Indonesia’s Poverty Maps
Impacts and Lessons

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ABBREVIATION

BPS  Badan Pusat Statistik (the national statistical office)

Country Context

Indonesia is a large country of over 200 million people. While it was quite successful in reducing poverty between 1960 and 1990, some 37 million people were still living in abject poverty at the end of that period, surviving on less than a dollar a day in 1990. In 1994, the government explicitly identified poverty reduction and elimination as a national objective for the first time, in the Sixth Five-Year Development Plan. Since then, there have been four major antipoverty programs. However, the design and implementation of these programs have been hindered by the lack of poverty information at geographically disaggregated levels.

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As in other countries, poverty statistics based on surveys are only representative at the regional and urban or rural levels in Indonesia. There have been several attempts to produce poverty estimates for lower administrative units. For instance, the Presidential Instruction on Disadvantaged Villages Program of 1994–97 was the first major effort to produce small area poverty estimates nationally. The aim of the program was to classify all villages in Indonesia as either poor or nonpoor. Other attempts included a complete enumeration of all villages and village characteristics in the country (village potential statistics, or PODES; see elsewhere below) and the classification of all families in Indonesia into five welfare categories that was carried out by the Family Planning Coordination Board. However, these efforts were expensive, and some operations still suffered from undercoverage among villages and inconsistency in data gathering.

By early 2000, the government was expressing immense interest in the poverty mapping approach developed by a World Bank research team (Elbers, Lanjouw, and Lanjouw 2003). This approach combines information from a household survey and a population census to estimate the economic welfare of small areas. It does not involve much additional cost because the requisite data sources already exist, that is, household surveys, population censuses, and other, auxiliary databases. Furthermore, the small area estimates of welfare are accompanied by measures of precision (such as standard errors and confidence intervals). These estimates of welfare (for example, poverty and inequality) may be represented on high-resolution maps, which are therefore commonly called poverty maps. The disaggregated information on these maps is useful in identifying the share of the poor or the incidence of poverty, and this, in turn, may inform budget allocations and program design and targeting.

The Mapping Process

In the first phase of its assistance for poverty mapping in Indonesia during 2002–03, the World Bank hired a local entity, the independent SMERU Research Institute, through an Asia–Europe Meeting grant to help guide the staff at Badan Pusat Statistik (BPS), the national statistical office, in the production of poverty maps on three provinces: East Java, East Kalimantan, and Jakarta. The main objective of the pilot phase was to test the feasibility of applying the poverty mapping approach in Indonesia and provide step-by-step training to the BPS. At the time, the 2000 population census data were not yet available for the entire country. The results of the first phase are presented in Suryahadi et al. (2005). Then, in the second phase (2003–04), BPS staff produced poverty estimates disaggregated to the district (regency or city, kabupaten or kota), subdistrict (kecamatan), and village (desa or kelurahan) levels on the rest of the 27 provinces that were mapped. The World Bank continued to support the BPS through the Asia–Europe Meeting Trust Fund by providing expertise, hardware, and advice, as well as support in the dissemination of the poverty maps to local governments.

The mapping exercise relied on three sources of data, namely, the consumption and core modules of the 1999 household survey (the socioeconomic survey known as Susenas), the 2000 population census, and the 1999 village census (PODES). All the
data were collected by the BPS. The data on household consumption and household characteristics used in the mapping were obtained from Susenas, and additional information on villages was gleaned from PODES.

The exercise was the first occasion on which all these data sets were combined, and one major problem was discovered: the village codes are not identical in all three data sources. The BPS should possess a master list of all villages and keep track of changes in administrative divisions (such as the merging or the partitioning of villages), and, in theory, all the villages in Susenas and the population census should also exist in PODES. However, because of decentralization, the BPS has not kept up with the changes in these lowest administrative units, and a number of villages (as many as 10 percent of the villages in four provinces) do not match in the three data sources. To overcome this shortcoming, BPS staff imputed information on the missing villages using averages at the subdistrict level.

All the poverty estimates on provinces, districts, and subdistricts were within acceptable limits. However, the results at the village level need to be viewed with caution because the precision in poverty headcounts varies greatly across villages within individual provinces. Some village estimates suffer from high standard errors, and more village-level information will be required to improve the precision. Figures 9.1 and 9.2 present two examples of the poverty maps.

Many people have expressed the opinion that the maps are out of date because they are partly based on the population census, which only occurs once in a decade. However, this problem is being addressed by the World Bank research team given that a methodology to revise the maps between census years is being developed and tested in several countries in the region, including the Philippines and Thailand.

**Figure 9.1 Poverty Headcount Ratio, by Province, Indonesia 2000**

Another shortcoming noted by users is the fact that the maps only contain estimates of poverty and inequality, but do not contain information on other indicators of interest. However, this criticism misunderstands the poverty mapping approach. The methodology does not exclude the estimation and mapping of other indicators. Thus, for example, the World Food Programme and the BPS have created follow-up nutrition maps on the entire country. Other applications abound elsewhere, for instance, the health status maps on children in Cambodia, the caloric maps in Nepal, and the measurements of welfare among minority groups such as artisanal fishermen in Thailand and the disabled in Uganda.

**Impacts: Actual Poverty Map Applications**

Since their distribution in December 2004, the national poverty maps of the BPS have been used in various applications by government agencies, donors, and nongovernmental organizations (NGOs).

**Ministry of Finance, budget estimates of unconditional cash transfers to the poor**

In 2005, the government of Indonesia decided to cut fuel subsidies. The resulting increase in fuel prices would particularly affect the poor, and the government planned to cushion this negative shock by providing unconditional cash transfers to the poor. The Ministry of Finance used the poverty maps to estimate the budget for the cash transfers.
Ministry of Education, selection of beneficiary areas

The Ministry of Education has several programs targeted at helping vulnerable groups. The ministry has used the poverty maps to select beneficiary areas for these programs, which include the Skills-for-a-Living Program (Kecakapan Hidup), the Mainstream Gender in Education Program, and the Prevention of Women Trafficking Program. The Skills-for-a-Living Program, for example, has an annual budget of Rp 125,000,000 (approximately US$13,000) and seeks to help young unemployed Indonesians who are poor, out of school, and without marketable skills. The program provides these unemployed youth with training to acquire vocational and social skills so they may become self-sufficient and use the skills to find jobs. The participants are between 15 and 35 years old. Based on their positive experience with the ease of use of the maps, the Ministry of Education has recommended that other divisions also use the poverty maps for area targeting in their programs.

Ministry of Social Affairs and the United Nations Development Programme, cross checking and referencing

The Ministry of Social Affairs has a positive perception of the poverty maps and uses the small area poverty estimates to cross-check the information in its own database (for example, the nonmonetary dimensions of poverty). The ministry and the BPS have an ongoing collaboration whereby the BPS collects and updates information every year for the ministry’s database. The United Nations Development Programme also uses the maps to cross-check its own information and other data it acquires from the Coordinating Ministry for People’s Welfare and various line ministries for budget planning and targeting for its programs.

World Food Programme, production of follow-up nutrition maps

High-level staff at the World Food Programme have recognized that the poverty mapping experience has given the BPS the know-how and capacity to produce follow-up nutrition maps efficiently for its projects. The nutrition maps are used to select beneficiary areas.

Bina Desa

Bina Desa Secretariat (the Indonesian Secretariat for the Development of Human Resources in Rural Areas) is an NGO that operates in the field of empowerment and human resources in Indonesian villages. It has used the poverty maps of the BPS, but finds that the lack of other correlates such as population and locality variables on the maps is a limitation. More information, including a population profile, would be needed so that the maps may also be used for health insurance, scholarship initiatives, and other types of programs.
The local development planning board in Yogyakarta Province, identification of poor districts

The local development planning board in Yogyakarta Province has used the BPS poverty maps to identify poor districts (kabupaten) in the implementation of its Community Empowerment Program (Pemberdayaan Masyarakat).

The World Bank

Within the World Bank, the environment team is using the poverty maps to help guide their policy advice to the Indonesian government under the Forest Law Enforcement and Governance Initiative. In particular, the maps are providing information on poor people living in forested areas, poor people living within the State Forest Zone, and the relationship between forest coverage and poverty incidence.

The Bank’s infrastructure team has used the poverty maps of East Java Province to prepare the East Java Strategic Infrastructure and Development Reform Program. The program provides loans and technical assistance to the provincial government through a combination of investments and supporting policy measures to attract investment and promote growth. The maps have been especially useful in identifying the poorest areas in East Java, notably, along the southern coast.

In addition to the various applications cited above, other impacts of the poverty maps include the increased awareness of the usefulness of poverty maps as a tool in geographical targeting. This awareness has generated a demand for updated and richer maps. The current poverty maps are limited to a few indicators (poverty and inequality). The government has realized that, to enhance the usefulness of the maps, complementary maps of other dimensions of poverty are needed. The Ministry for National Development Planning has been a leading advocate for creating a set of maps that encompass a range of core indicators. The ministry has begun discussions with other line ministries and donors about building a new set of maps under the Development of Data Systems and Analyses for Regional Planning Initiative.

Many officials have indicated that the poverty maps have highlighted the issue of poverty and energized the government to focus on poverty reduction. The poverty maps have also raised the profile of the BPS; it is increasingly being perceived as an institution committed to poverty reduction. Since the publication of the poverty maps, the BPS has been invited to participate in planning and strategy development at several ministries. For example, when the Ministry of Finance decided to implement the cash transfers program after terminating fuel subsidies, the BPS was one of the organizations consulted about the feasibility of the transfers at the subdistrict level.

Impacts: Potential Poverty Map Applications

During discussions with officials, we have also learned that small area estimates of poverty and inequality may be helpful in the following programs.
Kecamatan Development Program

The Kecamatan Development Program aims at reducing poverty in rural communities and improving local governance. The first phase of the program began in 1998 and ended in 2002. The second phase ran from 2002 to 2006. The program provides block grants of Rp 350 million to Rp 1 billion (US$40,000 to $114,000) directly to subdistricts and villages for small-scale infrastructure and social and economic activities. The current criteria for identifying poor districts are not very clear, and the poverty maps might be a helpful tool in identifying poor subdistricts in a consistent, systematic manner.

Unconditional and conditional cash transfers

Anticipating that the October 2005 removal of fuel subsidies and subsequent price increases would have a major impact on lower-income households, the government rapidly designed and implemented a short-term unconditional cash transfer program for 15.5 million poor and near-poor households. The transfers began on October 1, 2005, and ran for a period of three months. Initially, some officials suggested that the cash transfers might be given to village leaders for distribution based on the poverty maps. However, Indonesia’s vice president decided that the cash transfers should be given to individual households directly.

The program is set to go forward again following evaluation. It has evolved into a conditional cash transfer system as part of a larger antipoverty agenda. Conditional cash transfers provide money to poor families contingent upon the fulfillment of certain criteria, such as investments in human capital (for example, as measured through school attendance or regular visits to health centers by children). Conditional cash transfer programs have two main objectives—immediate income support and the longer-term accumulation of human capital—and serve as a demand-side complement to the supply of health and education services. Currently, the program uses the poverty census to channel funds to the poor, but the leakage is substantial, and the poverty census is an expensive exercise. The poverty mapping methodology might help identify key correlates of poverty that would facilitate proxy-means testing, and it would be much cheaper than a poverty census.

Local governments and NGOs

Many of the representatives of government agencies who were interviewed had never heard of the poverty maps, but, when they were told of the maps, most acknowledged that such a tool would be useful in their programs. A primary potential user is local governments. A significant portion of the national budget is given to local governments for ultimate distribution. With proper training, local governments might make good use of the poverty maps for the allocation of resources among their administrative units.

Other potential users of the maps are the donor and NGO communities. These communities fund a wide range of poverty programs in the country. Oxfam International, for example, has many area-targeted projects in Indonesia and is well connected with local
NGOs. While Oxfam representatives had heard of the poverty maps, they had never received a copy of the report or seen the maps. Oxfam might use the maps for site selection and might also promote the use of the maps among their partnering NGOs. Similarly, most of the NGO representatives interviewed had never heard of the BPS poverty maps, but they believed the maps might become an important tool for targeting. In particular, most NGO projects are carried out at the district level, and a tool such as the poverty maps that facilitates selection among poor districts should be appealing.

Lessons

1. Consultation and effective dissemination are needed to dispel skepticism, foster dialogue, and encourage use.

In Jakarta on December 23, 2004, shortly after the poverty maps had been completed, the BPS held a seminar to disseminate the findings. Participants at the seminar included officials at ministries and other government agencies, local government officials, and representatives of donor organizations and NGOs. Some 1,000 hard copies of the poverty map reports were distributed. Subsequent to the seminar, dissemination was also carried out through eight provincial seminars funded by the local BPS offices in eight provinces: Bali, Bengkulu, East Java, East Kalimantan, North Sumatra, Semarang (Central Java), South Kalimantan, and South Sulawesi.

The demand for the information reflected in the maps appears to be high among lower administrative units. However, the BPS was constrained by funding limitations from distributing the maps more broadly to such units. A workshop to educate local BPS staff, as well as the staff of local development planning boards, on the methodology and on applications of poverty maps would have been immensely helpful. Without full understanding of the maps, local BPS staff must rely on the central BPS office to explain and promote use of the maps. Local development planning boards are the primary implementation agencies for a wide range of programs, and, thus, educating them about the maps might enhance the pro-poor impact of their projects and investments.

Many government agencies still harbor doubts about the mapping methodology and its reliability and robustness. One reason is that they feel that the process lacked inputs from end users during the early stages of development. Many said they were not given any opportunity to provide suggestions or feedback before the maps were completed. Thus, the participation of and consultation with stakeholders throughout the production of poverty maps are crucial not only to educate users and to raise awareness about the maps and the mapping methodology, but also to promote wider demand for the end product and institutionalize the mapping process.

The BPS is the producer of the maps, but the maps need a champion in a government agency that plans or implements the country’s antipoverty programs. The Ministry for National Development Planning would be an ideal candidate. Sri Mulyani Indrawati, the minister of development planning in 2004 (and currently the minister of finance),
was one of the few who understood the wide-ranging applications of poverty maps and urged government agencies to use them.

It appears that the potential applications of the poverty maps are not being conveyed effectively. For instance, somewhat ironically, the poverty maps produced by SMERU Research Institute and relying on the identical methodology have been more favorably received and accepted (see below). Many representatives of NGOs and donors said they knew about the SMERU poverty maps, but not those of the BPS. One main reason is that SMERU has been effective at dissemination. Maps produced by SMERU have been available on the Web, as well as on interactive compact discs, and SMERU’s data formats are user-friendly. On the other hand, the BPS maps are only available in those 1,000 hard copies distributed at the national seminar, and there is no information about the maps on the BPS Web site.

2. In fulfilling the goal of building local capacity, avoid the creation of parallel, potentially competing maps.

There are two sets of poverty maps on Indonesia, and they have relied on the same methodology. One has been prepared by SMERU Research Institute, and the other has been prepared by the BPS. During the pilot phase of the mapping exercise (2002–03), SMERU was hired by the World Bank and the BPS as a local consultant to produce maps for three provinces, while training BPS staff on the methodology. The understanding was that, during the second and final phase, SMERU would supervise the BPS as the latter completed maps on the rest of the country. However, subsequently, in 2005, SMERU, in collaboration with the Ford Foundation, completed maps on the rest of Indonesia, while the BPS, with World Bank technical assistance, was also producing maps for the rest of the country. It would have been helpful to hold discussions, share experiences, and compare results, but both the BPS and SMERU carried out their work on their own without much interaction. Moreover, the existence of the parallel sets of poverty maps published only months apart has created much confusion and undermined the BPS initiative. The experience in other countries suggests that reliance on international consultants avoids this potential conflict of interest between local consultants and the government. However, such a reliance may also hinder local capacity building. A more constructive approach might be to obtain prior agreements that the local consultants will partner and collaborate with the government and that the end product will be a joint effort.

3. Ensure the internal cohesion of the agency that produces the maps.

In Indonesia, as in many other countries, the poverty mapping exercise has involved the merging of several data sets for the first time. In other countries, merging different data sets is synonymous with asking different divisions of the national statistics office to work together to produce a single product. This may represent a challenge because the division of labor is not obvious. In Indonesia, however, the question became which division should produce the poverty maps, the Mapping Division or the Poverty Division. In the
end, the project was assigned to the Mapping Division, which does not have the requisite skills in statistical analysis, the experience in policy advisory services, or familiarity with antipoverty programs. Meanwhile, the people in the Poverty Division with the appropriate expertise felt alienated. This limited the outreach and impact of the maps.

4. **Make potential users aware of the wide-ranging applications of poverty maps and emphasize that poverty maps are complementary to (rather than a substitute for) other antipoverty information tools.**

Partly because of the internal controversy within the BPS over the production and ownership of the poverty maps, when the vice presidential directive was issued to carry out a poverty census, many in the BPS embraced this endeavor with great enthusiasm and viewed the census as a substitute for the poverty maps. However, given the particular uses of poverty maps, the two tools should be considered complementary.

While the poverty maps facilitate geographical targeting over targeting on households or individuals, the mapping methodology is able to provide considerable information about correlates of poverty at the household or individual level. Thus, indirectly, poverty maps also contribute to understanding the proxy determinants of poverty that the poverty census seeks to obtain. In particular, the poverty mapping process illustrates a rich set of variables suitable for proxy-means testing.

Unlike the population census, the poverty census is not an enumeration of all households in Indonesia. The poverty census was completed in three months at a cost of US$40 million. Many users have expressed concern about the limitations and the quality of the poverty census. For example, the lists of poor households in villages were supplied by village leaders, and their perception may have been subjective and rather arbitrary. This is complicated by the fact that many households are near poor, and it is difficult for local leaders to identify the difference accurately.

Given that the poverty census data are now available, the BPS may consider undertaking an analysis to compare the data reflected in the poverty maps and the data collected through the poverty census. Despite some of the limitations in the poverty census, this exercise would yield a great deal of information and offer the opportunity to validate the findings shown in the poverty maps.

**Conclusions**

There is evidence that the poverty maps of Indonesia have been used by government agencies and the donor and NGO communities. The number and types of applications might have been greater if there had been more consultations at the beginning and more effective dissemination at the end. The lack of participation of potential users during the mapping process has created resistance to the maps and skepticism about their utility. The broad-ranging uses of the maps were not effectively conveyed to users, who were, in most cases, frustrated with the difficult formats of the maps and their unavailability on the Web or in electronic copies.
The poverty mapping exercise has been particularly successful in encouraging local capacity building. The World Bank transferred the know-how to a local research institution that, in turn, guided BPS staff step-by-step in the poverty mapping methodology during the pilot phase. Subsequently, BPS staff produced the maps for the other provinces in Indonesia on their own under the supervision of the World Bank team.

In addition to the concrete uses and applications of the poverty maps, the poverty mapping exercise and the dissemination of the maps have had other impacts. The government has renewed its focus on poverty issues, and the issue of identifying and locating the poor has been debated. A discussion of poverty monitoring has been reinvigorated. Government agencies have come together to discuss the need to undertake concerted efforts to compile more reliable and timely poverty information to support government policies. Spearheaded by the Ministry for National Development Planning, the government is taking steps to create a database encompassing the monetary and nonmonetary dimensions of poverty so as to help improve regional and local planning.

Notes
1. This is the US$1-a-day poverty line adjusted for purchasing power parity.
2. These programs are the Presidential Instruction on Disadvantaged Villages, which aimed at accelerating poverty reduction in less developed villages across Indonesia; the Family Welfare Development Programs, designed to intensify the poverty reduction effort; the Income-Generating Project for Marginal Farmers, which sought to increase the incomes of small farmers through self-help groups; and the Twin Urban and Rural Kecamatan Development Programs, which provided block grants to poor subdistricts to reduce rural and urban poverty.
3. For an explanation of the data sources for the mapping exercise, see Suryahadi and Sumarto (2003). PODES is a complete enumeration of all villages in the country that has been constructed by the BPS. This village census collects information mainly on the presence (or absence) of infrastructure and facilities such as roads, health facilities, schools, market facilities, water supplies, electricity, telephone links, public toilets, and so on.

References