 3 : PURCHASING POWER AGRICULTURAL WAGES - NOVEMBER 2004**  
(in kgs of rice)



Map 5 : STATED PRIORITIES FOR DEVELOPMENT

