Public Disclosure Authorized

Public Disclosure Authorized

46190

THE EMPLOYMENT AND POVERTY IMPACT OF PNPM

Program Nasional Pemberdayaan Masyarakat

THE NATIONAL COMMUNITY EMPOWERMENT PROGRAM

Gustav F. Papanek
Boston Institute for Developing Economies, Ltd.

World Bank Consultant, Indonesia

April 2007

THE EMPLOYMENT AND POVERTY IMPACT OF PNPM

Summary and Conclusions i

Summary Table: Targets and Employment Benefits of PNPM ii

I. Employment In Rural Areas: The Former KDP/PPK [Kecamatan Development Program] Part of the Program 1

A. Employment in Infrastructure Construction 1

Figure 1: Employment Generated by PNPM 2

1. PNPM provides work and income when few other jobs are available 3

2. It can be a vital component of a Social Safety Net [SSN] 3

3. How many jobs it provides depends on how many days of employment the average individual can get under PNPM 3

4. In 2007 PNPM will have a limited impact. Benefits are less than under UCT 4

5. The benefits in terms of employment and poverty reduction will be large as the rural part of PNPM is scaled up in 2008 and 2009 4

B. A Development Program as Well as an Employment Program: The Indirect Impact of PNPM Through Activation of the Economy 6

1. Injecting purchasing power into poor villages stimulates economic activity 6

2. Improving the infrastructure, lowering cost, speeding access and stimulating greater economic activity 6

3. The importance of the two indirect benefits: Activation and investment income combined 7

Figure 2: Sources of Employment by PNPM 8

Table 1: Indirect Employment Effects of the PNPM Program– Rural [KDP] part only 9

4. Raising the wages of all unskilled low paid labor and thus the income of the poor 9

C. The Importance of Full-Scale Funding and Operation: The Costs of Cuts in the Program 10

1. The benefits of full-scale operation 10

2. The consequences of a reduced budget for PNPM 10

a. The consequences of freezing grants at Rp. 1.5 billion per Kecamatan for 2008 to 2010 10

b. Expanding the number of Kecamatan in PNPM is the other key to success 11

c. Labor intensity makes a big difference, but is difficult to affect 11

d. A worst case scenario: Cutting back across the board 12

D. The Impact of PNPM on Poverty 12

1. Impact of PNPM on the poor - Share of poor and near-poor in PNPM income 13

2. How many poor will escape poverty thanks to PNPM? 13

Figure 3a. Total Number of Poor to Benefit from PNPM if Each Kacamatan Grant is Rp. 3 billion or Rp. 1.5 billion in 2008 & 2009 14

Table 2: Analysis of the number and percent of poor and those benefited by PNPM 15

3. Other factors can and will swamp the impact of PNPM on poverty 16

Figure 3b: The Number of Poor who Benefit from PNPM with Increased Income or whoEscape from Poverty 17

II. Employment In Urban Areas: The Former UPP/P2KP [Urban Poverty Program] Part of the Program 18
A. The Urban Infrastructure Construction Program 18
1. Differences between rural and urban programs:
Infrastructure is a smaller, micro-credit a larger share of the urban program 18
2. The impact of the urban program is far smaller than of the rural one 19
a. The calculation of employment on urban projects uses KDP data extensively 19
b. Reasons for the small impact of the urban program 19
c. Best estimates are shown in Appendix Table 1..... 19
3. Employment generated indirectly is an estimate based on KDP data..... 19
B. The Impact of the Urban Micro-Credit Program..... 20

III. Can PNPM Be Sustained Beyond 2009? 21
1. PNPM can be a successful investment program 21
a. It builds infrastructure 21
b. At about half to two-thirds the cost of contractor-built projects..... 21
c. The rate of return is excellent & will increase government revenue and be available to fund PNPM in the future. 22
2. PNPM can and should be an essential element of a Social Safety Net..... 22

Appendix Table 1: Calculations of Employments Effects of PNPM and Sensitivity to Changed Magnitudes *(insert Excel document here)* A-1
A. Base Case: Labor Share is 60% of Expenditure for Infrastructure A-1
B. Sensitivity Analysis: Freezing Grants at Rp. 1.5 Billion for 2008 to 2010..... A-4
C. Sensitivity: Labor at 45% of Total Grants..... A-7
D. Sensitivity: Reducing Average Grant per Rural (KDP) Kecamatan by Rp 1 Billion in ’08 to ’10 ..... A-10
E. Sensitivity: Reducing the Numbers of Kecamatan Covered by PNPM in ’08 and ’09 by 1,000 Rural and 300 Urban in Each Year A-13
F. Worst Case: Grants and Kecamatan Both Cut – Less Labor-Intensive..... A-16

Appendix Table 2: Factors Affecting Agricultural Wages in Java, 1976-1987..... 24

Appendix 3: Estimated Poverty Impact of the PNPM Program 26
1. Benefits of PNPM for the poor 26
2. Impact of Inflation and growth 26
Table 1: Effect of inflation on income of the poor and on the benefits from PNPM 26
3. Growth in the labor force 27
4. Who are the poor and how many can be helped by PNPM?..... 27
Table 2: Median income by decile for the poor in 2006..... 27
Table 3: Analysis of the number and percent of poor and those benefited by PNPM..... 27
5. Poor who will not benefit from PNPM – The Handicapped Poor 28

THE EMPLOYMENT AND POVERTY IMPACT OF PNPM
SUMMARY AND CONCLUSIONS

1. **By 2009,** when PNPM should cover all Kecamatan, **it can benefit roughly 24 million workers and their families, increasing their income by 10-14%** for 60 days of work.

2. Some **6 million families will be pulled out of poverty** and another 10 million of the poor will have increased income, but not enough to escape poverty.
But the **number of poor depends** as much or more on:

a. **The price of rice and other basic foods.**

b. Jobs created elsewhere in the economy.

c. How many are benefited by the Conditional Cash Transfer program.

3. PNPM will hire 10 million directly in 2009, but a larger number, some **14 million, will benefit indirectly from the economic activity generated by the program. PNM is not just an employment program it is also a long-term development program.**

4. To reach its targets PNPM needs to allocate **Rp 3 billion a year** for an average Kecamatan block grant. **If the average grant for 2008/09 is frozen at Rp 1.5 billion then 10 million fewer workers will be employed** and **6 million more families will remain poor**. The benefits of the program will be severely diluted.

5. There will be **benefits in addition to direct employment and income:**

a. The additional income will benefit workers primarily when they need it the most; when there are few other jobs because it is the off-season in agriculture, or because of drought, flood or other natural or economic catastrophes in a region. The benefits will therefore be more important than a 10-14% increase in annual income.

b. **PNPM can be a Social Safety Net**, expanding as needed.

c. **It will raise the wages of all unskilled workers significantly** by reducing the competition during the off-season from desperate workers who drive all wages down.

d. **By developing roads, irrigation and drainage works, water supply and sanitation works, PNPM will permanently increase employment and income.** The annual rate of return for the infrastructure investment under the rural [KDP] part of PNPM is estimated at 50% or more [EIRR of 72%], a remarkably high return.

e. **Injecting purchasing power into villages and poor urban areas will have an indirect effect in "activating" the village economy.** That effect is about 16.5%; that is, for every Rp 100 million spent village income will actually increase by Rp 116.5 million.

f. The combined indirect effect of development and activation is to **increase rural income by Rp. 17 trillion [nearly US$ 2 billion] in 2009;** Rp. 26 trillion in 2010.

6. **PNPM can be sustained as a permanent program.**

a. Government spends large sums each year on building infrastructure. Some of those funds could be spent for local infrastructure through PNPM permanently, since KDP projects can be executed at 40% below the cost of contractor-executed ones.

b. Some of the roughly $ 2 billion [Rp. 17 trillion] added to national income in 2009 **will increase government revenue to help pay for a continuation of PNPM.**

c**. It would be an essential element in a badly needed Social Safety Net.**

7. But the **PNPM contribution to solving the unemployment and poverty problems, while important, is also limited, because:**

a. It provides supplementary employment and income, not full-time regular jobs. At best it will provide 60 days of work, important because it provides an income when many workers are desperate, but it is not a substitute for year-round work.

b. **It provides few jobs for professional, technical and other middle class workers.** Nearly all its jobs will be for unskilled or low skilled workers.

c. It can **not help families that have no one in the labor force.**

Therefore other programs and policy changes are also needed.

Summary Table
Targets and Employment Benefits of PNPM
(*all rounded - in millions*)

	2006	2007	2008	2009	2010
1. Total employment in Indonesia					
@ 60 days per person	**1.5**	**4**	**13**	**24**	**30.5**
@ 21 days per person	4	12	37.5	70	88
@ 100 days per person	1	2.5	8	14.5	18
2. **Number of poor benefited**					
Pulled out of poverty	0.4	1	3.5	6.5	8
Remain poor but income Increases	0.6	1.5	5	10	12
Increase in annual income with 60 days of work from PNPM: 10-14%;					
3. **Reduction in employment if grants in 2008-2010 reduced from Rp. 3 to Rp. 1.5 billion** per Kecamatan:	>	>	-5	-10	-13
4. No. of Kecamatan in PNPM	1,800	2,800	4,100	5,400	5,400
Average grant per Kecamatan Rp. Billion	0.8	1.2	3	3	3
5. Share of expenditures allocated to infrastructure					
- rural	67%	70%	70%	70%	70%
- urban – approx.	41%	70%	70%	70%	70%
Labor as % of infrastructure spending					
- Direct	30%	30%	30%	30%	30%
- Indirect labor in materials	30%	30%	30%	30%	30%
5. Sources of employment for an average of **60 days** of work per person [Appdx. Table 1.A.] (in millions of employed)					
KDP/rural infrastructure-direct	0.9	1.4	5.4	7.8	7.8
KDP/rural infrastruc.-indirect	0.2	1.0	3.9	11.6	18.2
UPP/Urban infrastruct. – direct	0.2	0.9	1.9	1.8	1.7
UPP/urban infrastruct.- indirect	0.1	0.6	1.4	2.7	2.6
UPP/Urban micro-credit-direct	0.1	0.1	0.3	0.3	0.3
UPP/Urban micro-credit-indirect	0.0	0.0	0.0	0.0	0.0
TOTAL	**1.4**	**4.1**	**13**	**24**	**30.5**
Of which					
Direct employment by PNPM	1.1	2.5	7.7	9.9	9.8
Indirect employment resulting from increased econ. Activity	0.3	1.7	5.3	14.4	20.8

***SENSITIVITY ANALYSIS*:**
Consequences of various lower inputs for employment at 60 days only (all in million) (complete tables in appendix)

	2006	2007	2008	2009	2010	Reference Appendix
Employment generated by above assumptions (Base Case)	1.5	4	13	24	30.5	Table 1.A.
CHANGED ASSUMPTIONS						
1. Average grants cut in half to Rp. 1.5 billion per rural Kecamatan in '08-'10	1.5	4	8	14	17.5	Table 1.B.
2. Number of Kecamatan covered reduced by 1,300 in 2008-2010	1.5	4	9	18.5	23.5	Table 1.E.
3. Share of labor employed in construction of infrastructure and supply of materials combined decreases from 60% to 45%.	1	3	9.5	18	23	Table 1.C.
4. Worst Case Scenario: Grants Reduced to Rp. 1.5 billion; No. Kecamatan cut by 1,000; 45% Of expenditures for labor in '08-'10	1	3.5	4.5	8.5	10.5	

NOTE: Most basic data from Richard Gnagey. He estimates that KDP in the average village generates 1,778.6 days employment. Other calculations in Appendix.

THE EMPLOYMENT AND POVERTY IMPACT OF PNPM

Program Nasional Pemberdayaan Masyarakat

THE NATIONAL COMMUNITY EMPOWERMENT PROGRAM

The major benefits of the PNPM program is to generate additional employment and the corresponding additional income, primarily for poor unskilled labor. How much employment and income is generated is obviously important in judging PNPM's benefits. This paper estimates the program's impact on employment and income for 2007 to 2010 and analyzes the circumstances under which the effect could be larger or smaller.

By 2009, when PNPM should cover all Kecamatan, **it can benefit 20-26 million families, increasing their income by 10-14%** for 60 days of work. Some 14.5-18 million of the beneficiaries will be poor of whom **5.5-8 million will be pulled out of poverty**. Even **by 2008 some 10-16 million can get jobs** [Figure 1] and income and 3-4 million can escape poverty. Additional benefits will accrue to society and especially to the poor from PNPM:

a. The additional income will benefit primarily workers in months when they need it most;

b. It will raise the wages of all unskilled workers, even those that have no contact with the program, by reducing the competition from desperate workers who depress all wages;

c. By developing roads, irrigation and drainage works, water supply and sanitation, PNPM will permanently increase employment and **add Rp. 17 trillion [nearly US$ 2 billion] a year to national income in 2009** and more in future years.

d. Injecting purchasing power into villages and poor urban areas will have an indirect effect in "activating" the local economy.

While the benefits of PNPM are massive its limits need also to be recognized:

- PNPM provides supplementary employment and income, not full-time regular jobs at a good wage and with some benefits. Other programs and policies will have to provide those.

- And **it does not provide much employment for skilled, managerial, technical and professional workers.**

It is important to recognize that, except for a small number of staff positions, most jobs generated by the community grants will be for manual work and for a limited number of days a year.

The program has different parts which are examined in turn.

I. EMPLOYMENT IN RURAL AREAS: THE FORMER KDP/PPK [KECAMATAN DEVELOPMENT PROGRAM] PART OF THE PROGRAM

The rural part of the PMPM program, which is based on the KDP/PPK, is the bigger part of the program, expected to generate most of the employment. In turn by far the biggest part of the rural/KDP-based program will be for infrastructure construction and rehabilitation. It will absorb about 70% of funds for the rural areas. For the other 30% [women's credit program and Social Sector support] no good data exist and therefore no estimates are made for their employment impact.

A. EMPLOYMENT IN INFRASTRUCTURE CONSTRUCTION.

The most important and clearest employment benefits in terms is provided by the infrastructure construction part of grants to local communities. This was a central part of the KDP/PPK [Kecamatan Development Program], which used, on average, 67% of total funds for infrastructure. Both the rural and urban parts of PNPM expect to use at least 70% of funds for infrastructure in 2007. The remainder will be for micro-credit, social sector support [health & education] or other special programs.

Figure 1: Employment Generated by PNPM

	2006	2007	2008	2009	2010
Upper bound- full funding kecamatan grants at Rp 3 billion in '08 & '09	1.4	4.3	16.0	26.0	32.0
Full funding-Kecamatan grants @ Rp 3 in '08 & '09	1.4	4.1	13.0	24.3	30.5
Lower bound- full funding kecamatan grants at Rp 3 billion in '08 & '09	1.4	3.9	10.0	20.0	25.0
Upper bound - grants frozen at Rp 1.5 billion in '08 &'09	1.4	4.3	10.0	16.0	19.0
Kecamatan grants frozen @ Rp. 1.5 billion in '08 &' 09	1.4	4.1	8.1	14.4	17.6
Lower bound- grants frozen at Rp 1.5 billion in '08 & '09	1.4	3.9	6.0	10.0	13.0

There are several important aspects to this program:

1. The **impact of PNPM will be especially great because it provides work and income when few other jobs are available** because:
- planting/transplanting and harvesting are finished and it is the slow season in agriculture;
- drought, flood or other natural catastrophe have temporarily destroyed jobs in a region;
- economic set-backs have affected an area, e.g., the only factory closed or policy changes eliminated many jobs, e.g., betjaks [bicycle rickshaws] are banned in a city.

It can therefore help the most vulnerable and keep them for falling into debt and poverty. And it will reduce recorded unemployment somewhat by providing jobs to those who would otherwise be temporarily unemployed for part of the year during the off-season in agriculture.

2. Because it can expand or contract in response to need **it can be a vital component of a Social Safety Net [SSN]**. It can serve as SSN if:
- wages continue to be set at or below the prevailing agricultural wage, so that only the truly poor apply for work;
- PNPM has a flexible budget which allows expansion of the program if more truly poor apply for work than there are funds to support them.

3. How many jobs it provides depends on how many days of employment the average individual can get under PNPM.
The KDP, the largest program absorbed by PNPM, provided on average only 7 days of work a year. Because that number is so low total employment provided by KDP was an impressive 2.7 million workers[1]. And while that employment made a difference by providing work when little else was available, it was too little to have much of an impact on annual income or on poverty – it raised annual income on average only a bit over 1%.

An estimated 30% of the expenditure on infrastructure was for direct labor. That implies that workers received roughly Rp. 13,000 per day[2], which is consistent with the average daily wage for agricultural labor in Indonesia in 2005 [Rp. 11,800]. At that wage 7 days of work under KDP provide roughly Rp. 90,000 a year. In 2006 the official rural poverty line was at Rp. 8.7 million for the average poor family with of 4.75 members [see below]. KDP then increased income by only 1%[3] for those poor who were close to the poverty line, of little help in terms of a family escaping from poverty.

Therefore, if PNPM is to make a serious contribution to poverty reduction it needs to provide far more than 7 days to the typical participant. Since the average community grant in 2007 is to be triple what it was for KDP in 2006 many calculations have assumed that PNPM should aim at providing 21 days of

[1] Expenditures were Rp 90.8 million per village for the average infrastructure project. For each Rp 51,000 of expenditure on infrastructure one worker was employed for one day; therefore 1,779 person-days were generated per village. With the average worker employed for 7 days, some 247 workers were employed in the typical village. With 9 villages covered per Kecamatan and some 1,200 Kecamatan covered direct employment provided was [247 x 9 x 1,200=] to 2.67 million workers. All these data and calculations from Richard Gnagey, Advisor, Sekretariat, PPK to whom I am deeply grateful.
[2] If 25% of the total expenditure of Rp. 51,000 per person-day is for labor the average pay would be Rp. 13,000. NOTE: I have rounded many estimates in order to avoid spurious accuracy; e.g., 20% of Rp. 51,000 is Rp. 10,200; 30% is Rp 15,300; both are rough guesses. An approximate average of the two is Rp. 13,000, which is used as the estimated, average daily wage throughout this paper.
[3] Rp. 13,000 per day times 7 days= Rp. 91,000. 1% of their income of Rp. 8.7 million a year = Rp. 87,000. So 7 days of work would increase yearly family income by about 1.05%.

work on average [3 times the 7 days of KDP]. That is still very little for a program that aims to reduce poverty and provide employment in the off-season. Providing 21 days of work would add only about 3% to the income of poor families. Similar programs in other countries assure 60-100 days a year to any participant who wants to work that much.

Some participants with small holdings of land might be satisfied with 20-40 days of work. But landless and land-poor agricultural workers need at least 60 days a year for a family, if they are to escape poverty. An average of 60 days of additional work under KDP would raise family income by about Rp. 800,000, adding about 10% to family income for those near the poverty line, up to 14% for those poor with less income, a small, but significant improvement. And since the added income would come during the months when there is little other work or income it would significantly increase the ability of beneficiary families to escape poverty during those crucial months.

A reasonable target for PNPM and a reasonable assumption for these calculations therefore is that the average worker will get 60 days of work under the program. That will be the central assumption of this paper, though consequences of 20 days and 100 days will also be explored. Section 1 of the Summary Table shows the consequences of providing only 21 days of employment to the average worker, rather than 60 days: the number employed by the program in 2009 triples from 27 to 74 million persons/families, but the average family receives a negligible increase in income (3.5%), undermining the usefulness of the program in fighting poverty, reducing unemployment and serving as a Social Safety Net.

4. In 2007 PNPM will have a limited impact. Benefits for the poor are significantly less than they were in 2006 under the Unconditional Cash Transfer [UCT] program that has ended. The Conditional Cash Transfer [CCT] program will supplement PNPM starting in 2007, but only for families with children of the appropriate age. Its benefits will also be limited in 2007 to about 1.5 million families. The poor may therefore be worse off because:

- UCT benefited 19 million families; PNPM will provide income to 4 million and CCT programs will add at most 1.5 million. So total beneficiaries from these programs will decline from 19 to 5 million.

- UCT provided grants of Rp. 1.2 million, while PNPM will provide Rp. 0.8 million on average. CCT will provide on average Rp. 2 million. So the small number of families receiving CCT funds will be better off than under UCT.

- In addition UCT required no work and therefore allowed the beneficiaries to do casual work to supplement their income. KPD/PNPM requires work so the beneficiaries will be less able to earn additional income.

The reason that PNPM provides few added benefits in 2007 is that its community grants are only increasing by 50% and the number of Kecamatan covered will increase only 10%. By 2009 more families will benefit from PNPM than benefited from UCT grants. PNPM can be a sustainable permanent program while UCT was definitely a temporary one; over the longer term its benefits will be far larger than those of UCT. But ***in 2007 the poor may well be worse off*** so far as government programs are concerned.

5. The benefits in terms of employment and poverty reduction will be large as the rural part of PNPM is scaled up in 2008 and 2009. As KDP in the rural areas turns into PNPM and expands from 2006 to 2009, increases in employment will result from:

i. The number of Kecamatan covered will increase until all are covered;
ii. The infrastructure grants to each Kecamatan will increase nearly four-fold over 2006;
iii. The proportion of grants to infrastructure, with assured employment, increases slightly [to about 70%] and that for micro-credit, with uncertain employment consequences, declines [from 8% to 0 for general micro-credit, leaving about 14% for credit to women's groups –"SPP"].

Another 13% of PNPM expenditures is likely to be for Education and Health activities and 10% for Technical Assistance. A substantial part of the grants for health and education is for buildings which will add to employment. The employment effects of rural micro-credit for women, for education and health have not been taken into account [benefits of urban micro-credit are calculated].

iv. How much of the infrastructure grant is used for labor, including labor embedded in materials is another crucial variable in employment impact. Based on data from KDP most calculations in Appendix 1 assume that 60% of grants is used to hire labor. Half of that, 30% of the total, would be for labor hired directly under the PNPM program to execute projects. This estimate is a firm one. Another 30% of total grants is for labor embodied in materials used by the projects; e.g.: to quarry stones and sand; to break large rocks into small stones suitable for road-building; to move sand and stones into and out of trucks. The estimate of labor embodied in materials has a large margin of error. Appendix Table 1.C shows the effect if labor embedded in materials is only 15% of total expenditures. In that case only 18 million jobs are created by the program in 2009, not 24 million.

At full-scale operation about one-quarter of the labor force will get additional income through PNPM activities. The program will reduce under-employment substantially and pull over 15% of the poor above the poverty line.

To reach the goals of PNPM **further strengthening and clarification of institutional arrangements** would be desirable.
i. The need for a clearer structure. The implementing structure for 2007 was meant to be a transitional one. Both the rural [KDP] and urban [UPP] programs have by now accumulated a great deal of experience. As the PNPM program goes forward and expands it would be important to further strengthen the links between them, to facilitate KDP and UPP learning from each other and at some point in the future merging into a single agency.

ii. Need for clearer priorities. A great deal is known on how the 2 existing programs have worked, but additional information is needed to provide a basis for deciding which parts of the program should have priority. For instance: how much money should be allocated for general *micro-credit*. KDP has concluded that micro-credit administered by KDP is not very effective, that community-administered programs find it difficult to collect debts and more generally to enforce discipline on borrowers. KDP management therefore decided to leave micro-credit to banks and especially BRI [except for a special program for women-borrowers]. UPP management, conversely, has decided that its micro-credit program works well and should be continued, although on a smaller scale. It would be important to know a good deal more about the effectiveness of UPP micro-credit in creating productive jobs in order to decide how much of the urban grants should be allocated to micro-credit in the future.

B. A DEVELOPMENT PROGRAM AS WELL AS AN EMPLOYMENT PROGRAM: THE INDIRECT IMPACT OF PNPM THROUGH ACTIVATION OF THE ECONOMY

One of the most important and surprising aspects of this study is that the indirect effects of the PNPM program, in terms of additional jobs and income, are greater than the direct effects and most will last far longer**. PNPM is a development program as well as an employment program and its impact on long-term, even permanently, increasing economic activity –that is income and employment- are greater than its short-term employment benefits**. There are several such indirect effects:

1. Injecting purchasing power into poor villages and stimulating economic activity.
While the impact on the income of the poor of actual employment under the KDP/PPK program was measured a long time ago, it was only recently that the impact by stimulating economic activity has been measured. This impact, normally called the "Multiplier" or "Activation Effect", is a widely recognized [by economists at least] effect of additional government expenditure in a country where labor and other resources are not fully employed. For instance, workers on the PNPM project will spend the additional wages they received on buying more high value food, more services and on improving their house. To improve where they live they will buy supplies and hire workers to work on the house. The construction workers, in turn, spend their additional income on barbers or vegetable growers and sellers, or those who raise chickens. But some of the income of the newly employed workers will go to buy imported goods, which have almost no multiplier power in the country.[4]

As the workers on house improvement receive their wages, they in turn spend some of their money on other workers and a second round of "activation" effects will occur. Some of the material used for the house in this example will have been produced by labor, but these effects have been ignored in the only calculations that have been made of the "multiplier" or "activation" effect. That study by Torrens[5], on which the discussion here is based, shows an average multiplier of 1.165. Therefore, for every Rp. Billion spent by KDP or PNPM the increase in income in that village is at least Rp. 1.165 billion. Employment increases proportionately if we assume that the increased income as a result of the multiplier effect is spent as labor intensively as the original expenditures for KDP-PNPM infrastructure. In short, the employment effects of the KDP part of PNPM can be scaled up by 1.165 to take account of this multiplier or activation effect. This has been done in Appendix Tables 1 and in the Summary table.

2. Improving the infrastructure, lowering cost, speeding access and stimulating economic activity
Even more important is the indirect effect on the economy and therefore on employment as the result of better infrastructure. The same Torrens paper shows very high Economic Internal Rates of Return [EIRR] for the sample of KDP projects analyzed. Although his calculations are conservative he concludes that the average EIRR is at least 53%. In a way that is not surprising. Half of all projects were for roads and bridges. By reducing time to market and costs of shipping, they made possible the growing of higher value but perishable crops which could raise income dramatically, as farmers shifted from growing cassava or maize to growing vegetables for the urban market. The ability to market sand or stone from quarries had an equally dramatic effect. The impact of building or rehabilitating

[4] Implicit in the calculations is that the "opportunity cost" or the 'Social Marginal Product" of unskilled labor in Indonesia is close to zero. That is, workers hired directly or indirectly as a result of PNPM can be withdrawn from their present occupation with little or no decrease in output as a result. The clearest case is for family farms or retail shops. They have more family members than are needed. Several essays by Papanek discuss the phenomenon. Another piece of evidence is the increase in agricultural labor during the Asian financial crisis. Some 5 million workers crowded into agriculture in Indonesia with no major increase in output.
[5] Torrens, Anthony "Economic Impact Analysis of Kecamatan Development Program Infrastructure Projects".

irrigation systems was even greater, leading to double and even triple cropping and more stable yields. However since less than 15% of projects were for irrigation, their total impact was less.

However, the actual EIRR of the projects in the Torrens sample is not the 52.7% highlighted in his report, but nearly 72%, because Torrens –to be conservative– excludes all projects with EIRR above 100% from the average. There is really no good reason to exclude such projects. As he recognizes, returns exceeding 100% are entirely feasible when local projects are efficiently executed, especially if they involve rehabilitation of existing structures. When all projects in the sample are included the average EIRR is 72%. This means there is an annual stream of net benefits above 70%. An examination of a number of projects shows that stream to be quite steady over 10 years.

There are **two caveats,** however. [i] It is possible that after 8 years of community-driven projects those with the highest returns have been carried out; the lowest-hanging fruit has been picked. Future projects could have lower returns. [ii] It is possible that as the program is rapidly expanded from Rp. 800 million to Rp 3 billion per Kecamatan less care will be taken in project design and execution, resulting in lower returns. The KDP program showed no evidence for either possibility: the rates of return discussed above were actually achieved in the last year of the program. Nevertheless, to be conservative and to take account of the caveats the calculations underlying this paper **assumed a rate of return of only 50%, not the 72% actually achieved by KDP**.

The most important fact to note about the benefits of improved infrastructure, however, is that they are long-lasting. The benefits of direct PNPM construction expenditures and of the multiplier/activation effect come to an end in 2009 if PNPM ends that year. The benefits of better roads, irrigation, water supply and schools will last 5-20 years in most cases and, if maintenance is as good as with KDP, some will last pretty much forever. And so will the income they generate.

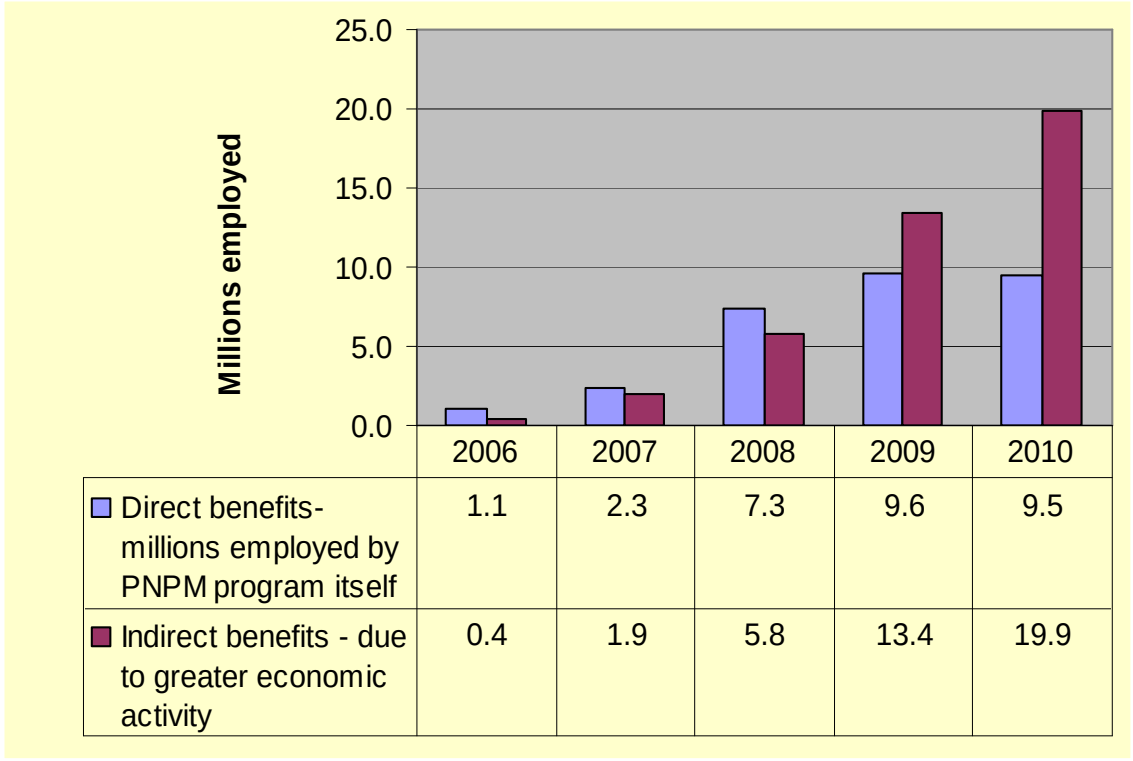
In the EIRR discounted future benefits for 10 years are included. But to calculate the employment benefits of PNPM one needs the annual but non-discounted rate of return. While the Torrens report does not provide that information, the annual rate and the EIRR should be of the same order of magnitude if the annual rate does not fluctuate much. In a small sample of cases that were examined that proved indeed to be the case.

3. The importance of the two indirect benefits: Activation and investment income combined

Adding together the two indirect effects – activation/multiplier and return on investment in infrastructure- increases employment nearly as much as the direct effect in 2008. But by 2009 the cumulative effects of the annual returns from investment make themselves strongly felt and the indirect employment effects exceed the direct effects by about 50%. The benefits of the improved infrastructure which can and should last for years help to make the PNPM program self-sustaining [see below]. It is probably **the most important finding of this study that the indirect effects on employment and income of PNPM very quickly exceed the direct effects.** They obviously must not be overlooked in appraising benefits [See Figure 2 and Table 1 below].

Table 1 and Figure 2 show the large indirect effects of the PNPM rural infrastructure program. The main long-term benefits are due to the cumulative effect of the investment in infra-structure. These investments generate income in turn, for an estimated 10 year life-span. Part of that additional income will be saved and invested and will, in turn, generate income in future years. The cumulative effect is not large in the first two years of the investment, but by the tenth year, thanks to the magic of compound interest, the cumulative income from all of the investment will greatly exceed the original

Figure 2: Sources of Employment by PNPM



	2006	2007	2008	2009	2010
Direct benefits- millions employed by PNPM program itself	1.1	2.3	7.3	9.6	9.5
Indirect benefits - due to greater economic activity	0.4	1.9	5.8	13.4	19.9

cost of the KDP program. Some of the income will accrue to the government in the form of taxes to help fund a continuation of the PNPM on a long term basis.

Even by the fourth year, 2010, the indirect impact of the rural program alone will be quite large if PNPM continues into that year. Some 20 million workers will be employed in rural areas alone as the result primarily of the improved infrastructure. National income will increase by Rp 24 trillion [US$ 2.7 billion] as a result of the indirect impact of just the rural construction part of the program .

Table 1
Indirect Employment Effects of the PNPM Program – Rural [KDP] part only

	2006	2007	2008	2009	2010
a. Kecamatan grant including cash contributions -Rp. Billion	0.8	1.2	3	3	3
b. Income from investment in infrastructure; if return is 50%; one year lag; 15% re-invested; [Rp. billion]	0	0.4	1.0	2.6	4.3
c. Income multiplier adds 0.165 to income [Rp. billion]	0.1	0.3	0.7	0.9	1.2
d. Indirect income b+c [billion]-per Kecamatan	0.1	0.7	1.7	3.5	5.5
e. Person-days of employment per Kecamatan - thousands	6	31	78	163	254
f. Workers employed [million] @ 60 days per year, due to indirect effects- for country as a whole	0.2	1.0	4	11.5	18

4. Raising the wages of all unskilled low paid labor and thus the income of the poor.
One surprising consequence of such programs has been that they raise wages of *all* unskilled rural and urban workers, even if they are not employed as the result of PNPM. Traditionally during the agricultural off-season millions of landless and land-poor workers, with no agricultural income and desperate to earn enough money to feed their family, take very low paid rural work, reducing their annual income and depressing wages throughout the economy. Others without agricultural work flood into the cities to work in construction or bicycle-rickshaw [betjak] driving[6]. An increased supply of labor into the cities also drives down wages there. With PNPM providing alternative employment and income just when they are needed the most it keeps desperate workers with no alternative employment during the off season from depressing wages. It can help smooth out the seasonal fluctuations in the demand for agricultural labor.

Evidence comes from the INPRES program –very similar to KDP- in the 1970s. Without the INPRES program to provide alternative employment, wages for agricultural workers dropped sharply in the non-planting, non-harvesting seasons as these workers desperately sought jobs. INPRES provided a floor below which wages would not fall as low as they previously had during the off-season. While the increase in wages was mostly during a few months this was enough to assure that average and total wages for the year were higher.

[6] Rural activities include boiling palm sap for sugar or toddy; analyzed by Gillian Hart. Many "circular migrants" to the urban areas take low paid construction and betjak driving jobs [Papanek & Kontjorojakti].

A regression analysis of factors influencing the wages of agricultural labor in the short and medium-term showed only two explanatory variables that were consistently highly significant. One was the rate of inflation; the other was the expenditure on labor intensive public works, that is on INPRES. Surprisingly expenditures on development as a whole and the growth of the national income did not have a significant impact. They too increased demand for labor, which tends to increase wages, but the benefit for each billion Rupiah was small, because both could be quite capital intensive. They increased demand for machinery to move earth and equip factories, to dig minerals and cut down trees more than for unskilled labor. INPRES primarily paid for unskilled labor. By increasing labor demand during the season when it helped the most, INPRES benefited the poor who were never in direct contact with the program, raising their wages and increasing their income, and reducing the hours and days when they were without employment.

For every 10% increase in the rather small INPRES program wages of unskilled workers increased by about 2% on average. [See Appendix 2-A for the regression analysis that supports this argument]. What the effect of PNPM will be on workers with no contact with it, it is impossible to say until it is implemented, but it is likely to be as noticeable as for INPRES. PNPM will be larger and should be equally labor intensive and therefore have a comparable impact on wages. This positive effect is not incorporated into the calculations in Appendix Table A-1, nor in the Summary Table. It is an additional, currently un-quantifiable benefit.

C. THE IMPORTANCE OF FULL SCALE FUNDING AND OPERATION: THE COSTS OF CUTS IN THE PROGRAM

1. The benefits of full-scale operation.

As far as they are known, current plans for expanding KDP into PNPM are incorporated into the Summary table. If the expansion of the program is slowed down for lack of resources the benefits in terms of employment and income will obviously also be less. The sensitivity of the employment benefits to changes in inputs are shown in the Summary Table and the spreadsheet attached as Appendix 1. *By 2009 when it reaches its full scale the rural infrastructure part PNPM will employ about 8 million workers directly, and another 11.5 million as the result of the increased economic activity which it fostered, providing 60 days of supplementary employment to nearly 20 million workers.* When the urban programs, discussed below are taken into account the total number employed reaches 24 million.

The impact on poverty is discussed in the next section of the paper.

2. The consequences of a reduced budget for PNPM.

But how many jobs PNPM provides and how many families it pulls out of poverty depends crucially primarily on two budget variables:

- the size of the grant for the average Kecamatan; and
- the number of Kecamatan covered.

If either fails to reach the fully planned level the number of beneficiaries drops sharply and the impact of PNPM on employment and poverty becomes much smaller.

a. The consequences of freezing grants at Rp. 1.5 billion per Kecamatan for 2008 to 2010.

If the level of Kecamatan grants for 2008 to 2010 is frozen at Rp. 1.5 billion, a 20% increase over 2007, instead of more than doubling to Rp. 3 billion per Kecamatan then 10 million fewer workers will have jobs in 2009 [Appendix Table 1. B and Figure 1]. The number of jobs generated will be cut by 41%. Over time the impact of lower grants becomes ever greater. Reductions in grants

mean cut-backs in infrastructure rehabilitation and development. Lower investment in turn means lower growth, which feeds back into even lower second-round income and employment. Therefore by 2010 instead of 30.5 million jobs PNPM will provide only 17.5 million.
The impact on poverty is discussed more extensively below. Obviously a cut in grants will also mean a reduced number of poor who benefit from PNPM: instead of **16 million poor beneficiaries only 9.5 million will benefit in 2009** [Appendix 3 and Figure 3.a in the next section]. And **fewer than 4 million families will escape poverty rather than 6.5 million** doing so.

In 2007 there will be an immediate effect of the decision that grants will increase 50% over 2006, not a tripling as planned at one time. As noted earlier: the ending of the Cash transfer program, or UCT, in 2007 will reduce the income of the poor by more than the PNPM program will increase it, because the PNPM grants now will increase only slowly. *As a result the number of poor may well increase in 2007. This is not a sign that PNPM has failed, it is a reflection of the fact that it is starting slowly.*

The question has been raised whether it is realistic to increase the average grant from Rp. 1.2 billion in 2007 to Rp. 3 billion in 2008, even if it is desirable to do so. It should perfectly feasible to achieve an even greater increase in Kecamatan where KDP/PPK is well established and where the existing organizations are perfectly able to administer a larger program. Indeed in Aceh a Rp. 6 billion grant in 2007 was implemented effectively, despite the handicap of a post-conflict situation. In Kecamatan that enter PNPM or KDP/PPK or UPP/P2KP for the first time the program may need to start more slowly as implementing capacity is ramped up. But since Rp. 3 billion is an average it is perfectly feasible.

Even a reduction of Rp. 1 billion in grants to each Kecamatan in 2008-2010 results in 6 million fewer supplementary jobs generated by PNPM [Appendix Table 1. D] and an increase of some 3 million in the number who remain poor.

b. Expanding the number of Kecamatan in PNPM is the other key to success.
Increasing the size of grants is a necessary, but not sufficient, condition for achieving the goals of PNPM. With only 2,000 rural Kecamatan covered in 2007 the number of families benefited will remain small. The other crucial ingredient in success is to cover all rural Kecamatan, roughly 5,400, in the country by 2009, a 2.5 fold increase.

In 2007 the increase in the number of Kecamatan to be included was small, but in 2008 the target is to more than double the Kecamatan covered, from 2,000 to 4,100. To achieve it will require an early increase in training programs, managerial capacity and the ability to supervise and to prevent KKN [corruption, collusion and nepotism] from increasing. If there is only a 35% increase in the number of rural Kecamatan covered [from 2,000 to 2,700], rather than the 100% increase called for in 2008 then the number of families benefited will fall short by about 30%, 4 million fewer [Appendix Table 1.E]. And in 2009 the reduction in Kecamatan included in the program by 1,000 in 08 and 09 means that instead of generating 24 million jobs 2009 the PNPM program will reach 18.5 million.

c. Labor intensity makes a big difference, but is difficult to affect.
How many poor are benefited by PNPM also depends heavily on the proportion of the funds spent which are used to hire labor. Some programs in other countries limit the non-labor component of the infrastructure program to 30-40%. Neither KDP nor UPP have done so. In fact the rural [KDP] program spent roughly 30% of total KDP infrastructure expenditure directly for labor. It is higher for roads, lower for bridges.

Of the roughly 70% of expenditures used for equipment and materials a substantial proportion is also for labor. But that proportion varies greatly. For roads the bulk of non-labor expenditures are for aggregate [stones, sand] and more than 80% of that cost can be for labor: quarrying the stone or sand, breaking the stone into smaller pieces, loading and unloading. On the other hand for bridges and culverts the non-labor component can be largely fabricated parts with a low labor component.

While data on labor used directly by projects are good, the estimate of the labor in materials, supplies and equipment is subject to a large margin of error because it is based on an informal survey, not a comprehensive one. It has been roughly estimated by Gnagey to be another 30% of total expenditures[7]. Of course this proportion would change with the composition of the infrastructure works to be executed: more roads means more labor is used in the production of materials, while more bridges and more culverts mean a sharp reduction in the labor component of materials. The share of labor in a typical infrastructure project can be raised:

- by providing incentives to both Kecamatan and Village to increase labor use, by providing additional resources to villages that use more labor, less machinery;
- by encouraging construction of labor intensive structures such as roads and irrigation/ drainage works and discouraging works that use little labor [most water supply projects].

If the labor component in materials should turn out to be closer to 15% of total expenditures, rather than the 30% assumed here then total employment in 2009 would be 20 million rather than the 27 million in the Base Case [Appendix 1.C]. What the actual labor inputs are under PNPM needs to be tracked more carefully when the program is under way. A survey of a sample of projects to determine the labor content of their materials inputs is a key elements in improving this estimate.

d. A worst case scenario: Cutting back across the board.

If shortage of budgetary resources and a decision to give PNPM a lower priority become dominant considerations and cutbacks are made in both the grants per Kecamatan, to Rp. 1.5 billion on average, and the number of Kecamatan included in the program, to 4,100 in 2009 rather than 5,400, the savings would be considerable: instead of Rp 16 billion/ $ 1.8 billion, the cost of grants would fall to Rp 6 billion/ $ 0.7 billion. But the benefits of the program would be sharply reduced also. If in addition the labor-intensity of the effort declines so only 45% of funds are spent on labor, rather than the 60% assumed in this paper, then the negative impact would be compounded. Instead of the roughly 24 million expected to be employed in 2009 **fewer than 9 million would be employed under this dismal scenario** [Appendix 1.F]. By 2010 only 10 million would receive supplementary employment, one-third of those benefited under the full-funding scenario. Just 2 million would pulled out of poverty, a bit more than 5% of the poor rather than 15%/ 6.5 million. Given other factors which influence poverty and employment the impact of PNPM would be hard to discern under a minimum budget.

D. THE IMPACT OF PNPM ON POVERTY

The principal objective of this paper is an analysis of the employment impact of PNPM. Both data and time are inadequate to extend the analysis fully to the poverty impact of the program. But some estimates can be made on this important topic [See Appendix 3 for details and supporting calculations].

[7] Richard Gagney in a personal communication estimates that labor is 80% of the total cost for roads, canals and dikes. This includes both the labor used directly and that embodied in materials. On the other hand for bridges' and water supply projects the labor component is only 20%. Since 75% of projects fall in the first category a weighted average is 66% for labor. Thus 60% has been used in this paper.

1. **Impact of PNPM on the poor - Share of the Poor and the Near-Poor in PNPM income.**
Based on KDP experience something like 60-70% of the benefits of PNPM will reach the poor, the other 30-40% going mostly to the near-poor. So out of the 24 million beneficiaries of PNPM in 2009 something like 16 million will be poor [range of 14.5-18 million]. The remaining beneficiaries, something like 8 million will mostly be near-poor. The near-poor are above the poverty line for the year as a whole, but with periods of very low incomes when a low wage in PNPM is acceptable.

That rate of success in reaching the poor is very good targeting compared to other poverty-reduction programs. The reason for this success is primarily due to the low wage paid by the program: less than the prevailing average agricultural wage. Only the truly poor will accept a wage that is less than what they earn in agriculture. Indeed KDP projects were mostly carried out, and PNPM projects will mostly be carried out during the agriculture off-season when agricultural work is limited and poor people desperately search for alternatives. There is little or no work during these months at the agricultural wage which prevails during the busy months.

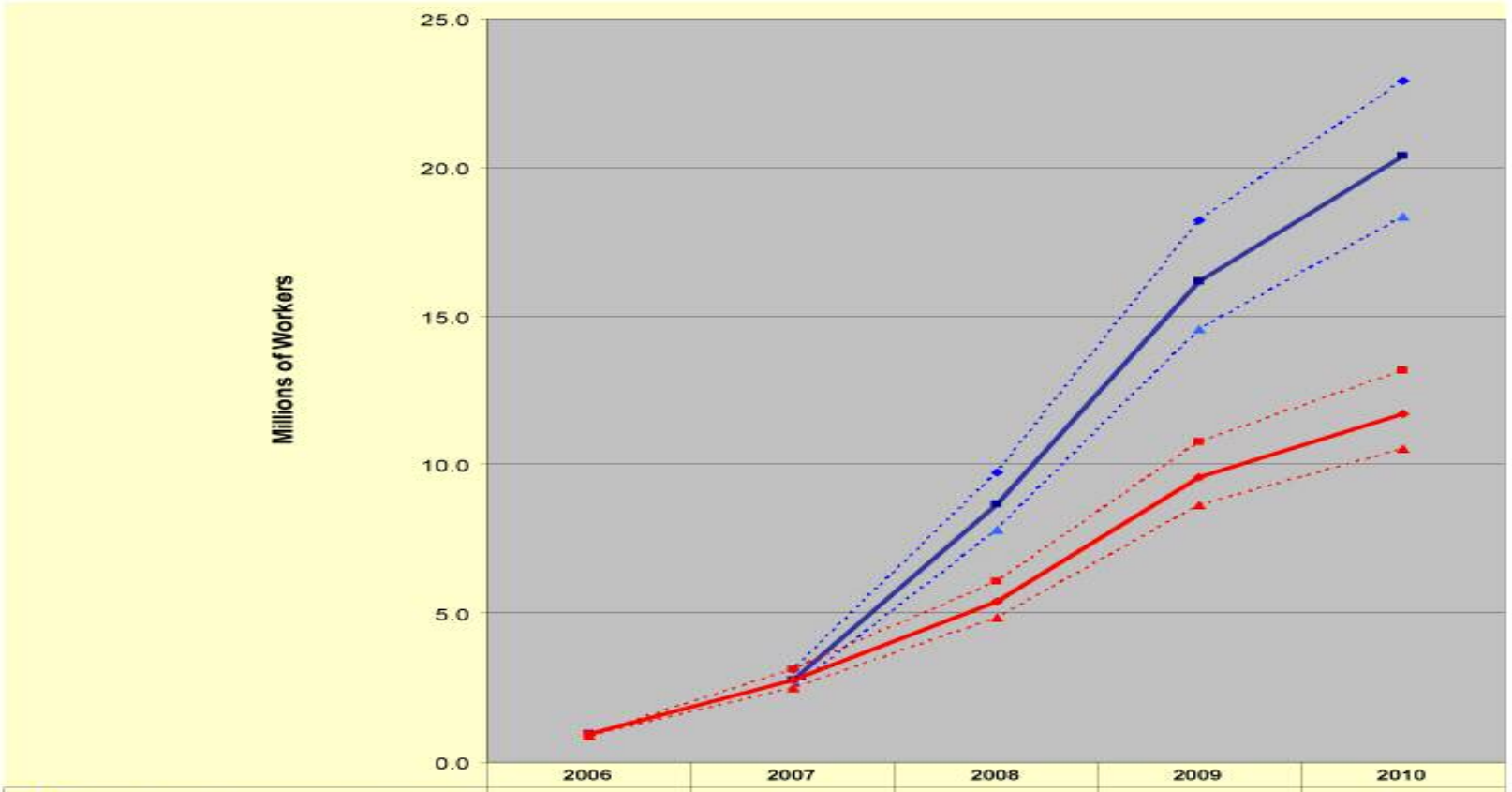
Of course, the PNPM program will benefit 16 million poor only if it is fully funded and executed as currently planned. If the grant per Kecamatan remains at Rp. 1.5 billion in 2008-2010 then the number of poor benefited in 2009 will be reduced from roughly 16 million to about 9.5 million, a substantial reduction in the poor who will be helped [Figure 3.a].

2. **How many poor will escape poverty thanks to PNPM?**
With the data at hand only a rough estimate is possible of the poor that will be pulled out of poverty by the PNPM program. It is reasonable to assume that in the typical household just one person would find employment under PNPM or, in any case, that most households will not get more than 60 days of work under PNPM even if more than one person participates. Working for 60 days that person or those persons will earn roughly Rp 0.8 million a year. The poverty line for an average household of 4.75 persons is Rp 725,000 a month or Rp 8.7 million a year in 2006. Employment under PNPM therefore adds about 9% to the household income of families exactly at the poverty line[8].

If the additional income from PNPM of Rp. 0.8 million a year is shared in a family of 4.75, which is the average number of family members for poor families, then it adds Rp. 13,700 per capita, per month to income, say, Rp 14,000.[9] Since the poverty line in 2006 has been set at Rp. 153,000 the additional income will be sufficient to propel out of poverty any family with average monthly income of Rp. 139,000 but below Rp. 153,000[10]. About 4.5% of the total population falls in the category of incomes between Rp. 139,000 and Rp. 153,000. Roughly two-thirds of them, or 6.5 million people, will benefit from PNPM and will therefore escape poverty.

[8] The per capita poverty line in March 2006 was at Rp. 153,000 a month; or Rp. 725,000 for a family of 4.75, which is the average number of members for poor families; roughly equal Rp 8.7 million a year. Under PNPM 60 days of work at Rp. 13,000 will add Rp. 780,000 a year to income or Rp. 65,000 a month. That is roughly an additional 9% of family income. The underlying assumption here is that the PNPM is a net addition; that there was no income foregone, no opportunity cost, to the work under PNPM. This is a reasonable assumption in my view: individuals will present themselves as available for work in the off-season in agriculture and at other times when other work is not available.
[9] Rp. 780,000/ 12 = 65,000/4.75=Rp 13,684
[10] Rp 139,000 + 14,000 = Rp 153,000

Figure 3a: Total Number of Poor to Benefit from PNPM if Each Kacamatan Grant is Rp. 3 billion or Rp. 1.5 billion in 2008 & 2009



	2006	2007	2008	2009	2010
Upper bound- total poor to benefit with grant per Kec.@ Rp.3 billion	0.9	3.1	9.7	18.2	22.9
Total poor to benefit with grant for each Kecamatan at Rp 3 billion	0.9	2.8	8.7	16.2	20.4
Lower bound- total poor to benefit with grant per Kec Rp 3 billion	0.9	2.5	7.8	14.6	18.3
Upper bound- total poor to benefit with grant per Kec.@ Rp.3 billion	0.9	3.1	6.1	10.8	13.2
Total poor to benefit with grant for each Kecamatan @ Rp.1.5 billion	0.9	2.8	5.4	9.6	11.7
Lower bound- total poor to benefit with grant per Kec Rp 3 billion	0.9	2.5	4.8	8.6	10.5

The calculation of poor beneficiaries is complicated by the fact that not all of the poor can benefit from PNPM because it is not a transfer program but an employment and development program. **Poor families with no family member in the labor force will not benefit from additional employment and income that PNPM provides**. The members of these families are all too old or too young or too infirm to work. They can not be helped by any program that provides employment and higher wages, but only by transfer programs. Many or most of those whose income is below Rp. 100,000 [US$ 11] a month are likely to be in this category-the non-working poor. To simplify calculations the numbers in this paper assume that all those in that income category will not benefit from PNPM.

The data used **ignore the impact of inflation and economic growth** on all variables. If the Kecamatan grants under PNPM are not increased to take account of inflation their value will substantially decline by 2009. At the current rate of inflation the income from PNPM employment will decline from Rp. 14,000 in 2006 prices to Rp. 11,000 in 2009 in real terms. In nominal or current prices it will remain at Rp. 14,000, but the poverty line will have increased by inflation and the income of the poor will have increased because of both inflation and economic growth. All of these factors are discussed at some length in Appendix 3, but are ignored in this paper. With all 3 magnitudes changing, probably by different percentages, trying to make adjustments that take account of both inflation and economic growth becomes highly speculative. Moreover the budget usually tries to take inflation into account in fixing allocation to programs so it is entirely possible that Kecamatan grants will also be adjusted to take account of inflation. **If no adjustment for inflation is made in the size of grants then the number of poor who are pulled over the poverty line will be somewhat smaller than forecast** here.

Another matter complicates the calculations with respect to the impact of PNPM on poverty. **Official data on poverty are based on separate poverty lines for each Province, but the detailed data on incomes by decile are readily available only for the country as a whole**. The poverty lines differ greatly among Provinces. Therefore the national Poverty Line gives a significantly different number for those below the poverty line than the aggregation of Provincial poverty lines. With a National Poverty Line of Rp. 153,000 of income per person per month 23% of the population is poor, while different Poverty Lines for each Province result in an estimate of 18% of the population below the Poverty Line. Since the aggregation of Provincial Poverty Lines gives a more accurate picture of poverty the first step is to normalize the National line to reflect the proportions in the aggregation of Provincial Poverty Lines. That is the first step in Table 1 below. The total number of poor in 2006 is estimated at 39 million.

Table 2

Analysis of the number and percent of poor and those benefited by PNPM

	Single Poverty line for country	Separate Poverty line for each Province	Poor & Near-Poor beneficiaries of PNPM
	(Percent of population)		(millions)
Near-poor beneficiaries	--	--	8
Below the Poverty line	23%	18%	16
Of which:			
below Rp 100,000	10%	7.8%	0
from Rp 100 - 139,000	7%	5.5%	9.5
from Rp 139 - 146,000	3%	2.3%	3.25
from Rp 146 - 153,000	3%	2.3%	3.25

Step 2 is to allocate the beneficiaries among the poor in proportion to their total percent of the poor, after first excluding the poor with income below Rp. 100,000 per month and per person, most of whom are assumed not to benefit from PNPM [see above]. It is the 6.5 million of the poor with incomes between Rp 139,000 and less than Rp. 153 who will gain enough income to leave the ranks of the poor and join those of the near-poor.

A larger number of the poor will benefit from PNPM but will still be poor. The beneficiaries whose income puts them 10% or more below the poverty line are in some ways even more deserving of the additional income the PNPM program can provide than are those with incomes only 10% below the poverty line. The poorer, those with incomes from Rp. 100,000 and Rp. 139,000 will not be pulled above the poverty line by the income that the PNPM program will provide, but they will be benefited substantially nevertheless. [See Figure 3.b.]

In short, of the 39 million poor in 2006 some 16 million will benefit from PNPM by 2009. Another 8 million of near-poor will also benefit. If the program is continued beyond 2009 increasing benefits will accrue each year to both the poor and near-poor. By 2010 more than 8 million would have moved out of poverty and another 12 million poor would have benefited, more than half of the total number of poor in 2006.

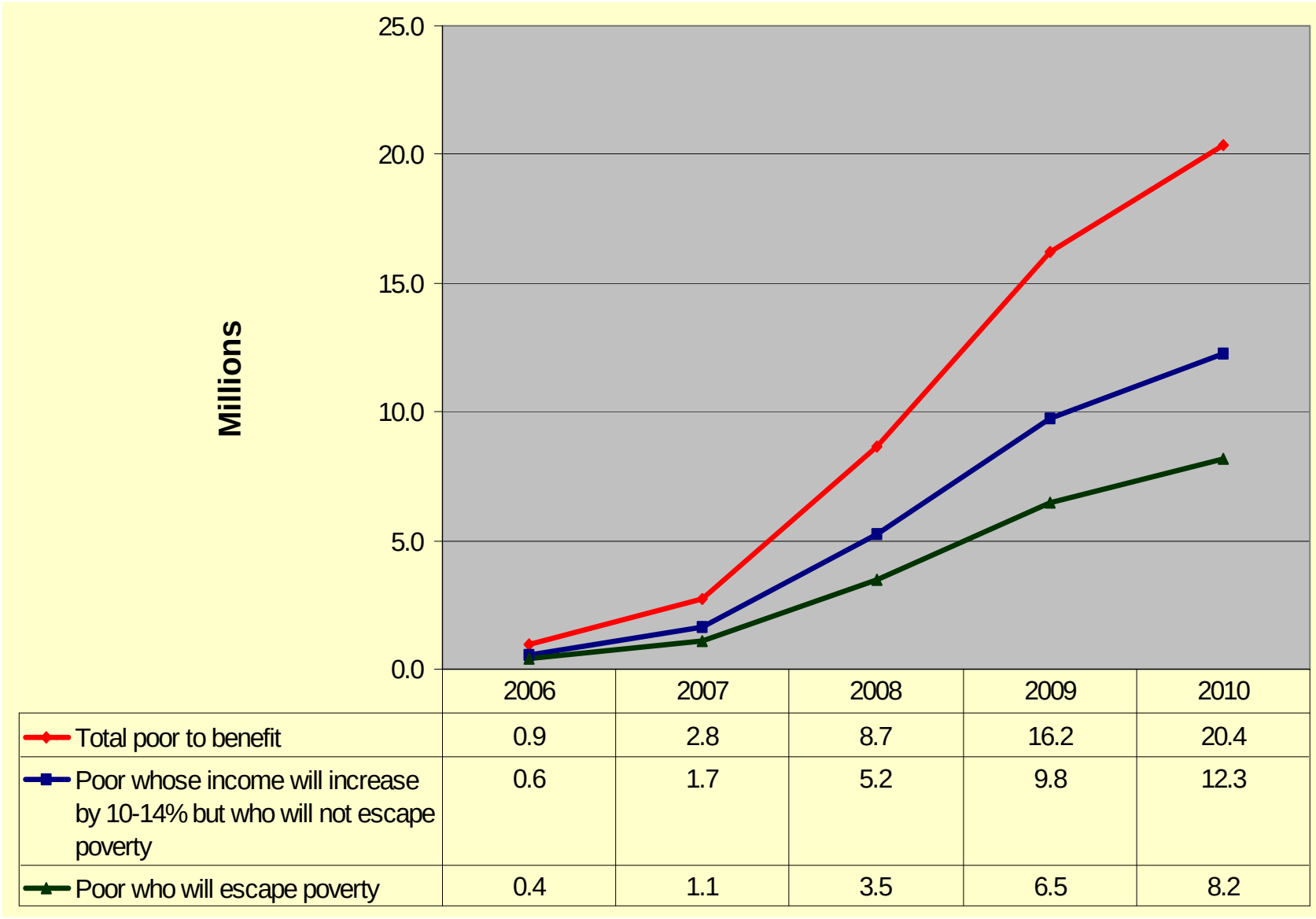
3. **Other factors can and will swamp the impact of PNPM on poverty.**
But all those estimates depend on that old standby of economists "other factors being equal", which they rarely are. How many poor there are depends as much or more on three other factors as on the size and effectiveness of the PNPM program:

[i] the **demand for the labor of the poor** is a crucial determinant of the income of the poor. PNPM is only one element in the demand for labor. The rate of growth of the economy and the labor intensity of that growth can be far more important in determining the demand for unskilled labor. If growth continues in the range of 5.5-6% and is mainly the result of increased income from mineral [coal and copper] and agricultural exports [palm oil] that demand relatively little labor then **even 6% growth may not much reduce poverty, even with the addition of PNPM.**

With 1.5-2 million workers entering the labor force each year that many jobs need to be added for poverty just to remain unchanged [again other factors remaining unchanged as well]. PNPM adds 24 million jobs of 2 plus months each which equals about 4 million full-time, year round, jobs. But 15 million were added to the labor force in the decade 1996-2006 and only 1-4 million jobs were created at best. **PNPM therefore will absorb more of the backlog of excess labor as all other economic activities combined, not a mean achievement.** But there remain between 7 and 10 million additional workers who have not been added to the productive labor force and who exert a downward pressure on wages. Unless that situation is reversed it will be difficult to deal with unemployment and poverty.

[ii] the **price of rice and other basic foods** [cassava, maize] that are a large proportion of the expenditures of the poor are a major factor in their real income. When the rice price increases it usually drags along the price of substitutes. On average it then takes about 18 months for nominal wages to catch up with rising inflation and in the meantime the real wage, the purchasing power, of the poor falls. The statistical relationship between the rate of inflation and the real [inflation adjusted] income of wage earners is a strong one [see Appendix Table 2].

Figure 3b: The Number of Poor who Benefit from PNPM with Increased Income or the Escape from Poverty



	2006	2007	2008	2009	2010
Total poor to benefit	0.9	2.8	8.7	16.2	20.4
Poor whose income will increase by 10-14% but who will not escape poverty	0.6	1.7	5.2	9.8	12.3
Poor who will escape poverty	0.4	1.1	3.5	6.5	8.2

The 20% increase in the rural CPI from February 2005 to February 2006 was a factor in the decline in the real wage of agricultural labor during that period, which reflects a decline in their consumption according to an earlier analysis [February 2006 are the latest data currently available to me].

[iii] rising income **transfers under the program of Conditional Cash Transfers** [CCT] is a third element in the number of poor, though at present of much less influence than the other two. In 2007 the new program, which gives grants to poor families as incentives to get children vaccinated or keep them in school, will cover at most 1.5-2 million families, far fewer than benefited from Unconditional Cash Transfers in 2006. How many more families are included in CCT in future year will determine how much of an impact that program has on poverty.

In short, **there is unlikely to be any close correlation between expenditure under PNPM and the number of poor people as long as the two most important factors influencing the number of poor remain negative: the demand for unskilled labor and the price of the staple foods the poor eat**.

II. EMPLOYMENT IN URBAN AREAS: THE FORMER UPP/P2KP [URBAN POVERTY PROGRAM] PART OF THE PROGRAM

The estimates of the impact of the urban [UPP] part of PNPM and the discussion which follows is far more speculative and uncertain than the discussion of the rural part. Much less research and analysis has been done on the impact of UPP/P2KP and the data are therefore not available for careful analysis.

A. THE URBAN INFRASTRUCTURE CONSTRUCTION PROGRAM.

1. **Differences between rural and urban programs: Infrastructure has been a smaller, micro-credit a larger share of the urban program.**

It has proved more difficult to organize infrastructure projects in urban areas and that part of the program has been a far smaller aspect of UPP/P2KP than it was in KDP/PPK. While KDP has spent 67% of its funds on infrastructure, the proportion in the urban area has been substantially less: initially it was only 13% [UPP 1], then increased to 42% [UPP 2]. But it is expected to be 70% in PNPM, just as it is for the rural part. By contrast the proportion going to micro-credit was much larger in urban, than in rural, areas: 85% in UPP 1 and down to 35% in UPP 2. In the urban part of PNPM the proportion allocated to micro-credit is likely to be down to 20%. Nevertheless is will be larger than for the rural areas, since the allocation to general micro-credit under KDP is zero from 2007 on.

Another important difference between the urban and rural programs is the importance in the former of projects that extend beyond one urban village to multi-kelurahan [village] projects. There are obvious reasons for the greater importance of projects in urban areas that cover whole cities, or large parts of big cities.

Finally the community contribution has been larger in UPP than KDP. The matching grants in KDP come primarily from the Kabupaten, though there are substantial and increasing contributions in kind from villages as the program reaches slightly less poor areas. In the urban areas a substantial contribution from the community was required from the beginning.

2. **The impact of the urban program is far smaller than of the rural one.**

a. The calculation of employment on urban projects uses KDP data extensively.

A great deal of data are available on the UPP program, but very little of it is concerned with the subject of this paper: the increase in employment and income which the program generates. Therefore it has been necessary to rely heavily on information from KDP on such matters as the average daily wage. While it is likely that urban informal sector wages are a bit higher than rural wages, we do know that the two move up and down together and that the differences are not great enough to substantially distort the results. But it would certainly be desirable that the UPP/urban part of PNPM carry out the large-scale surveys needed to provide reliable information on the impact of UPP. The calculations which follow are therefore subject to a larger margin of error because they rely partly on KDP data.

b. Reasons for the small impact of the urban program

The urban/UPP part of PNPM is expected to employ only one-third to one-fourth [see Summary Table] of those employed by the rural/KDP part for several reasons:

- the urban part is smaller than its rural counterpart since there are fewer urban Kecamatan;
- because a far smaller proportion of its grants were allocated to infrastructure in the past [50% rather than 70%]; and
- because UPP grants are made for one year only, while KDP grants last for 3-5 years.

The policy of "graduating" participating Kecamatan after one year - ending funding- is an especially big difference between the two programs. An urban area can spend UPP funds in a second or third year if it has any left over, but it does not receive new money after the first year as UPP funds are shifted to new areas. That policy may make less sense now that the PNPM program is to cover the whole country and is to be a long-term effort. It is another issue whose consequences need to be analyzed. That is, what are the advantages of limiting funding for each urban Kecamatan to one year, versus continuing funding for longer; and if longer, for how long? Indeed the question now arises whether funding for PNPM should be a permanent part of the budget. This is discussed below.

Calculating the impact of the urban program is also complicated by the fact that the allocation of UPP funds was changing drastically from that under UPP to that under PNPM: how much to infrastructure, how much to micro-credit being the biggest difference. The urban program was also just starting to gather impact data and the results of this effort were not available. Finally funds were expected to be expended from 3 different phases of the program –UPP 2, UPP 3 and PNPM– with somewhat different policies and program content. To repeat therefore: the numbers probably have a much larger margin of error than the rural data, but UPP program officials confirm that they were the best available in late 2006 or early 2007.

c. *Best estimates are shown in Appendix Table 1.* Based on the data available from both UPP and KDP programs estimates were made of the funds that would be available for urban areas from 3 programs: UPP 2 and UPP 3, and PNPM. The funds available for UPP 2 were substantial in 2006 and much less in 2007, and negligible in 2008. For UPP 3 funds were large in 2007 and zero by 2009. Both were dwarfed by expected PNPM funds starting in 2007 and reaching their height in 2008 and remaining level thereafter. But because UPP 2 and 3 phased out as PNPM phased in, the urban part of PNPM shows declining funds from 2008 on resulting in declining direct employment generated. Details are provided in Appendix Tables 1.

3. **Employment generated indirectly is an estimate based on KDP data.**

No usable data were available on the indirect employment effects of the urban program. Theoretically urban investment could either yield a higher or a lower return than rural investment. Because of the

density of both population and business in urban areas an investment in roads or clean water could potentially yield a very high return. On the other hand it is difficult to organize public works in urban areas and there may be few opportunities for high yield investments. In the rural areas irrigation can double or even triple crop yields; in the urban areas the potential for irrigation is limited. There are many villages in rural areas that are not connected to all-weather roads and providing such roads can yield high returns; in the urban areas the communities with no all-weather roads are few. For all these reasons returns in urban areas may be lower. Moreover the urban program spent much more on social investment in health and education whose economic returns are low in the early years and accrue over a long term.

In the absence of data and with no strong reason to assume that the returns in the urban areas would be either higher or lower than in the rural ones the best assumption was that indirect returns in the urban areas would have the same relationship to direct returns as in the rural areas. Indirect returns for all urban programs were calculated on that basis. Clearly it would be highly desirable for PNPM to carry out studies on both the direct and indirect returns of the urban as well as the rural parts of the program.

B. THE IMPACT OF THE URBAN MICRO-CREDIT PROGRAM

Estimating the impact of the urban micro-credit program is even more subject to uncertainty than the urban infrastructure program because no survey data exist on employment effects. A useful survey of UPP/P2PK micro-credit has shown that a substantial proportion of the was used to expand enterprises or establish new ones and UPP analysts have made the reasonable assumption that expanding an enterprise or establishing a new one increases employment significantly. They have therefore estimated a substantial increase in employment as a result of the micro-credit program.

But there are flaws in that estimate:
First, it appears that the survey of the uses for credit is a survey of the stated purpose for which the money was borrowed, not of what was actually done with the funds. It is very likely that applicants would claim that they plan to make investments on the assumption that such a purpose would increase their chances of getting a loan. The survey provides no information on whether they actually made the investment.
Second, a survey of the rural/KDP micro-credit program found that regardless of stated purpose about half of rural micro-credit loans were used to retire debt or to increase assets [e.g., stored rice]. Those uses generally do not increase demand for labor. There is no similar survey of urban micro-credit use, but it is plausible that urban poor behave like the rural poor and that many borrowers use credit to retire debt or buy assets.
Third, many micro-enterprises are overstaffed, with more family members participating than are needed, because they can not find a job outside the family business. They are all present for 7-10 hours a day or more whenever the store, for instance, is open, but they have little to do. When turnover increases these family members may serve more customers, but they neither work more hours nor does the enterprise hire more non-family labor.

Without a careful survey of the actual employment consequences of urban micro-credit one can not have confidence in estimates of its employment impact. Maybe the assumption is correct that borrowers use funds for the stated purpose of expanding economic activity, with increased employment as a result, or maybe the main consequence is less debt and more consumption. The calculations for this paper have used the survey results for KDP micro-credit to calculate the employment impact of UPP micro-credit. This gives a far lower employment impact than the assumption that loans requested to expand enterprises all lead to greater employment: UPP staff

estimate is 2.8 million employed for 60 days; KDP-survey-based calculations lead to 0.3 million employed for 60 days, that is, only 10% as much. Which assumption more nearly reflects reality therefore makes a big difference. Only a survey of urban micro-loan beneficiaries can settle the issue. In line with the conservative approach of this paper the lower number has been used as having a more solid empirical base.

The other questions on micro-credit are the repayment rate and the interest rate. If the interest rate does not cover high administrative costs and non-performing loans then the program requires a permanent subsidy or funds available will shrink. Even if non-performing loans [NPL] are only 10% of total loans then funds available will quickly decline if the interest rate does not cover both administrative costs and these NPL. As the pool of loan funds declines their employment impact will also decline. The issue of NPL has not affected the estimates used: the assumption has been that it will be sufficiently low so their cost and those of administration can be covered by the interest rate. Since the employment effects are small even on this optimistic assumption adopting it has little effect on the results.

III. CAN PNPM BE SUSTAINED BEYOND 2009?

It is widely assumed that PNPM is a temporary program, designed to quickly impact unemployment and poverty. In this view by 2009 other programs will address both problems and PNPM can be brought to an end. But there are several reasons for keeping PNPM as a longer term program.

1. PNPM can be a successful investment program, generating a good rate of return, providing some of its own financing and building badly needed infrastructure.

Unlike cash transfers and other programs to deal with unemployment and poverty, PNPM can be an important element in the government's investment program, contributing to the rate of growth and leading to increasing employment in the future.

a. *It builds infrastructure, a key requirement for more rapid growth, for poverty reduction and for employment.* Many infrastructure needs can not be provided by PNPM. It is not an efficient way to build major roads, power stations, harbors or airports. Nor can it build urban water supply systems, secondary schools or major hospitals. But there is great need for rural roads and for rehabilitating some urban feeder roads; for improving local sanitation and drainage systems, both rural and urban and for rural water supplies; for tertiary irrigation canals; for rehabilitating primary schools and local health posts [many were built in 20-35 years ago by an earlier program and have badly deteriorated]; for planting trees and rehabilitating deteriorated land; and so on. The earlier program [INPRES] lasted 15 years or more; KDP itself has lasted 8 years and still there are great unmet needs for infrastructure. By 2009 the program will surely not have built and rehabilitated most of needed infrastructure.

b. *It can build infrastructure at half to two-thirds the cost of contractor-built government projects.* A careful study of KDP, done be engineers concluded that a sample of projects was executed at much lower cost than standard contractor costs in the same area. The main reason was the incentive system: villagers wanted to save money so they could build a longer road for the same cost; contractors and their labor have different incentives [see Torrens]. In addition KDP has low "hidden costs", it has been largely able to avoid or rather to drastically reduce, corruption [see Olken] and has developed techniques to reduce it further. Therefore the needed infrastructure costs substantially less and more can be built for the same price. *In short*, it would be fully justified to allocate some of the governments' infrastructure budget to PNPM.

c. *The rate of return on KDP projects is excellent and some of it will increase government revenue and be available to fund PNPM in the future.* As noted earlier the Economic Internal Rate of Return [EIRR] on a sample of projects was 72%, far better than most projects. This translates into an annual increase in income of 72% for many years. Indeed with reasonable maintenance most of these projects can last forever. The cost of maintenance has not been included in the above calculations. But if maintenance requires 5-10% of original cost then the net returns will be still be a phenomenal return well above 50%. The increased Government revenue has not been calculated, but could be.

Note that the increased income also leads to increased saving and investment, which leads to further increases in income and employment in future years. Within 4 years of the start of the program the annual rate of return will exceed the costs of the program by some 50%. There are few, if any, investments that are as productive. As with any good investment, those made under PNPM will increase consumption, savings/investment, government revenue and exports. To calculate the exact amounts would be a major exercise but with that rate of return the impact should be large in all respects. The increase in government revenues could, of course, be used to support continuation of PNPM. There are few, if any, government programs that will pay for themselves to the same extent.

2. PNPM can and should be an essential element of a badly needed Social Safety Net [SSN]. It is widely accepted that Indonesia needs a SSN. It could contribute to labor peace, reduce the pressure for large terminal pay allowances and help keep millions from falling into poverty at the slightest problem. The essence of a successful SSN is that it is
- largely automatic, responding quickly as the need arises, and
- that it makes it difficult to cheat, easy to get help when truly needed.

PNPM can help in both respects: it can be set up so that when there is more demand for work at a modest wage it responds; and by requiring the beneficiaries to work it discourages families from trying to be considered "poor" if they are not poor at all.

In short, PNPM should be thought of as a long-term program, an important element in development/ growth and in providing a Social Safety Net for workers, notoriously difficult to reach efficiently, that can partly finance its own costs.

Appendix Table 1
Belongs here. Excel spread sheet

Appendix Table 2:
FACTORS AFFECTING AGRICULTURAL WAGES IN JAVA, 1976-1987

	EAST JAVA	CENTRAL JAVA	WEST JAVA
INTERCEPT	-2.76	5.78	5.64
	(-2.06)	(3.26)	(4.27)
CURRENT PRICE	.047	.176	.220
	(1.07)	(1.58)	(2.14)
PRICE 1 QTR LAG	.250	.456	.318
	(3.99)	(3.71)	(2.90)
PRICE 2 QTR LAG	.144	.280	.119
	(2.24)	(2.38)	(1.05)
PRICE 3 QTR LAG	.045	.157	-.143
	(.69)	(1.36)	(-1.50)
PRICE 4 QTR LAG	-.041	-.114	-.033
	(-.64)	(-.93)	(-.29)
PRICE 5 QTR LAG	.044	.120	.090
	(.70)	(1.00)	(.71)
PRICE 6 QTR LAG	.073	-.035	.018
	(1.12)	(-.28)	(.16)
PRICE 7 QTR LAG	-.011	-.202	.061
	(-.19)	(-1.71)	(.65)
VA-PER CAP	-.351	.175	-.035
	(-1.77)	(.49)	(-.16)
VA-PER CAP - LAGGED	.539	-.810	-.217
	(2.95)	(-2.79)	(-.97)
INPRES	.151	.238	-.014
	(5.05)	(5.59)	(-.61)
NON-INPRES DEVELOPMENT	.079	.073	.038
	(1.92)	(1.07)	(1.18)
TIME	.013	.014	.013
	(3.44)	(2.60)	(2.44)
PLANTING	-.307	-.40	-.478
	(-65.33)	(-51.86)	(-99.08)
WEEDING	-.191	-.316	-.50
	(-40.85)	(-41.03)	(-103.60)
ADJ. R. SQ.	.998	.996	.998
F Statistic	4180	2220	3705

Numbers in parentheses are t-statistics. Values of 2.0 and above are statistically very significant.

Notes: Wages is the average of wages for planting, hoeing and weeding.
VA agri per cap – the value added in agriculture per person in the agricultural labor force.
INPRES – real expenditure on all INPRES (labor intensive public works) programs in the Province.
Non INPRES Develop – real national expenditure on all development programs except for INPRES.

Deflators were used for:
VA agric – the deflator used for the agriculture component of Gross Domestic Regional Product (GDRP).
INPRES – GDRP deflator for public administration and services.
Non- INPRES Develop – the National Consumer Price Index (CPI)
Except for dummy variables, all variables are in logarithms.
Planting & weeding-dummy variables to distinguish wages for these activities from wages for hoeing.

Sources: Wages and prices calculated from Central Statistical Office, Government of Indonesia, Central Statistical Bureau, (BPS), Indicator Ekonomi (various) for "Farmers Terms of Trade";
Cf: G.F. Papanek "Changes in Real Wages: Employment, Poverty, Competitiveness" Development Studies Project unpublished paper, DSP #24, April 1989.
INPRES and total national development data from World Bank reports.
Value added from BPS, "Provincial Income in Indonesia".
Agricultural labor force from BPS "Population in Indonesia";
Value added per capita is values added divided by agricultural labor force for same Province.

Table from: Papanek, Gustav F. "Growth, Poverty and Real Wages in Labor Abundant Countries", background paper for World Bank, World Development Report, Dec. 1989.

==========

Appendix 3

ESTIMATED POVERTY IMPACT OF THE PNPM PROGRAM

1. Benefits of PNPM for the poor.

PNPM provides on average 60 days of employment per family @ Rp. 13,000/day = Rp. 780,000 = Rp. 0.8 million. So 60 days of work a year on PNPM adds Rp. 65,000 a month to income.

If that income is shared in a family of 4.75, which is the average number of family members for poor families, then it adds Rp. 13,700 per capita, per month to income, say, Rp 14,000.

Per capita poverty line in 2006 is Rp. 153,000 per month or 730,000 per month for family of 4.75 = poverty line per year is Rp. 1.8 million per person or Rp. 8.8 million per family.

In 2006 those with per capita monthly incomes of Rp. 139,000-152,000 will be lifted out of poverty by the Rp. 14,000 which PNPM will provide per month per capita.

2. Impact of Inflation and growth: These benefits however are calculated at 2006 prices. Assuming inflation continues at 6.5% a year, the poverty line will increase every year by roughly that amount; alternatively one can say the benefits of PNPM will shrink in real terms. However, if growth continues at roughly 6% a year then per capita incomes will rise at something like 4.5% a year in real terms and by 11% a year at current prices.

In three years from 2006 to 2009 the Poverty line will have increased by about 21% to Rp. 184,000. But the poor whose income was Rp. 139,000 will have increased it by 14% at constant prices and by 35% at current prices to Rp. 186,000. The income from PNPM will not have increased at all unless the Government increases funding for PNPM to take account of inflation. The effect of inflation is shown below on these assumptions. Those with non-PNPM incomes of Rp. 170,000 in 2009 will be pulled out of poverty.

Table 1

Effect of inflation on income of the poor and on the benefits from PNPM

Year	Poverty line	Income of marginal poor under various assumptions	Income from PNPM	Total income of marginal poor including from PNPM
2006	153	139	14	153
2009	184*	158**	14	172
2009	184*	170***	14	184
2009	184*	186****	14	200

* 2009 Poverty line is 2006 Poverty line plus 20% to account for inflation .
**Income of Marginal poor at 158,000 is the income of 139,000 plus 14% of income growth.
***At 170,000 it is the lowest income which, with the addition of the Rp. 14,000 from PNPM will put the family above the poverty line in 2009.
****At 186,000 it is the income of those at 139,000 in 2006 adjusted for both income growth and inflation.

What proportion of the poor will have incomes between Rp 170,000 and Rp 184,000 in 2009 is hard to predict. But given these assumptions it is unlikely to be much different than the proportion in 2006, as not only the poverty line but also incomes increase with inflation and with growth. *The effect of inflation is therefore ignored in what follows since it would be highly speculative.*

3. Growth in the labor force

Each year 1.5 – 2 million join the labor force. If the economy does not generate enough regular, reasonably well-paid jobs to employ them they will join the ranks of the poor. How many are poor in 2009 obviously depends heavily on how much additional demand for labor results from growth, it does not depend primarily on the number of jobs created by PNPM. Therefore it is difficult to measure the success of PNPM by the percent of poor people in the country.

4. Who are the poor and how many can be helped by PNPM?

In the 2006 Susenas survey each income decile has roughly 21.6 million of population.
Between the second and third poorest decile the median income increases roughly Rp. 2,600 a month for every 1% or 2.16 million people added to the income cohort.

Table 2

Median income by decile for the poor in 2006

Poorest 10%:	Rp 99,000
Second poorest 10%	Rp 133,000
Next poorest 10%	Rp 159,000

When compiled by deciles for the country as a whole some 23% are shown as below the national poverty line: the poorest 2 deciles or 20% of the population with incomes from 0 to Rp. 146,000 and another 3% of those with incomes from Rp 146,000 to Rp. 153,000. But national figures show a total of only 18% below the poverty line. The reason for the difference is that BPS has a separate poverty line for each Province and the national poverty line is the aggregation of Provincial Poverty lines. So in some Provinces only those with incomes below Rp 140,000 may be poor, while in others the poverty line is at Rp 160,000. In the compilation by deciles the Poverty line is uniformly set at Rp. 153,000, ignoring differences in the prices of commodities bought by the poor and differences in the composition of their purchases. But the proportion in different income group should be similar for the two methods of calculation.

In the compilation by deciles roughly 3% of the population, or 6.5 million people, have incomes between Rp. 139- 146,000. The distribution of the poor is then as follows:

Table 3

Analysis of the number and percent of poor and those benefited by PNPM

	Single Poverty line for country	Separate Poverty line for each Province	Poor & Near-Poor beneficiaries of PNPM
	(Percent of population)		(millions)
Near-poor beneficiaries	--	--	8
Below the Poverty line	23%	18%	16
Of which:			
below Rp 100,000	10%	7.8%	0
from Rp 100 - 139,000	7%	5.5%	9.5
from Rp 139 - 146,000	3%	2.3%	3.25
from Rp 146 - 153,000	3%	2.3%	3.25

So of the 18% who are poor about 4.5%, or one quarter –that is almost 10 million- have incomes between Rp. 139,000 and 153,000 that will move them out of poverty if they receive Rp. 14,000 from PNPM.

5. Poor who will not benefit from PNPM – The Handicapped Poor.

Not all of the poor will be benefited by PNPM. Individuals with an income of less than Rp. 100,000/ month, about 8% of the population, will rarely be helped by PNPM. Most of these 11 million persons are probably in families who with no one able to work, no one in the labor force, because members are too old or too young, or ill or with physical handicaps. Many such families can not benefit from the work opportunities provided by PNPM. If they are going to be helped it will have to be by welfare, that is Unconditional Cash Grants, or by Conditional Cash Grants.

6. Who can be helped and who can be pulled out of poverty by PNPM?

Since roughly 8% of the poor will not be helped by PNPM there remain 10% of the poor who can be helped by PNPM. Of those 10% some 4.5% would have monthly incomes between Rp. 139,000 and Rp. 153,000 and would move above the poverty line IF they received additional income from work under PNPM.

Another 5.5% of the poor, with incomes between Rp. 100,000 and Rp. 139,000 would also be better off as a result of the work and income from PNPM, but their increased income will not be sufficient to pull them out of poverty. The poorest in this group, with incomes of Rp. 100,000 would see their income increased by 14% as the result of earning Rp. 14,000 from PNPM work. The richest in the group, with incomes just below Rp. 139,000 would have a 10% increase in income if they earned Rp. 14,000 from PNPM work. But neither would receive enough money from PNPM to move out of poverty.

7. The near-poor who will benefit from PNPM

KDP experience is that about 20-33% of the benefits will go to the non-poor or rather to the near-poor. This is good targeting by the standards of pro-poor programs. The reason for this success is primarily due to the low wage paid by the program: less than the prevailing average agricultural wage. Only the poor will accept a wage that is less than what they earn in agriculture. Indeed KDP projects were mostly carried out, and PNPM projects will mostly be carried out during the agriculture off-season when agricultural work is limited and poor people desperately search for alternatives. There is little or no work during these months at the agricultural wage which prevails during the busy months.

Wages under PNPM are also supposed to be low and therefore the same ratio is likely to apply. Then up to one-third, or 8 million of the 24 million getting jobs in 2009 will be near-poor and 16 million will be poor.

8. The poor who will benefit from PNPM

There are an estimated 39 million poor. Some 11 million of them may not benefit from PNPM because they have no one in the family who can work. That leaves 28 million poor who could potentially benefit. Of those only roughly 60%, that is 16 million, will to able to get work and income under PNPM in 2009. Others will be in rural or urban villages that are not benefiting from PNPM that year or that have other work during the months when PNPM construction is going forward or for other reasons will not get jobs under the program. 40% of these poor beneficiaries have incomes sufficiently high so that the additional income of PNPM will lift them out of poverty.

If different income groups of the poor get these jobs in rough proportion to their numbers then one can estimate the pro-poor impact of PNPM. Some **16 million poor will benefit from PNPM in 2009. More would benefit in later years if the program continues. Of that group only 6.5 million will have been poor but will be lifted out of poverty by PNPM, or about 3% of the population. That effect might not show up in poverty data because other factors –the rate of growth, the price of rice- can have a much bigger effect.**

The **9.5 million poor who will not escape poverty** now live on Rp. 100,000 to 139,000, or $ 11-$15, a month. Their **income will increase by 10% to 14%,** making them much less poor.

9. Uncertainty and range

There are a number of assumptions that underlie these conclusions that could readily turn out to be somewhat different in fact.

One is the proportion of non-poor or rather near-poor who will benefit from PNPM.
Rather than 1/3 it could be 40% or less than 25%, largely depending on the wage that PNPM offers in different areas. That could increase poor beneficiaries from 16 million to 20 million or reduce it to 14 million.

The benefits from PNPM may be totally swamped by **other factors that increase or reduce poverty**: [i] the **demand for the labor of the poor** is a crucial determinant of the income of the poor. PNPM is only one element in the demand for labor. The rate of growth of the economy and the labor intensity of that growth can be far more important in determining the demand for unskilled labor. If growth continues in the range of 5.5-6% and is mainly the result of increased income from mineral [coal and copper] and agricultural exports [palm oil] that demand relatively little labor then even 6% growth may not much reduce poverty.

[ii] the **price of rice and other basic foods** [cassava, maize] that are a large proportion of the expenditures of the poor are a major factor in their real income. When the rice price increases it usually drags along the price of substitutes. It usually takes about 18 months for nominal wages to catch up and in the meantime the real wage, the purchasing power, of the poor falls. The statistical relationship between the rate of inflation and the real [inflation adjusted] income of wage earners is a strong one [see Appendix Table 2].

[iii] rising income **transfers under the program of Conditional Cash Transfers** is a third element in the number of poor, though at present of much less influence than the other two. In 2007 the new program, which gives grants to poor families as incentives to get children vaccinated or keep them in school, will cover at most 1.5-2 million families, far fewer than benefited from Unconditional Cash Transfers in 2006. How many more families are included in future year will determine how much of an impact that program has on poverty.

This paper does not address these other factors in the number of poor, but is concerned with the impact of PNPM. But it must be recognized that the demand for labor and the price of basic staple foods can affect the poor as much or more as the supplementary jobs under PNPM. Neither an increase nor a decrease in the number of poor can therefore be ascribed to PNPM without a careful analysis of other factors determining the number below the poverty line.