1. The Poverty Challenge

It is well known that poverty is a global phenomenon. Different countries may face different intensity of poverty problems, and may have different policies and experiences in reducing poverty incidence. According to statistical data of Central Agency of Statistic, the population of Indonesia in 2003 is about 215.3 million people with the growth rate about 1.5 percent per year. The number of people living under the poverty line in 2003 has reached 37.3 million people or equal to 17.4 percent of total population. This implies that the number of poor people in Indonesia has decreased 1.1 million or 2.9 percent as compared to poverty incidence in 2002.

Poverty has many dimensions. In addition to low income (living on less than $1 a day), illiteracy, ill health, gender inequality, and environmental degradation are all aspects of being poor. This is reflected in the Millennium Development Goals (MDGs), the international community’s unprecedented agreement on the goals for reducing poverty (World Development Report 2004). Compared to the World Bank criterion of $1 a day as poverty line, the proportion of the poor in Indonesia is 7.4 percent of total population. But, it will reach 53.4 percent of total population if $2 per day is used as the poverty line. This means that there are still many Indonesian families who are not currently categorized as poor but are vulnerable to falling into poor groups. This condition is due to a large number of families that live just above the poverty line. For example, the Human Development Report 2003 has revealed that the population without
sustainable access to an improved water sources in Indonesia was 22 percent, while those who live without access to improved sanitation was 45 percent, and births without being helped by skilled health personnel was 56 percent.

Most of Indonesia's poor (78 percent) live in rural areas and depend on the agricultural sector for their main livelihood. Agricultural sector dominates the national employment scene with 41 million workers, of whom 80 percent are attached to the informal economy. Even though poverty is very much a rural phenomena, unfortunately, the rural poor are often confronted with disadvantages stemming from remoteness, lack of education and health care, insecure and unproductive jobs, high fertility and discrimination for women or ethnic minorities. Thus, poverty reduction policies and programmes must give strategic focus on rural development, and must create more opportunities for women and men to find work in the rural areas. Such policies not only promote economic growth, but also help alleviate urban poverty by restraining rural-urban migration (ILO Jakarta, 2003).

<table>
<thead>
<tr>
<th>Year</th>
<th>Rural</th>
<th>Urban</th>
<th>Rural + Urban</th>
<th>Percentage of total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>35.5</td>
<td>18.7</td>
<td>54.2</td>
<td>40.1</td>
</tr>
<tr>
<td>1990</td>
<td>17.8</td>
<td>9.4</td>
<td>27.2</td>
<td>20.1</td>
</tr>
<tr>
<td>1996</td>
<td>15.3</td>
<td>7.2</td>
<td>22.5</td>
<td>11.3</td>
</tr>
<tr>
<td>1998</td>
<td>31.9</td>
<td>17.6</td>
<td>49.5</td>
<td>24.2</td>
</tr>
<tr>
<td>2000</td>
<td>26.4</td>
<td>12.3</td>
<td>38.7</td>
<td>18.9</td>
</tr>
<tr>
<td>2002</td>
<td>25.1</td>
<td>13.3</td>
<td>38.4</td>
<td>18.2</td>
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<tr>
<td>2003</td>
<td>24.4</td>
<td>12.9</td>
<td>37.3</td>
<td>17.4</td>
</tr>
</tbody>
</table>

Given this close connection between the rural economy and poverty, the Indonesia government has made a formal commitment to rural development by seeking to implement measures that will stimulate off-farm employment opportunities. In particular, the government's recent White Paper has focused on the development of small-scale agribusiness activities. Examples of judicious interventions that the government could consider include improvements in land tenure security, enabling farmers to diversify into agribusiness through provision of greater information and capacity-building, and nourishing linkages between small and large business.

Another plank of rural development is investment in rural infrastructure. A recent study suggests that there are significant weaknesses in the provision of infrastructure facilities in Indonesia (World Bank Jakarta, 2003). Around 50 percent of Indonesian households do not have access to electricity, while there
are only 9.1 telephones per 100 people. Approximately 50 percent of Indonesians in the poorest quintile do not have access to an asphalt road as the main road in the place in which they reside. Between 6 to 11 millions Indonesians do not have any reliable connection to any decent road or motorised transport network. These people are likely to reside in some of the least accessible and disadvantaged areas of the country. Future public spending allocations would need to focus on the provision of rural infrastructure facilities. Connecting the rural poor to markets and services through a rural road network of a reasonable standard will form an important plank of the government’s poverty reduction strategy.

2. Poverty Reduction Strategy

Many governments are failing short on their obligation, especially to poor people (World Development Report 2004). To meet this responsibility, governments and citizens need to make the services that contribute to health and education - water, sanitation, energy, transport, health, and education - works for poor people. Too often, these services are failing. Sometimes, they are failing everybody - except the rich, who can opt out of the public system. But at other times, they are clearly failing poor people. How do we know that these services are failing poor people?

First, while governments devote about a third of their budgets to health and education, they spend very little of it on poor people - that is, on the services poor people need to improve their health and education. Public spending on health and education is typically enjoyed by the non-poor. Second, even when public spending can be reallocated toward poor people - say, by shifting to primary schools and clinics - the money does not always reach the frontline service provider. Third, even if this share is increased, teachers must be present and effective at their jobs, just as doctors and nurses must provide the care that patients need. But they are often mired in a system where the incentives for effective service delivery are weak, wages may not be paid, corruption is rife, and political patronage is a way of life. Highly trained doctors seldom wish to serve in remote rural areas. The fourth way services fail poor people is the lack of demand. Poor people often don’t send their children to school or take them to a clinic. Weak demand can also be due to cultural factors, notably gender. Some parents refuse to send their daughters to school. Husbands have been known to prevent their wives from going to clinics - even for deliveries.

Many Indonesian women and men still live in poverty. The government of Indonesia has made a serious commitment to put in place the right pro-poor growth policies that will allow people to break out of poverty. The commitment is shown by put the poverty reduction as the priority in Act No. 25 year 2000 on National Development Program. It was stated that the incidence of poverty has to be reduced by 4 percent within five years (2000 – 2004).
The recent achievement in macroeconomic stability in Indonesia has shown good indicators to stimulate business and economic growth. The challenge is how to bring the macroeconomic stability to develop micro, small, and medium enterprises to grow that will provide equitable development. Past experiences showed that emphasis on economic growth itself is not sufficient to solve the problem of poverty. The policy on economic development should guarantee the provision of basic public goods and services, such as health and education facilities, job opportunities, potable water, affordable foods and a good quality of the environment, fair justice and court system, and better social cultural atmosphere.

The government of Indonesia has reaffirmed its commitment to produce a comprehensive equitable growth and Poverty Reduction Strategy Paper (PRSP) by May 2004. The formulation of such strategy is based on participatory approach, which means that all stakeholders, including the poor, should have an opportunity to contribute. Beside participatory, the other basic principles of PRSP formulation are transparency, accountability, and mutual benefit. According to the World Bank (2003), the PRSP formulation in Indonesia is more participatory than other countries. Nevertheless, there still a big challenge on how the new strategy on poverty can encourage sectors to be more focused to meet the needs of the poor.

As a road map for full PRSP, Indonesia has had the Interim PRSP in early 2003. The I-PRSP lays out four pillars of poverty reduction strategy, namely promoting/broadening opportunity, community empowerment, capacity building and human resource development, and social protection. These four pillars are basically derived from two main approaches, i.e. (1) increasing income of poor people through productivity improvement; and (2) lessening the expenditure of poor people to have access to basic, social, and economic services. On promoting the opportunities, the government along with private sectors and communities should make efforts to promote as much business and employment opportunities for poor people. The government, private sectors, and communities should also empower poor people to be able to attain their economical, social, and political rights. To strengthen the capacity of the poor, the government, private sectors, and communities have to assist poor people to enhance their capacity and capability. Finally, the government with the support of private sector and communities should provide social and security schemes to protect poorest groups due to natural disasters, negative impacts of economic crises, and social conflicts.

One of the key aspect is to maintain the link between the PRSP and planning and budgeting processes. Ideally, the PRSP should serve as a framework for the development of the relevant planning and budgeting instruments. Total budget allocation for poverty reduction programs in Indonesia was Rp 16.5 trillion in 2002, while the allocation for 2003 was Rp 11.9 trillion. This means that the
budget allocation for poverty reduction programs has decreased by 28 percent in 2003. Recently, there are 16 actual poverty reduction programs that have been implemented in 10 government institutions. These programs are including of family empowerment, agribusiness development, urban poverty, micro, small, and medium enterprises partnerships, revolving fund, small islands and coastal zone community empowerment, kecamatan development program, rural infrastructure development, women empowerment through local economic development, and land management.

It was realized that Indonesia needs to have a new poverty reduction strategy under a new political environment of freedom, democratization, and decentralization. Combating poverty should be based on the regional approach and decentralization policy, which provides a greater role of local government at the district level in reducing poverty. The decentralization effort and related fiscal framework is an important element to combat poverty and to better address the problem in every part of Indonesia.

In order to achieve poverty reduction target based on the National Development Program, strategic issues to be overcome in promoting opportunities are mainly related to the lack of access to employment and factors of production. Lack of access to employment is influenced by level of education and health, while lack of access to factors of production includes of access to working capital, market, and asset ownership. Access to market and services to the poor can be improved through improving road infrastructure. The important consideration on this issue is how to ensure that the provision of road and other infrastructure will be actually benefits to the poor by reducing the cost of accessibility to basic, social, and economic needs. On the other side, effort to increase the income of poor people will mostly relate to the improving of farmer incomes through micro and small-scale agribusiness.

3. Overview of the Infrastructure Condition

Economic infrastructure refers to infrastructure consisting of physical infrastructure which produces services to enhance economic productivity and living quality, such as transportation, telecommunication, electricity, and irrigation. The role of infrastructure in development can be seen from their contributions to economic growth and to the improvement of living quality. As far as macro economy is concerned, the availability of service from infrastructure influences marginal production of private capital while from micro economy point of view, the availability also affects the reduction of production cost.

The contribution of infrastructure to the improvement of living quality are shown by (1) the availability of amenities in physical environment; (2) the enhancement of prosperity including the increase in consumption value,
improvement of productivity from labour as well as access to job opportunities, and improvement in real prosperity; and (3) the realization of stability in micro economy which is indicated by fiscal sustainability, developing credit markets and their influences on labour market.

In Indonesia, development planning of infrastructure puts emphasis more on physical planning, while service is not paid much attention. The impacts of long-lasting economic crisis demand total reformation in every living element of the country by giving significant influence on the level of availability, quality of services, and effectiveness in managing infrastructure. The economic crises decreases the capability in providing service on means and infrastructure, mainly because of the lack both financial capability in fulfilling the needs for operations and maintenance for existing networks of means and infrastructure.

Ratio of electrification was still low, that is around 58 percent in 2001. Besides, the absence of new investment in this field in the form of new generators brought about electricity crises in 28 regions outside Java and Bali islands. Ratio of electrification between villages located in eastern and western part of Indonesia is 91 by 66 percent. The installing capacity of generators for western part was 92 percent while for eastern part was 8 percent. It was not possible to build an inter-connection networks for eastern part being as efficient as those for western part due to the uneven distribution of population.

In the year of 2000, as long as 140,000 km road (or 48 percent of 291.5 thousand km) was slightly and heavily damaged, including the main economic route, such as northern coastal areas in Java and eastern Sumatera. As long as 8,798 km of national and provincial roads were in a poor condition in 2000. For roads in district, the damage affected 134,443 km roads. Social and economic user costs was estimated to reach Rp 200 billion far exceeding the investment capability of government in roads. Since 1993/1994, roads in district were never in good conditions. On average, they were in both slight and heavy damage. Therefore, maintenance cost for roads was far from being adequate. As a result, backlog maintenance took place so that in 2001, the length of damaged national and provincial roads was doubled compared to that in 2000 which was 16,740 km while the damaged district roads reached around 150,000 km. Apart from the insufficient national budget, other factors causing the damages included excessive overloading, poor quality of road construction, natural disasters, as well as the absence of awareness of maintaining public asset.

Up to now, there are only around 8.8 million telephone connection or around 3 connections per 100 people all over Indonesia. Moreover, it is around 86 percent was located in western part of Indonesia. Law of telecommunication gives mandate for perfect competition for the procurement of telecommunication although the implementation is very slow. No new networks for fixed lines were built since the crisis. Duopoly by PT Telkom and PT Indosat controlled the full
service network providers market. Therefore, the development of domestic telecommunication infrastructure at present depends on the capabilities of both companies. There has been no policy of Universal Service Obligation (USO) to conduct telecommunication development in unprofitable areas so that the even distribution of development of telecommunication infrastructure can not be guaranteed.

To support agriculture development, around 1.5 million ha out of 6.7 million ha irrigation networks in slightly and heavily damaged conditions. The government could only provide between 40 and 50 percent of operational and maintenance costs. Besides, between 15 and 20 thousand ha per year of irrigated agricultural fields were converted for non agricultural purposes. The continuous degradation of 62 out of 470 catchment areas was caused, among others, by uncontrolled deforestation in the upper end the river. The damages in irrigation networks will lower the performance in the provision of irrigation water so that it will decrease the area’s length for rice plantation. If it is not remedied seriously, it will hamper the fulfillment of national rice product. The damaged networks reached 22.4 percent of the total networks, of which 73.4 percent were located in Sumatera and Java islands which are the national rice barns.

4. **Rural Infrastructure Development and Poverty Reduction**

The exact relationship between the use of services and prices or family income varies, but for poor people, lower incomes and higher prices are associated with less use. Poor people spend a lot of their money on services: 75 percent of all health spending in low-income countries is private, 50 percent in middle-income countries. Based on government sources, these broad aggregates are probably underestimates, hiding the heavier burden on poor people.

In many of the poorest countries, access to schools, health clinics, clean water, sanitation facilities, rural transport, and other services is limited. Indonesia expanded access to primary education in the mid-1970s by using its oil windfall to build new schools and hire more teachers. Primary enrollment doubled between 1973 and 1986, reaching 90 percent – though the story on quality is less positive.

There is a broad consensus that growth is essential to sustained poverty reduction, although it may not be a sufficient condition. At the same time, recognizing that recent discussion on pro-poor growth tend to be narrowly focused on direct poverty-targeting measures. There has been increased awareness of the need to analyze how to generate a dynamic growth process, while ensuring social equity (inclusive growth) in the country-specific context. To achieve a sustainable growth and poverty reduction, interaction among following three channels are critically important: (1) direct channel, which impacts the poor directly (such as programs for basic health, sanitation,
education, and rural roads); (2) market channel (or trickle down), where growth helps the poor via economic linkages (such as inter-sectoral and inter-regional labor migration, increasing demand, reinvestment through formal, informal, and internal finance); and (3) policy channel, which supplements market channel (such as subsidies, fiscal transfer, public investment, and proper design of trade, investment, and financial policies).

Infrastructure can play a vital role through each of these channels. For instance, basic rural infrastructure can address poverty problems through channel (1). Large-scale infrastructure can contribute to growth and poverty reduction through channel (3), but also serve as a pre-condition for realizing channel (2) and affect the patterns and quality of growth.

It is widely acknowledged that investment in infrastructure services can contribute to sustainable growth by: (1) reducing transaction costs and facilitating trade flows within and across borders; (2) enabling economic actors – individuals, firms, and governments – to respond to new types of demand; (3) lowering the costs of inputs used in the production of almost all goods and services; (4) opening up new opportunities for entrepreneurs, or making existing business more profitable; (5) creating employment, including works (both as social protection and as a counter-cyclical policy in times of recession); (6) enhancing human capital, for example, by improving access to schools and health centers; and (7) improving environmental conditions, which link to improved livelihoods, better health and reduced vulnerability of the poor.

Poor people – as patients in clinics, students in schools, travelers on buses, consumers of water – are the clients of services. They have a relationship with the frontline providers, with schoolteachers, doctors, bus drivers, water companies. Poor people have a similar relationship when they buy something in market. In a competitive-market transaction, they get the service because they can hold the provider accountable. That is, the consumer pays the provider directly; he can observe whether or not he has received the goods and services; and if he is dissatisfied, he has power over the provider with repeat business with legal or social sanctions.

For the services considered here – such as health, education, water, electricity, and sanitation – there is no direct accountability of the provider to the consumer. Why not? For various good reasons, society has decided that the service will be provided not through a market transaction but through the government taking responsibility. That is, through the “long route” of accountability – by clients as citizens influencing policymakers, and policymakers influencing providers. When the relationships along this long route break down, service delivery fails (absentee teachers, leaking water pipes) and human development outcomes are poor.
5. Policy on Infrastructure

Poor people are citizens. In principle, they contribute to defining society's collective objectives, and they try to control public action to achieve those objectives. In practice, this does not always work. Either they are excluded from the formulation of collective objectives or they cannot influence public policy because of weaknesses in the electoral system. Free public services and "no-show" jobs are handed out as political patronage, with poor people rarely the beneficiaries.

Even if poor people can reach the policymaker, services will not improve unless the policymaker can ensure that the service provider will deliver services to them. Given the weaknesses in the long route of accountability, service outcomes can be improved by strengthening the short route – by increasing the client's power over providers.

Budgets should be pro-poor and pro-growth. Government spending should be oriented toward poverty-reducing activities and outlays that foster the development of human and physical capital. In order to monitor this shift in the composition of public spending, it will be necessary to improve public expenditure management systems. Efforts should be made to improve the efficiency and targeting of spending, and tax reforms should aim at improving both efficiency and equity.

Fiscal targets should be flexible and allow increases in public expenditure to accommodate the government's poverty reduction strategy within a stable macroeconomic framework. Programs could also be presented in ways that could signal financing needs. Thus, normative macro-projections in PRSP could be presented as possible alternatives.

Projected increases in education and health care spending vary across countries. In the transition economies, for example, smaller-than-average increases are envisaged. This reflects the slightly higher levels of initial spending and the substantial scope for further rationalizing education and health care systems inherited from the pre-transition era.

Substantial increases in spending identified as poverty-reducing in PRSP is also envisaged. PRSP has defined a range of programs as poverty-reducing, including spending on primary education, primary or basic health, roads, rural development, agriculture, judicial systems, and anticorruption measures.

Over time, as PRSP is updated and revised in light of the impact of policies on social outcomes, the definition of poverty-reducing activities is expected to be refined. For most countries, existing budget classification systems do not allow for a precise matching of expenditure allocation and the programs identified as
poverty-reducing in the PRSP. The ultimate objective of reorienting public spending in favor of poverty-reducing programs is to achieve better social outcomes. Data on indicators that gauge social progress, however, are available only with a substantial lag, and they may not be available for every year – making it difficult to isolate the effect of recent changes in policies.

Higher government spending on education and health, and the shift in the composition of public spending from current to capital outlays, will help facilitate poverty reduction and higher economic growth. In developing countries, public expenditure is a powerful tool for shaping equity or reducing poverty. In particular, well-targeted and efficient public programs in education and health are essential to ensure that the poor have the skills needed to contribute to – and benefit from – economic development.

Higher spending on poverty-reducing activities must be accompanied by improvements in efficiency and targeting to significantly improve social outcomes. Programs are seeking sizeable increases in poverty-reducing spending. But this is not sufficient for reducing poverty, because the efficiency and targeting of these outlays must also be improved. The agenda of reform in this area is large, given that the poor reap a disproportionately small share of the benefits from education and health outlays in low income countries, and a majority of studies show a weak relationship between government social spending and social outcomes. The limited scope for reallocating a large portion of public spending to poverty-reducing activities in the short run further underscores the need to realize improvements in this area.

Enhancing the efficiency and equity of spending in key sectors, such as education and health care, is a critical component of country’s poverty-reduction strategies. Two complementary but distinct aspects of efficiency has been addressed in poverty-reducing programs. Firstly, the productive efficiency of spending can be improved by using a more productive mix of spending inputs – for example, shifting spending to critically needed nonwage inputs in health and education, such as medicines and textbooks; or making efficiency improvements that allow the government to provide the same level of public services with lower spending – for example, by reducing waste. Secondly, The allocative efficiency of spending can be strengthened by reallocating public spending within sectors to programs that are most useful for meeting the government’s policy goals. For example, a reallocation of spending from tertiary to primary education and to rural areas can potentially enhance the efficiency of spending if the principal goal of education policy is to increase primary enrollment and completion rates.

Policy measures are also envisaged to better target spending toward the poor. In transition economies, a common aim is to make social assistance a more effective instrument of poverty alleviation by targeting this spending to the poor.
In a similar vein, some countries plan to replace subsidies that are enjoyed by all consumers - poor and nonpoor alike - with those that benefit only low-income groups. In other countries, the objective is to increase equity by improving the access of the poor to health care and education, facilitated by the elimination of primary school fees.

Figure 2. A simplified framework of pro-poor government intervention

Step 1
Determine for rationale for public intervention:
1. Market failures, including public goods, externalities, non-competitive markets
2. Address inequalities in access to services and distribution of income

Analytical tools include:
- Poverty diagnostics
- Distribution of access and spending by: level of access, region/rural-urban, and population group
- Evaluation of selected programs

Step 2
Decide among alternative instruments to offset market failures and/or improve distributive outcomes

Potential instruments include:
- Regulatory measures
- Revenue measures
- Distinguish between public finance and provision

Step 3
Decide on the type of program if state-run is chosen, and set priorities consistent with aggregate budget constraints

Methods to rank across programs include:
- Cost-effectiveness analysis
- Multi-criteria analysis
- Social cost-benefit

Infrastructure serves as catalyst to development, improves access to resources, and enhances the impact intervention. The infrastructure development can hasten the poverty reduction process. Specifically, the question about the role of infrastructure can be broadened to include, firstly, the reduction of exclusion. The provision of infrastructure helps the poor to have better location, enable the poor to afford better facilities, and increase their participation in socio-political issues. Secondly, infrastructure can increase of social capital. Poverty may be due
to the attitude and mentalities. Infrastructure creates link between isolated communities and the rest of the world that can increase the productivity of the poor. Thirdly, infrastructure can reduce vulnerability in the sense that it helps to cope with natural disasters, economic shocks, and inequality of access to infrastructure. Finally, the provision of infrastructure by the government may serve as a substitute to the private and complement. It can be argue that competition in providing infrastructure can increase efficiency. Therefore, the market should be ease to entry by regulation and transaction process. In sum, the question for infrastructure provision is whether it can increase the ability of the poor to access the infrastructure it self to enable them reducing cost of their living. However, the provision of infrastructure is depended upon the available budget. Under the limited government funds, priority allocation is usually away from the infrastructure. This is because the impact of infrastructure on the economic growth is not direct. Even though it may argue on the role of infrastructure on the economy, it may put aside to more direct activities when budget is under pressure. Therefore, priority is a must.

Infrastructure has been defined in terms of the physical facilities and services flowing from those facilities. Therefore the impact of the infrastructure investment on the poverty reduction can be traced from how the availability of infrastructure can help the poor to get the opportunity in directly or indirectly raising their income. Figure 3 exhibits the link between infrastructure investment (areas of influence) and poverty reduction (areas concern). Differences in the dimension of the urban and rural poverty require different infrastructure provision. Urban poverty characterized by modern sector while rural poverty characterized by agricultural sector areas of influence. How infrastructures provision can encourage job opportunity, empower community, enhance capacity building (human resources) and create social protection in urban and rural areas is the key to poverty reduction.

The below figure is useful in helping to identify the possible path of the impact of investment in infrastructure and poverty reduction. However, it still have to explore the type of infrastructure needed in certain region. The need assessment analysis thus is required. In relation to the development planning process, the bottom up planning approach fulfills such analysis. As opposed to the top down approach that places the central government as the center by assuming that they know everything the local governments need and want. The bottom up process requires collecting the public interest in infrastructure. If the government investment on infrastructure is based on public needed, then the outcome and impact of infrastructure development could increase.

The priority and needs of every region is different. Some regions may consider building roads important, while the other may choose irrigation facility. In the remote (and poor) regions, building road will provides incentive for teacher and doctors, while fresh air may be more important in the city sanitary and park.
social planner should inquire the need of each region to increase the effectiveness of the infrastructure development.

Figure 3. Link between infrastructure and poverty reduction

The policy on infrastructure development which has been implemented so far in Indonesia is focused more on physical sides and the policy is sometimes too general and less focused. This shows that there are poor relations between the procurement of infrastructure devoted to disadvantaged people in the attempts of reducing poverty. Some of policies that have been outlined by government concerning the strategy for poverty reduction in connection with the procurement of infrastructure are, among others, stated in the macro operational policies in economy, namely policies of infrastructure development which support social and economic activities of disadvantaged people. In the National Development Program, the improvement for basic capabilities of disadvantaged families and communities is made through widening of access to various services in education, health, job opportunities, capitalization, infrastructure, and other services. The bottom up planning that targeted to reduce poverty is in line with figure 4. Here, the types (dimensions) of poverty play a central role in determining infrastructure needed. The target (poverty reduction) can be achieved through direct and indirect routes. It is expected that the infrastructure
can help reducing the poverty by reducing the cost of living, increasing income, and stabilizing the income (expenditure) of the poor.

Figure 4. Simple analytical framework to determine the types of infrastructure needed to support poverty reduction programs

<table>
<thead>
<tr>
<th>Dimension of poverty</th>
<th>Transmission</th>
<th>Function</th>
<th>Policies</th>
<th>Types of infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Low income</td>
<td></td>
<td></td>
<td></td>
<td>Urban areas:</td>
</tr>
<tr>
<td>- Limited productive resources</td>
<td></td>
<td></td>
<td></td>
<td>- School</td>
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<td>- Hunger and malnutrition</td>
<td></td>
<td></td>
<td></td>
<td>- Garbage disposal</td>
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<tr>
<td>- Low level of healthiness</td>
<td></td>
<td></td>
<td></td>
<td>- Park</td>
</tr>
<tr>
<td>- Limited access to education and other basic needs</td>
<td></td>
<td></td>
<td></td>
<td>- Sanitation</td>
</tr>
<tr>
<td>- High rate of mortality due to diseases</td>
<td></td>
<td></td>
<td></td>
<td>- Piped water</td>
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<tr>
<td>- Homeless and poor quality of living</td>
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<td></td>
<td></td>
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<tr>
<td>- High criminal level</td>
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<td></td>
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<tr>
<td>- Discrimination and socially exclusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Low participation</td>
<td></td>
<td>Direct</td>
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</tbody>
</table>

6. The Role of IRAP Approach

Under decentralization (since 2000), almost all important decisions are made at local (district) level. Recently, there are 33 provinces and 418 districts in Indonesia. District governments are more responsible for public facilities and services. The logic way of thinking behind the implementation of decentralization is that local governments are close to the community. The big challenge is how to make this delegated responsibility will effectively overcome development problems at local level.

Although the regular bottom up development planning has been implemented since the mid of 1980s, nevertheless, the fact shows that infrastructure development have not significantly contributes to overcome access problems of rural community, especially in eastern part of Indonesia. The main important factor is not about the amount of investment provided, but more about the
process to identify the priority activities to overcome actual access problems. Many of infrastructure development proposed in bottom up planning documents were not the real actual needs of the community, especially those who lives below poverty line in remote areas. Actually, the planning mechanism itself is quite ideal. It starts from village (Desa) level, up to sub-district (Kecamatan), district (Kabupaten and Kota), province, and national level. The primary problem is about instrument that used to formulate the priority activities, mainly at village, sub-district, and district level where financial decision is made. The rational background was not sufficiently considered in the priority identification process. Activities proposed was tend to be more subjective and the representativeness of stakeholders is the only main item to be considered. In short, there are three main issues of rural infrastructure development planning in Indonesia, i.e. mechanism, participation, and instrument. IRAP approach is naturally related to these three issues.

In relation to poverty reduction efforts, the implementation of IRAP approach in given region can contributes in the following aspects:

(1) IRAP approach can helps local governments in better allocation of financial resources. Better targeting of infrastructure development will have a greater possibility to solve the main problem of development, i.e. poverty, through access improvement to basic, social, and economic services, and productivity and income improvement of the poor.

(2) The implementation of IRAP approach will encourage community empowerment by providing opportunity for poor groups or it representatives to contributes actively in decision making process at local level, including the identification of priorities of rural infrastructure development.

(3) IRAP activities are basically supports the capacity building at local level. This means that the capability of stakeholders that involves in bottom up rural infrastructure development planning will be strengthened, and pro poor planning and budgeting will be sustained.

(4) Finally, suitable planning and budgeting in rural infrastructure development will have greater possibility to protect vulnerable poor groups. Improvement of access will provide better accessibility for poor people to have basic, social, and economic goods and services. Poor people will have better opportunity to increase their capability, involve in labour market, more productive, and increase their income and welfare. As mentioned by Todaro and Smith (2003), the main target of development is the capability of people.
IRAP Approach and Pro-Poor Rural Infrastructure Planning: The Case of Indonesia

Roberto Akyuwen and Novya Ekawati

4th Regional Integrated Rural Accessibility Planning (IRAP) Workshop
Siem Reap, Cambodia, March 29 - 31, 2004

Presentation Topics

- Progress of IRAP Implementation in Indonesia
- Development of Methodology and Instruments
- Mainstreaming Efforts (Rural Infrastructure Development Policies and Poverty Reduction Strategy)
IRAP Implementation Areas in Indonesia

- West Java Province: 1998 - 1999
- East Nusa Tenggara Province: 2003 - 2004
- West Nusa Tenggara Province: 1997 - 1998
- Mollucas Province: 2003 - 2004

Population of Kutai Kartanegara District, East Kalimantan Province

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Area (sq km)</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1.</td>
<td>Pasir</td>
<td>14.937</td>
<td>140.700</td>
</tr>
<tr>
<td>2.</td>
<td>Kutai Barat</td>
<td>31.627</td>
<td>71.988</td>
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<tr>
<td>3.</td>
<td>Kutai Kartanegara</td>
<td>27.261</td>
<td>223.303</td>
</tr>
<tr>
<td>4.</td>
<td>Kutai Timur</td>
<td>35.747</td>
<td>78.787</td>
</tr>
<tr>
<td>5.</td>
<td>Berau</td>
<td>24.201</td>
<td>64.369</td>
</tr>
<tr>
<td>6.</td>
<td>Malinau</td>
<td>42.620</td>
<td>19.182</td>
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<tr>
<td>7.</td>
<td>Balsengen</td>
<td>18.010</td>
<td>43.823</td>
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<td>8.</td>
<td>Numukan</td>
<td>14.585</td>
<td>42.556</td>
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<td></td>
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<tr>
<td>9.</td>
<td>Balipapan</td>
<td>740.0</td>
<td>211.722</td>
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<tr>
<td>10.</td>
<td>Samarinda</td>
<td>783.0</td>
<td>266.195</td>
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<tr>
<td>11.</td>
<td>Tarakan</td>
<td>307.1</td>
<td>62.256</td>
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<tr>
<td>12.</td>
<td>Bontang</td>
<td>406.7</td>
<td>53.641</td>
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<tr>
<td></td>
<td>Total</td>
<td>211.440</td>
<td>1.278.802</td>
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</table>
### Population of Bantul District, Daerah Istimewa Yogyakarta Province

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Area (sq²)</th>
<th>Population</th>
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<th>Total</th>
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<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
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<td>1</td>
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<td>392,487</td>
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<tr>
<td>2</td>
<td>Sleman</td>
<td>574.8</td>
<td>454,683</td>
<td>446,694</td>
<td>901,377</td>
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<td>3</td>
<td>Gunung Kidul</td>
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<td>343,559</td>
<td>670,433</td>
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<td>4</td>
<td>Kulen Progo</td>
<td>596.3</td>
<td>182,672</td>
<td>188,272</td>
<td>370,944</td>
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<td>5</td>
<td>Yogyakarta City</td>
<td>32.5</td>
<td>194,106</td>
<td>202,605</td>
<td>396,711</td>
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<td>Total</td>
<td>3,185.8</td>
<td>1,546,861</td>
<td>1,573,617</td>
<td>3,120,478</td>
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### East Nusa Tenggara Province (9 Districts)

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>Area (sq²)</th>
<th>Population</th>
<th></th>
<th></th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>Sumba Barat</td>
<td>4,051.92</td>
<td>181,119</td>
<td>172,656</td>
<td>353,775</td>
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<td>Sumba Timur</td>
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<td>89,140</td>
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<td>Kupang</td>
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<td>194,749</td>
<td>398,838</td>
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<td>4</td>
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<td>194,638</td>
<td>194,440</td>
<td>389,078</td>
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<tr>
<td>5</td>
<td>Timor Tengah Utara</td>
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<td>96,811</td>
<td>96,902</td>
<td>193,713</td>
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<tr>
<td>6</td>
<td>Belu</td>
<td>2,445.57</td>
<td>130,977</td>
<td>137,507</td>
<td>268,484</td>
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<tr>
<td>7</td>
<td>Alor</td>
<td>2,484.60</td>
<td>80,183</td>
<td>83,839</td>
<td>164,022</td>
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<td>8</td>
<td>Lembata</td>
<td>1,366.38</td>
<td>40,066</td>
<td>40,631</td>
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<tr>
<td>9</td>
<td>Flores Timur</td>
<td>1,006.85</td>
<td>92,980</td>
<td>101,381</td>
<td>194,361</td>
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<td>10</td>
<td>Sikka</td>
<td>1,731.92</td>
<td>121,042</td>
<td>130,442</td>
<td>261,484</td>
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<td>11</td>
<td>Ende</td>
<td>2,046.62</td>
<td>109,538</td>
<td>122,732</td>
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<tr>
<td>12</td>
<td>Ngada</td>
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<td>108,223</td>
<td>115,250</td>
<td>223,473</td>
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<tr>
<td>13</td>
<td>Manggarai</td>
<td>7,136.40</td>
<td>302,866</td>
<td>301,940</td>
<td>604,806</td>
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</tr>
<tr>
<td></td>
<td>City</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Total</td>
<td>47,343.90</td>
<td>1,893,223</td>
<td>1,915,254</td>
<td>3,808,477</td>
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Overview IRAP Methodology in Indonesia

- **Training 1: Accessibility Data Collection and Mapping**
  1. Questionnaire
  2. Mapping

- **Training 2: Accessibility Score Calculation and Prioritization**
  1. Form 1: Indicator Value
  2. Form 2: Indicator Weight
  3. Form 3: Accessibility Value

- **Training 3: Formulation of Project Proposal**

- **Examples of Prioritization Outputs**
  1. Sectors
  2. Sub-Villages (Dusun)

Development of Instruments

- Questionnaire: data and information on infrastructure condition, especially for non-transportation facilities, such as school, health care, and market (these information are needed to formulate the maintenance activities)
- Maps: different size of accessibility maps has been produced at local level
- Indicator Weight: different perspective of local planner on indicator weight determination
- Formulation of Proposal: (1) simplification of proposal arrangement steps; (2) there are two types of proposals arrangement (for government and non-government budgets)
Mainstreaming Efforts

Office of Coordinating Ministry of Economic Affairs
- Local Level Planning (IRAP Approach)
- Maintenance
- Small-Scale Contracting
- Local Economic Development

Office of Coordinating Ministry of People’s Welfare
- Formulation of Poverty Reduction Strategy Paper (PRSP)

The Poverty Challenge

Figure 1. Percentage of poor people in Indonesia under criterion of $1 and $2 per day
Table 1. Number of poor people in Indonesia divide by urban and rural areas

<table>
<thead>
<tr>
<th>Year</th>
<th>Rural</th>
<th>Urban</th>
<th>Rural + Urban</th>
<th>Percentage of total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>35.5</td>
<td>18.7</td>
<td>54.2</td>
<td>40.1</td>
</tr>
<tr>
<td>1990</td>
<td>17.8</td>
<td>9.4</td>
<td>27.2</td>
<td>20.1</td>
</tr>
<tr>
<td>1996</td>
<td>15.3</td>
<td>7.2</td>
<td>22.5</td>
<td>11.3</td>
</tr>
<tr>
<td>1998</td>
<td>31.9</td>
<td>17.6</td>
<td>49.5</td>
<td>24.2</td>
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<tr>
<td>2000</td>
<td>26.4</td>
<td>12.3</td>
<td>38.7</td>
<td>18.9</td>
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<tr>
<td>2002</td>
<td>25.1</td>
<td>13.3</td>
<td>38.4</td>
<td>18.2</td>
</tr>
<tr>
<td>2003</td>
<td>24.4</td>
<td>12.9</td>
<td>37.3</td>
<td>17.4</td>
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</tbody>
</table>

Poverty Reduction Strategy in Indonesia

Two main approaches of poverty reduction strategy:
1. Increasing income of poor people through productivity improvement
2. Lessening the expenditure of poor people to have access to basic, social, and economic services

Four pillars of poverty reduction strategy:
1. Promoting/ broadening opportunity
2. Community empowerment
3. Capacity building and human resource development
4. Social protection
Overview of the Infrastructure Condition

- **Electricity**
  Ratio of electrification was still low, that is around 58 percent in 2001

- **Road condition for transportation**
  In the year of 2000, as long as 140,000 km road (or 48 percent of 291,500 thousand km) was slightly and heavily damaged and as long as 8,798 km of national and provincial roads were in poor condition

- **Communication**
  Up to now, there are only around 8.8 million telephone connection or around 3 connections per 100 people all over Indonesia, around 86 percent was located in western part of Indonesia

- **Irrigation**
  To support agriculture development, around 1.5 million ha out of 6.7 million ha irrigation networks in slightly and heavily damaged conditions, the government could only provide between 40 and 50 percent of operational and maintenance costs, besides, between 15 and 20 thousand ha per year of irrigated agricultural field were converted for non agricultural purposes

Rural Infrastructure Development and Poverty Reduction

Three channels to achieve a sustainable growth and poverty reduction:

1. Direct channel, which impacts the poor directly (such as programs for basic health, sanitation, education, and rural roads)
2. Market channel (or trickle down), where growth helps the poor via economic linkages (such as inter-sectoral and inter-regional labour migration, increasing demand, reinvestment through formal, informal, and internal finance)
3. Policy channel, which supplements market channel (such as subsidies, fiscal transfer, public investment, and proper design of trade, investment, and financial policies).
The Role of IRAP Approach

In relation to poverty reduction efforts, the implementation of IRAP approach in given area can contributes in the following aspects:

1. IRAP approach can helps local governments in better allocation of financial resources
2. The implementation of IRAP approach will encourage community empowerment by providing opportunity for poor groups or it representativeness to contributes actively in decision making process at local level, including the identification of priorities of rural infrastructure development
3. IRAP activities are basically supports the capacity building at local level
4. Suitable planning and budgeting in rural infrastructure development will have greater possibility to protect vulnerable poor groups.

Pro-Poor Government Intervention

Step 1: Determine the rationale for public intervention:
- Poverty diagnostics
- Distribution of access and spending by: level of access, region/rural-urban, and population group
- Evaluation of selected programs

Step 2: Decide among alternative instruments to offset market failures and/or improve distributive outcomes
- Regulatory measures
- Revenue measures
- Distinguish between public finance and provision

Step 3: Decide on the type of program if state-run is chosen, and set priorities consistent with aggregate budget constraints
- Cost-effectiveness analysis
- Multi-criteria analysis
- Social cost-benefit

Analytical tools include:
- Poverty diagnostics

Potential instruments include:
- Regulatory measures
- Revenue measures
- Distinguish between public finance and provision
Infrastructure Investment and Poverty Reduction

Areas of intervention:
- Increase access to electricity, roads, irrigation, telecommunication, health services, rural market, education, piped water, information, garbage disposal, drainage

Areas of influence:
- Promoting job opportunity, empowering community, capacity building (human resources), social protection, increase market efficiency, healthiness

Direct impact:
- Employment and wages of the poor

Indirect impact:
- Economic growth

Impact (transmission):
- Economics of scale, learning curve, externalities

Poverty reduction:
- Real income greater than poverty line

Types of Infrastructure Needed to Support Poverty Reduction

Dimension of poverty
- Low income
  - Limited productive resources
  - Hunger and malnutrition
  - Low level of healthiness
  - Limited access to education and other basic needs
  - High rate of mortality due to diseases
  - Homeless and poor quality of living
  - High criminal level
  - Discrimination and socially exclusion
  - Low participation

Transmission
- Decrease living cost of the poor
- Increase income (expenditure) of the poor
- Stabilize income (expenditure) of the poor

Function
- Invest in infrastructure

Policies
- Urban areas
  - School
  - Health center
  - Garbage disposal
  - Park
  - Sanitation
  - Piped water

- Rural areas
  - Road
  - Irrigation
  - Rural market
  - School
  - Health center
  - Electricity
  - Potable water