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Transmigration in Indonesia: Lessons from its Environmental and Social Impacts

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ABSTRACT

Indonesia's transmigration program to transport people from Java and other densely populated islands to largely forested outer islands has high environmental, social, and financial costs, while doing little towards relieving population pressure on Java. Transmigration has been an important cause of forest loss in Indonesia. World Bank financing promoted the program directly over the 1976-1989 period and continues to underwrite other settlement models that have supplanted earlier programs. The bank projects included creating and strengthening a Ministry of Transmigration, which also carried out settlements of types other than those financed as discrete components of bank loans. Some of these indirectly supported activities have had particularly serious human rights consequences. The case of transmigration provides valuable lessons for tropical countries and international development agencies such as the World Bank, and many of these lessons have yet to be learned.

KEY WORDS: Transmigration, World Bank, Tropical forest settlement, Indonesia, Deforestation, Indigenous peoples, Human rights

Transmigration is Indonesia's program of transporting millions of people from the overcrowded islands of Java, Madura, Bali, and Lombok to settlement areas in the outer islands of Sumatra, Kalimantan (Indonesian Borneo), Sulawesi (formerly the Celebes), and Irian Jaya (Indonesian New Guinea) (Figure 1). Labeled "the World Bank's most irresponsible project" by Survival International (1985), multilateral bank financing of this program has long been a focus of criticism because of its impact on deforestation and human rights. In 1986, transmigration was singled out by a consortium of 14 environmental groups as one of the "Fatal Five"--the five projects chosen as illustrations of inadequate environmental safeguards in World Bank lending procedures, the others being the Polonoroeste Project in Brazil, the Three Gorges Dam in China, the Narmada Dams in India, and the Livestock III project in Botswana (TFAGC 1986, Schwartzman 1986). The experience of the transmigration program, and of the World Bank and other international institutions that have supported it, contains many lessons for tropical countries and for agencies that fund and influence development projects. The aim of the present paper is to capture some of these lessons in hope that the errors they reflect will not be repeated.

(Figure 1 here)

Many controversies surround transmigration, ranging from the facts themselves to the interpretation and relevance of the events, especially in light of continual changes both in Indonesia and in the World Bank. Regarding the wisdom of World Bank involvement, two questions are crucial. The first is the extent to which one should accept the rationalization that if a development initiative is "going to happen anyway," support should be granted to make the development a little less damaging than it otherwise would be. The second is the extent to which financing agencies are responsible for impacts caused by the institutions these agencies create and strengthen, as opposed to the more limited impacts at the sites where bank-supported activities are appraised as discrete project components. These questions apply to development projects and Bank activities throughout the world.

TRANSMIGRATION

A Brief History of Transmigration

As a country composed of over 13,000 islands (6000 of which are inhabited), Indonesia has always regarded as a high priority measures designed to preserve national unity. Cultural diversity is seen as an impediment and is reduced as much as possible through promotion of the national language and a series of national symbols. Java, with 61% of the country's total population, dominates this process. Populating the outer islands with Javanese has been a national goal since long before Indonesia achieved independence from the Netherlands in 1948. The first transmigration project (then known as *kolonisatie* or colonization) was in 1905. In the 1905-1931 period 27,338 people were moved, an average of only 1013 per year (Jones 1979, p. 212). As the most accessible of the outer islands, Sumatra was the destination. The high cost and obvious insignificance of the program in reducing population pressure on Java led to abandonment of the program in 1928, but the situation changed radically in 1929 with the onset

of the Great Depression: plantation owners in Lampung and South Sumatra provinces dismissed thousands of workers, as did industries on Java, leading to resumption of kolonisatie on a larger scale to relieve the resulting social pressures (Sevin 1989, p. 85). During the 1932-1941 period 162,600 people were moved (16,260/year). World War II interrupted kolonisatie until the current transmigration program was launched in 1950.

Sukarno, Indonesia's founding president, called transmigration "a matter of life and death for the Indonesian nation." As originally announced in 1949, Sukarno's plan would have moved an incredible 48 million people over a period of 35 years (Budiardjo 1986, p. 112). Tambunan, the first head of the Transmigration Bureau, planned to reduce Java's population from 54 to 31 million over a period of 35 years by moving all of the island's natural increase plus an annual quota that would rise by increments of from one to seven million over the course of the program (Suratman and Guinness 1977, p. 82). The expense and difficulty of executing such a plan soon led to radical reduction of the targets. Even the revised targets were consistently greater than the numbers achieved, and this pattern still continues. However, failure to meet unrealistic targets cannot be taken as indicating low priority, and transmigration in different forms has always been a centerpiece of independent Indonesia's development program.

In 1965, Sukarno set a target of moving 1.5 million people per year, equivalent to Java's annual increase in population at the time (Jones 1979, p. 214). This solution to the overcrowding of Java's rural areas was linked to Sukarno's resistance to family planning and would require clearing 2000 ha/day in the transmigration areas (Swasono 1969, p. 14 quoted by Ross 1980, p. 82).

Suharto, Indonesia's current president who rose to power in 1966 and formally assumed office after Sukarno's death in 1970, has continued and accelerated the transmigration program. In 1967 (the year after Sukarno lost effective power), the government acknowledged that soaring population growth could obstruct national development and started a family planning program (Atmosiswoyo 1977, p. 22). In addition, reportedly, "Suharto has long been known to have an obsessional interest in transmigration" (Budiardjo 1986, p. 114).

Since 1969, Indonesia's planning has been done in repelitas, or five-year development plans. Targets and population moved under the plans are given in Table 1. These figures do not include population movement outside the transmigration program, although they do include movement with various forms of partial support.

(Table 1 here)

By 1989 a cumulative total of approximately one million families, or five million people, had been shipped to the outer islands as part of the official program, plus anywhere from two to three times this many had moved independent of the program. The slowdown beginning in 1987 coincides with the decline in world oil prices and its consequent budget restrictions in oil-rich Indonesia. The government chose not to resume rapid transmigration even though diversified exports (albeit many involving sale of natural capital) improved Indonesia's economy in the

1990s. In addition, World Bank-funded projects switched from the traditional transmigration settlement pattern of annual crops such as irrigated rice (sawah) and upland slash-and-burn agriculture (ladang) to a pattern of "estate settlements"--villages surrounded by oil palm, rubber, and other perennial crops. These estate settlements do not go under the rubric of "transmigration" in the World Bank, although many (but not all) of the same serious problems apply to them.

Another factor in the slowdown in establishment of new projects was the backlog of over 900 already established projects still under the tutelage of the Ministry of Transmigration, either because they were less than five years old or because serious problems prevented their being handed over to local authorities (RePPProT 1990, p. 205). Environmentalists inside and outside Indonesia also claimed the switch to improving already established projects as a victory for their own lobbying and advocacy efforts (e.g., Colchester 1987).

The slowdown has been greatest in Irian Jaya. In Repelita IV (1984-1989) the target was 137,000 families, but only 7986 (6% of the target) were settled. The 1989-1990 plans were for 400 families from Java plus 250 families of local transmigrants. However, feasibility studies have identified sites for an additional 142,161 families (RePPProt 1990, p. 206).

Types of Transmigration

General (agricultural) transmigration. General transmigration (transmigrasi umum), or sponsored transmigration, is the name given to the program where the government provides transportation to the settlement site, as well as infrastructure, a house, and a living allowance intended to support the people until the first harvest. This form of transmigration has been progressively replaced with partially assisted spontaneous transmigration in locations such as Sumatra, where a significant number of people from Java are willing to move at their own expense. In Irian Jaya, however, fully sponsored general transmigration has persisted.

Spontaneous transmigration. Spontaneous transmigrants are of two types: spontan migrants who are completely independent of the program (also called uncontrolled migrants), and swakarsa transmigrants, who are part of the government program but must transport themselves to the site (albeit often at subsidized rates). Swakarsa transmigrants receive less government support than general transmigrants, but at the least receive a plot that has been surveyed and titled by the government.

Repelita V (1989-1994) called for 180,000 families of sponsored transmigrants and 370,000 families of swakarsa (spontaneous) transmigrants. Of the swakarsa families, 200,000 were to be supported on plantation crops, 40,000 on forest industries (silviculture), 90,000 on fisheries (mainly fish ponds) and 40,000 on services (RePPProT 1990, p. 205). It should be remembered that spontaneous transmigrants are often relatives of the general sponsored transmigrants, and therefore are not unrelated to the official program's impact. While official programs are usually placed in heavily disturbed logged-over forest, spontaneous migrants are

more likely to use undisturbed forest (Peter Gardiner, public statement, 1992). This also applies to uncontrolled migrants, who settle completely outside the transmigration program.

The potential of transmigration to draw spontaneous migrants places the program in a double bind: if agriculture is a failure, then transmigrants turn to encroaching on forest for slash-and-burn farming, whereas if a project is successful, then the news will attract more migrants, resulting in more deforestation.

Local transmigration. Local transmigration, or transmigrasi lokal, is the movement of people to resettlement areas within the same province or region. These settlements are for those displaced by dams and other development projects, for victims of natural disasters, and for people removed from areas declared as forest or nature reserves.

Military transmigration. The Department of Transmigration has stated that "the frontier regions of Kalimantan, Irian Jaya, East Timor have the priority for migrating military people for the purpose of Defense and Security" (Indonesia, Department of Transmigration, Bureau of Planning 1987 cited by RePPPProT 1990, p. 201). One of the official objectives of transmigration is "[T]he strengthening of national defense and security" (Law No. 33, Article 2, 1972 on the Basic Provisions of Transmigration, cited by Budiardjo 1986, p. 111). This refers primarily to monitoring and suppression of domestic dissent and is done through a system called territorial management (pembinaan teritorial or pembinaan wilayah), whereby active and retired military personnel are sprinkled through the ranks of the civil administration (including transmigration), and report through a hierarchical chain linking the smallest social units (villages in rural areas and neighborhood associations in cities and towns) to the head of the army. Two army documents obtained by TAPOL, a London-based nongovernmental organization promoting human rights in Indonesia, explain how this is applied to Irian Jaya through transmigration. Both documents were written by then Brigadier-General Sembiring Meliala when he was commander of the Cendrawasih/XVII Regional Military Command in Irian Jaya. The first (dated January 1983) is entitled "The Transmigration Program in Irian Jaya must be Handled in a Special Way in Order to Help Resolve the Security Problem," and the second (dated April 1984) is entitled "The Basic Pattern of Territorial Management Specific to Irian Jaya, Employing the Method of Community Development Centers." The phrase "Community Development Centers" refers to settlements into which native Irianese would be relocated after removal from traditional villages. Contrary to official transmigration guidelines, the army plan calls for keeping the Javanese separate from the Irianese, who would be given an extended course of "guidance and instruction," including (Islamic) religious instruction.

In addition to this territorial management throughout Irian Jaya, active and retired army personnel would settle special military transmigration sites along the border with Papua New Guinea through a program called saptamarga after the "seven vows" taken by all members of the armed forces. Martono, the Minister of Transmigration, told a meeting of transmigration officials in September 1985 that "Preparations are under way for a program of transmigration sites based on the saptamarga model, for application in trouble spots...such as...East Timor....

The largest area for emplacement of sites of this model is Irian Jaya where 13 sub-districts will be affected" [Kompas (Jakarta), 6 September 1985, cited by Budiardjo 1986, p. 113].

Whitten and others (1987, p. 4) indicate that about 550 families of military transmigrants were settled in the April 1984-February 1986 period (0.5% of the fully sponsored transmigrants during the period). In response to criticisms raised in a special issue of The Ecologist devoted to transmigration (Vol. 16, No. 2/3, 1986), outgoing World Bank president A. W. Clausen wrote that the bank knew of only one transmigration site containing "retired" military personnel, and that the bank "has not assisted in the establishment of settlements for military reasons" (Colchester 1987, p. 37).

PIR-Trans: Nucleus estate settlements. Nucleus estate settlements (NES), which have been attached to the transmigration program and acquired the name Perkebunan Inti Rakyat (PIR-Trans), were begun in 1988. All but two of the 183 phase III-A detailed site plans were of the PIR-Trans type in Riau, Jambi, West Kalimantan and Central Kalimantan; the two exceptions were in Irian Jaya.

The World Bank's Trans V loan funded the Second Stage Development Program (SSDP), which supported transmigrants on estate crops such as oil palm rather than on arable crops as in the previous transmigrasi umum (general transmigration) model. The PIR-Trans program is not as attractive to potential transmigrants as the old agricultural (general) transmigration because PIR transmigrants are responsible for paying off a debt over 20 years for the cost of oil palm or other plantation crops, whereas agricultural settlements gave land away. If commodity markets crash, or if production systems prove to be unsustainable, it is transmigrants who will be left holding the bag.

Industrial plantation forests. Industrial plantation forests (Hutan Tanaman Industri, or HTI) are the foundation of the current program of rapid expansion of silvicultural plantations, beginning in 1992. Indonesia expects to plant 300,000 ha/yr, reaching 6.2 million ha by the year 2000, at which time the program will supply 1.5 million m³/yr of wood (R. Sudradjat, personal communication, 1992). Of the wood produced, 50% is intended for pulp, 40% for construction, and 10% for energy.

In 1992 there were 100 HTI estates in the process of being established, with plantation areas ranging from 3600 to 40,000 ha. The implementation of projects and provision of houses and other infrastructure for transmigrants is entirely done by private companies that are awarded concessions. Each is built around a nucleus of about 300 transmigrant families, surrounded by a "plasma" from which it draws additional wood and labor.

Plantation proposals almost always say that they are to be established in Imperata cylindrica grassland areas. However, Imperata in Indonesia is spread out in relatively small patches. Proposals for 200,000 to 500,000-ha plantations invariably entail clearing land that is not Imperata. Usually this is forest that has been either lightly or heavily logged. In Indonesia, lightly logged forest is referred to as secondary forest (hutan sekunder). This should not be

confused with secondary forests as the term is used outside of Southeast Asia; these are known as successional forests (hutan sukesi) in Indonesia.

The industrial plantation forest projects receive no-interest loans from the government covering 15% of establishment costs (including maintenance through an 8-year cycle) calculated on the basis of Rp2 million/ha (approximately US\$1000/ha; loans are therefore approximately US\$150/ha). In fact, establishment costs are only Rp 1.2-1.5 million/ha, making the offer even more attractive. An additional 14%-15% of establishment costs are covered directly by the government as part of the replanting that is to be done with monies collected from the US\$10/m³ log tax charged to logging concessions (giving an additional subsidy of approximately US\$140-150/ha). In fact, the same companies that have logging concessions subsequently apply for contracts for industrial plantation forest projects in the same areas (A. Hadi Pramono, personal communication, 1992). Needless to say, this casts doubt on Indonesia's frequent claim that forestry management practices are sustainable as carried out in natural forest and indicates an additional source of financial gain for concessionaires that log their areas destructively.

If a forest's standing volume of timber falls below a threshold of 20 m³/ha it is classified as conversion forest, which can be cut to make room for plantations. This policy was implemented in 1990, and it is too soon to know if there has been an increase in the percentage of Indonesia's 550 logging concessions that exploit their areas to standing volume levels below this threshold.

The HTI schemes dwarf traditional transmigration in terms of potential impact. From the 1989/1990 through the 1993/1994 fiscal years, 867,002 ha of HTI plantations were installed, of which 32,825 ha were under the HTI-Trans program (Pusat Data Business Indonesia 1995, p. 50). The Ministry of Transmigration has essentially become a source of cheap labor for large estates, first for oil palm and now for silviculture, especially Acacia mangium for pulp. When a company wants to develop a plantation in a remote area with few or no occupants, the company goes to the Ministry and requests a shipment of people (Christian Cossalter, personal communication, 1995). The impact on deforestation per capita of population transmigrated may be much higher with the industrial model than it was before: rather than 2-5 ha/family for agriculture, each family maintains 20 ha of silvicultural plantation (e.g., Lohmann 1990, p. 10).

"Transmigration" of political prisoners. Indonesia has used its transmigration program in various ways in connection with movement of political prisoners and of other categories of involuntary deportees. These have included penal settlements and areas for released prisoners. Tribal people returning to Irian Jaya from exile in Papua New Guinea have been forced to settle in special relocation areas (see Social Impacts section below).

WORLD BANK SUPPORT

A series of World Bank loans granted between 1976 and 1992 facilitated transmigration (Table 2). Bank-assisted settlements began on Sumatra, and only began on Irian Jaya with the Trans V loan in 1985. While World Bank financing underwrote only about 10% of the budget of

the transmigration program over the 1976-1989 period, bank funding was a key factor in the government's ability to obtain other financing for the program as a whole (Anderson and Spear 1986).

(Table 2 here)

World Bank funding for transmigration covered both implanting specific settlements and fortifying the program as a whole. Overall fortification of the program was specifically mentioned in the project appraisal report for the Bank's Trans IV loan, which claimed as a benefit that it would "strengthen ..., by extension, the transmigration program as a whole" (quoted in Searle 1987, p. 133). This included "management support to the Ministry at a central level" (World Bank 1985, p. 13). Among the achievements under the general strengthening category was creation of a new Ministry of Transmigration. Strengthening the overall program is the most controversial aspect of the bank's loans, because this served to support such activities as settlement in East Timor, military transmigration, penal settlements, and "transmigration" of political prisoners throughout the archipelago. The bank has frequently given open-ended support to programs that include portions that would never be acceptable if requested as individual projects (see Fearnside 1989).

In addition, the nature of World Bank-funded components changed over time: instead of providing specific settlements with a full range of infrastructure and services, a progressive shift occurred to aerial surveying to evaluate the physical suitability of areas for future transmigration. Obviously, this more recent role leaves open questions of who the transmigrants will be and how indigenous peoples or other holders of traditional land rights may be affected.

The World Bank's assistance has continued since the 1985 Trans V loan, even though the term "transmigration" no longer appears in project titles. The Second Stage Development Program (SSDP) was instituted in 1992 to improve old transmigration areas. The project designated US\$220 million for eight existing transmigration areas for "continued assistance for annual crops and development of tree crops on cleared and uncleared land" (IBRD and IDA 1992, p. I-33).

ACCOMPLISHMENTS AND FAILURES

Demographic Benefits

Relieving pressure on land resources in Java has always been the most loudly proclaimed objective of transmigration, but its effect is insignificant. During the 1979-1989 period (when the program was at its peak) approximately 3.5 million people (765,000 families) were moved, while all previous transmigration totaled approximately 1.4 million people. This is by any accounting minimal in comparison with the 108 million population of Java in 1990. At the 1990 growth rate of 1.98%/yr (Indonesia, Biro Pusat Statistik 1993, p. 41), Java's population was growing by 2.1 million persons/yr. The rate of transmigration during the 1980s therefore relieved a maximum of 17% of Java's growth. The net impact on Java's population is less than

this because transmigration figures are not corrected for reverse population flow of transmigrants and their descendants returning to Java. Partly as a result of increased urban employment opportunities on Java, the number of people moving to the outer islands (not only transmigrants) has dropped since the 1980s to about the same level as prevailed in the late 1970s. In contrast, the number of people moving from the outer islands to Java is about four times higher than during the late 1970s. The 1990 migration flow (defined by place of residence five years previously) from Java to the outer islands was 963,340, while the reverse flow was 713,749 (Indonesia, Biro Pusat Statistik 1993, p. 34).

The program consequently has little justification in terms of its official rationale. It is also worth noting that people in the outer islands reproduce faster, on average, than on Java, making transmigration a factor in speeding the growth of Indonesia's total population. In addition, the World Bank's 1986 sector review of transmigration takes credit for population relief provided to Java by departure of migrants who move and settle independent of the program (World Bank 1986 cited by RePPProT 1990, p. 200). RePPProT (1990, p. 200) also includes the effect of this population movement in concluding that "the situation on Java would now be significantly worse" without the program. A clear inconsistency exists in claiming credit for demographic benefits of the spontaneous migration but accepting blame only for environmental impacts of the much smaller contingents moved under the official program. What the situation on Java might be today had the over US\$7 billion invested in transmigration been spent in other ways is not considered.

Agricultural Benefits

Agriculture is the intended means of support for the vast majority of transmigrants moved so far. Under the normal transmigration pattern, each family receives a 0.25-ha house lot and home garden, 1.0 ha of potential sawah area and 0.75 ha of ladang or upland farming area. In projects initiated in Sumatra's Jambi and South Sumatra provinces in the 1970s, such as Rimbo Bujang, an additional 3 ha was given to the transmigrants to clear for themselves for planting rubber (Suratman and Guinness 1977, p. 94).

Transmigrants are affected by a host of agronomic problems that afflict tropical agriculture. As is true everywhere, agriculture is a profession that requires as much skill and knowledge as any urban calling. Urban transmigrants, without experience in agriculture, can hardly be expected to be successful farmers even if the special problems facing transmigrants were to magically evaporate. Two large surveys in the 1970s indicated that one third to one half of the transmigrants had never owned or managed land before, and 16% had never farmed at all (Suratman and Guinness 1977, p. 85).

Javanese transmigrants have often been assumed to be model farmers who will teach farming techniques by example to native inhabitants of the outer islands. As has also been the case in Brazil, where this assumption was made by planners of Amazonian colonization projects, the learning that occurs in practice is more often the reverse.

Agronomic problems include poor soil, insects, plant diseases, and weed invasion, especially by alang-alang (*Imperata cylindrica*) grass. Transmigrant agriculture also suffers from low market prices for crops, high prices for agricultural inputs, and poor transportation to markets.

The presence of *Imperata cylindrica* in Southeast Asia represents a major ecological difference from other parts of the tropics. This highly aggressive grass occupies abandoned agricultural fields and maintains its advantage over woody successional species as long as periodic reburning occurs, as is the norm throughout the region. Transmigrants receive hand tools (Figure 2), but with the labor required to combat *Imperata* and dig up its mat of roots, removal by hand is impractical. In the Singkut III Transmigration Area seven years after settlement, the landscape is dominated by *Imperata* rather than agriculture (Figure 3).

(Figures 2 and 3 here)

Some critics of transmigration have painted a picture of unremitting agricultural failure (e.g., Otten 1986), while others have pointed out that this picture fails to recognize that a few areas are agronomically successful (Indonesia, Ministry of Transmigration Staff 1991, Jhamtani and others 1987, Whitten and others 1987). In addition, some of the most dramatic incidents of starvation and mass exodus are now receding into the past; these include, for example, areas in Luwu and Sumatra that received emergency food aid from the World Food Program. The record has improved somewhat over time as a result of better site selection and planning and less obsession with rushing to fulfill impossible targets. On the other hand, the shift from more promising areas in Sumatra to ones with poorer soil and more difficult access in Irian Jaya has been a negative factor.

In judging what constitutes an agricultural success or failure, it is important to be clear about the perspective applied. A project may be successful from the point of view of individual transmigrants and at the same time a failure from the point of view of maintaining them without continual government and international subsidy or from the point of view of producing an exportable surplus. The projects are most successful from an individual point of view, as some transmigrants have undeniably bettered their condition by leaving Java for one of the settlements. Many have lost in this gamble, however. Agricultural success from the standpoint of the national economy has been illusory.

IMPACTS

Environmental Impacts

Deforestation numbers and definitions. Establishing transmigration areas obviously involves clearing forest. Because degraded alang-alang (*Imperata cylindrica*) grasslands have customary (adat) land rights claims, settlement projects have been preferentially placed in forested areas (World Bank 1981, cited by Searle 1987, p. 142). Unlike colonization in Brazilian Amazonia, where settlers clear their own plots, most transmigration clearing is done by the

government itself. Vast continuous expanses are often cleared, such as part of a 9000-ha clearing at the Hitam Ulu Transmigration Project in Jambi Province, Sumatra, shown in Figure 4.

(Figure 4 here)

Deforestation in Indonesia is a subject of disagreement, as official and unofficial estimates often do not agree. Objective verification from satellite imagery is minimal compared to some other major tropical forest countries, such as Brazil. Different definitions of deforestation are responsible for some discrepancies, but this factor is far from sufficient to explain the full range of estimates. Reclearing of secondary succession by shifting cultivation and degree of logging disturbance necessary to qualify as deforestation are the major items handled differently in different estimates.

A variety of estimates have been put forward for the rate of deforestation in Indonesia (Table 3). The World Bank (1990) made a rough apportionment by cause of the 750,000 ha/yr it estimated for Indonesian deforestation. This indicates 500,000 ha/yr (range: 350,000-650,000 ha/yr) of clearing by smallholders (presumably including transmigrants) and 250,000 ha/yr (range: 200,000-300,000 ha/yr) by development projects, which include nucleus estate settlements and HTI silviculture projects. The assessment reflects the situation over the 1980-1986 period; since that time the importance of development projects, especially HTI plantations, has undoubtedly greatly increased. The World Bank (1990) also estimated 80,000 ha/yr of "logging damage", but this is not deforestation as the term is used in this paper to refer to conversion of original forest (even if disturbed) to nonforested land uses. The bank also estimated 70,000 ha/yr of loss to forest fires.

(Table 3 here)

The Tropical Forestry Action Program (Indonesia, Ministry of Forestry and FAO 1991, p. 22) estimated 160,000 ha/yr for estate crop development, 300,000 ha/yr for (official) transmigration, 300,000 ha/yr for shifting cultivation, and 77,000 ha/year for "others," including spontaneous transmigration, illicit logging, mining, and urban development. In addition to these sources of deforestation, which total 837,000 ha/yr, were 100,000 ha/year of normal forest fire loss and 378,000 ha/yr of loss to the 1982-1983 Kalimantan forest fire.

Swamp drainage, which has been the basis of projects in coastal areas of Sumatra, has unique environmental impacts in addition to those common to upland settlement. Loss of natural wetland habitat is a source of concern (Pramono 1991). Swamp drainage also makes a substantial contribution of carbon emissions from the peat soils (Histosols) when they are drained. In terms of soil carbon release, draining a small fraction of Indonesia's swamps could release as much carbon through oxidation of soil organic matter as conversion of all of the country's remaining upland forests to *Imperata* grasslands (van Noordwijk 1994, p. 29).

Defining away deforestation is particularly common in Indonesia, where government sources often do not include cutting of "conversion forests" as deforestation, confining this term

to cutting in areas not placed in this legal category. Needless to say, the environmental impacts of deforestation, such as greenhouse gas emissions, have nothing to do with the legal category into which the Indonesian government may have placed the forest in question.

Deforestation by transmigrants. The degree to which rainforests affected by transmigration are undisturbed is a source of argument. Critics charge a major impact (Secrett 1986), while others object to portraying the forests involved as pristine (Whitten and others 1987, Indonesia, Ministry of Transmigration Staff 1991). Defenders of transmigration often describe the projects as being placed in already logged-over areas, thereby being responsible for much less loss of virgin forest than is portrayed by critics. Two considerations are important to keep in mind: first, passing the blame for deforestation is also done by defenders of logging, with the claim that logging is not deforestation and so should be spared the wrath of environmentalists concerned about loss of tropical rain forests (but passing the buck back and forth does not alter the fact that the forest disappears in the process). The second consideration is that the prevalence of intense logging activity prior to clearing varies greatly in different locations; among the nine transmigration areas visited by this author, logging was more evident in East Kalimantan than in Sumatra.

Somewhat different from the question of whether cutting conversion forests is deforestation at all is the question of who should be blamed for the forest loss. Whitten (1987, p. 242) believes that "the forest being lost has in almost all cases been taken from areas scheduled by the DoF [Department of Forestry] as conversion forest. Thus the focusing of ire upon the transmigration program misses the point that the fate of forests in almost all areas of Indonesia has been determined." However, I find it difficult to absolve transmigration of blame on the basis of a bureaucratic classification by the Department of Forestry. The more tangible acts involved indicate ample blame for both forestry and transmigration: the Department of Forestry for destructive logging and the Ministry of Transmigration for cutting the disturbed forest that remains.

The questions of what forces are driving deforestation and what actors are doing the clearing are vital to being able to evaluate the likely effects of any countermeasures. For example, a Deforestation Reduction Initiative (also called the Alternatives to Slash-and-Burn Initiative) has been proposed as a means of containing emissions that contribute to global warming (Sánchez 1990). This began in 1993 in a number of tropical countries, including Indonesia, with funding from the World Bank's Global Environment Facility (GEF). The approach is to increase the amount and duration of crop yields through improved cropping systems. The underlying theory is that farmers will refrain from clearing more forest if their subsistence needs are satisfied from a smaller area. The justification is given that "people do not cut tropical rainforests because they like to; they clear land out of sheer necessity to grow more food" (Sánchez 1990, p. 377). The conclusion is that "for every hectare put into these sustainable soil management technologies by farmers, five to ten hectares per year of tropical rainforests will be saved from the shifting cultivator's ax because of higher productivity" (Sánchez 1990, p. 378).

Although the claim of savings of 5-10 ha/yr has been repeated many times, the empirical basis for it is weak. It comes from the deduction that the amount of land that a family normally clears annually, if producing under a sustainable system rather than one that only yields crops for a year or two per cycle of shifting cultivation, will satisfy a family's needs and result in their abstaining from further clearing. The fundamental assumption is that farmers are satisfied with their level of existence and would not clear more if the opportunity presented itself. In the case of Indonesia, this logic is unlikely to lead to more than a tiny fraction of the expected reduction in deforestation. This is the case for two reasons: (1) most Indonesian farmers in forest areas are not traditional shifting cultivators, and (2) those that are shifting cultivators, such as tribal peoples in Irian Jaya, cause minimal encroachment on virgin forest areas. In Indonesia, the most evident contingent of farmers clearing forest for agriculture are the Javanese transmigrants (Figure 5). These considerations also make the full-stomach hypothesis inapplicable to settlement areas in Brazil (Fearnside 1987a, 1995).

(Figure 5 here)

The Indonesian component of the Alternatives to Slash-and-Burn (ASB) project has recently recognized that the basic premise of the original project is flawed. Instead of food production insecurity and poverty driving deforestation in the transmigration areas under study, the main causes are the profits and establishment of land claims that can be achieved by planting tree crops such as rubber (Alternatives to Slash-and-Burn 1995, p. 131). Ever since the early kolonisatie projects, profitable tree crops have resulted in more rather than less deforestation as planters expand their individual plantations and as additional migrants are lured from Java by the example of financial success. The ASB project hopes to redirect the policy portion of the project in recognition of this situation.

Social Impacts

Human rights and ethnic minorities.

Elimination of cultures. One government objective for transmigration is to eliminate cultures of ethnic minorities. That this is part of official policy rather than a mere side effect was clearly indicated by a statement of Martono, the Minister of Transmigration, in a presentation to the Inter-Governmental Group on Indonesia (IGGI) on 20 March 1985. The Minister stated that "By way of transmigration, we will try to ... integrate all the ethnic groups into one nation, the Indonesian nation.... The different ethnic groups will in the long run disappear because of integration ... and ... there will be one kind of man" (Indonesia, Department of Transmigration and IGGI 1985 cited by Colchester 1986b, p. 89).

Irian Jaya. Irian Jaya was a Dutch colony until it was taken over by Indonesia in 1963. The Netherlands, under pressure from the United States, passed Irian Jaya to the United Nations, which promptly gave it to Indonesia. A condition was attached that a plebiscite must be held by 1969. After six years of brutal repression and military conquest of the territory including bombing and strafing of villages, the Indonesian government selected 1025 Irianese to

participate in the plebescite (the population was approximately 700,000 at the time). Most voting was not witnessed by UN observers; what was observed at the six sites where access was permitted consisted of groups of men being forced to publicly declare their vote as a block in the presence of Indonesian soldiers. The vote was unanimous in favor of joining Indonesia. This "act of free choice" was subsequently ratified by the UN General Assembly. More information on these events can be found in Osborn (1985), Colchester (1986a,c), and Monbiot (1989).

The tribal population is of Melanesian racial and cultural derivation, and has no cultural, religious, or other tie to Indonesia's Javan and Sundanese majority cultures. A guerrilla war has been in progress since the Indonesian conquest, and the area remains under close military control. According to the United Nations High Commission on Refugees, there were 10,000 refugees in Papua New Guinea by 1979, and an additional 10,500 entered in the 1984-1986 period (Colchester 1986c, p. 103). Both the fact and the threat of transmigration played a part in this, but violence and threats of violence from both sides of the conflict were also important (Monbiot 1989, pp. 193-194).

Transmigration in Irian Jaya has been the most controversial part of the program receiving support from the World Bank. This is because of the role that transmigration plays in Indonesia's strategy for securing its domination of the area. The government of Indonesia makes no secret of its intention of hastening the demise of tribal cultures and languages and replacing them with the dominant Indonesian ones. Consent of tribal peoples affected is not thought necessary.

In a rebuttal of criticisms of transmigration to Irian Jaya that had been made in The Ecologist (Vol. 16 No. 2/3, 1986), Indonesia's Ministry of Transmigration Staff (1991, p. 8) stated that the lands of the Dani people of the central highlands and the Agats [Asmat] tribe of the southern coastal swamps had not been affected, and that "at no time has the Ministry ever had plans to put transmigrants into either of these areas." It is worth noting that these areas were covered by the 1:100,000-scale mapping carried out under Trans V for site selection (World Bank 1985, Annex 7), that the Second Swamp Reclamation Project approved by the World Bank in 1984 included a master plan for development of swamp areas in Irian Jaya (World Bank 1985, p. 70), and that people at both sites believe that their land is slated for transmigration (Monbiot 1989, pp. 153, 245). Most of the land has topography or soils unsuitable for transmigration; for example, 78% of the total area surveyed under Trans III was rejected (Indonesia, Ministry of Transmigration Staff 1991, p. 4). This leaves open the question of whether these areas would have been selected had they been more physically hospitable. Perhaps the most striking feature of the ministry's rebuttal is the number of points in The Ecologist's critiques that are simply not mentioned.

Defenders of transmigration to Irian Jaya point out that most transmigration there is located in sparsely populated lowlands rather than in the highlands where native populations are more dense: were the program intended to maximize acculturation, the reverse pattern would have been chosen. Two points are relevant: first, all of the province is occupied by tribal populations who exploit forest products even in apparently empty locations, and second, even a

small fraction of the transmigration program designed to eliminate native cultures represents a serious human rights issue.

East Timor. The events in East Timor are especially sensitive. Shortly after departure of the Portuguese from East Timor, this former colony was invaded and conquered by Indonesia in April 1975. A genocidal campaign against the Portuguese-speaking population ensued (Kuper 1981, p. 175; see also Budiardjo and Liong 1985). Approximately 200,000 people, or one third of the preinvasion population, are believed to have died (Budiardjo 1986, p. 115). In explaining the "discontent" that prevails in East Timor today, Indonesian authorities cite "transmigration policies" as one of the causes, partly for having favored newcomers over local population (YLBHI 1992, p. 17). Transmigration in East Timor is not a part of the program to which the World Bank has contributed directly.

Penal settlements. Transmigration has been used as an adjunct to forced labor camps for political prisoners (Amnesty International 1977, pp. 90-101). For a period of 14 years (1965-1979), Indonesia held between 55,000 and 100,000 political prisoners, over 99% without even the pretext of a trial (Amnesty International 1977, p. 9). The country still holds a substantial population of political prisoners, despite release of many in 1979 following sustained international pressure. Imprisoning this population was done following the October 1965 coup attempt by middle-level military officers. The program was promulgated on the theory that responsibility for the coup attempt rested with the Communist Party of Indonesia (PKI) and anyone who had associated with members of 26 mass organizations, 23 educational organizations, 62 trade unions and Baperki (an organization of Indonesian citizens of Chinese origin) and its associated university (Amnesty International 1977, p. 29). One tenth of Indonesia's adult population belonged to these organizations, all of which were legal at the time (Amnesty International 1977, p. 23). In addition to imprisonments, between 500,000 and one million people were summarily executed or killed by mobs, often with the encouragement of authorities (Amnesty International 1977, p. 22). Inclusion on lists of people to be killed or imprisoned was based on the principle of collective responsibility, and the criterion of membership in one of the listed organizations at any time in the past was as immutable as race, giving the killings some of the key characteristics of genocide (Kuper 1981). In some of the bloodletting, such as slaughter of Chinese merchants in northern Sumatra, race was the determining criterion.

Arrests have continued in the years since the 1965 events. In 1974 and 1975 large numbers of government employees were subjected to political screening and many arrested, often cutting staff of government offices by as much as half. Many observers believe that the screenings were a disguised means of rationalizing the administration in order to relieve the chronic problem of overstaffing (Amnesty International 1977, p. 29).

Transshipments of groups of 2500 political prisoners each began in 1969 to 12 transmigration "units" on the island of Buru, located between Sulawesi and Irian Jaya. A total of 14,000 prisoners were shipped to these areas by the Prosecutor General's office by 1977 (Amnesty International 1977), and the total reached 18,000 when they were "released" in 1979

(Tedjo Bayu, personal communication, 1992). "Release" from Buru often meant transshipment to transmigration areas on other islands. The original transshipment from Javanese prisons to the Buru penal colonies was also described as a "release" by the government. In December 1976 the government announced that all category B prisoners (those accused of "indirect involvement" in the coup attempt) would be "released" over the following three years by transporting them to "transmigration centers in Sumatra, Kalimantan, Sulawesi and other places, [and] those who come from Java, which is densely populated, will be transmigrated to Buru and other islands in accord with the guidelines on transmigration as stated in the Second Five-Year National Development Plan" (Embassy of the Republic of Indonesia, London, Press Release No. 015/Pen/76, reproduced in Amnesty International 1977, p. 122). One of the projects in Kalimantan established to receive former political prisoners is reported to be an agricultural success (Jhamtani and others 1987).

With respect to the prison population in general, Amnesty International (1977, p. 35) states that they are "in no doubt that the prisoners' greatest fear is compulsory 'transmigration'." The island of Buru, which received category B prisoners from Java, was particularly notorious. The government stated that prisoners selected were under the age of 45 and had been medically examined to assure good health. These claims contradict later official explanations of high death rates among prisoners as being the result of old age and diseases contracted before arrival. Forced agricultural labor on a near-starvation diet with no medical attention is the real reason, affirmed by all nongovernment accounts. Prisoners were allotted "a few spoonfuls" of boiled rice per day, supplemented by a "minute" piece of soybean curd and "occasionally" by a small piece of fish (Amnesty International 1977, p. 78). The Indonesian government has consistently maintained that its "transmigration" program for prisoners on Buru and other islands is "in accordance with the guidelines on national transmigration" (Amnesty International 1977, p. 34).

The political transmigrants that left were replaced by ordinary transmigrants sent by the Ministry of Transmigration. The settlements on Buru were in forest areas between villages of indigenous peoples--creating the same kinds of conflicts that characterize transmigration projects in Irian Jaya (Tedjo Bayu, personal communication, 1992).

Settlements for suspected rebels. Irianese who fled to Papua New Guinea in 1984 are suspected of harboring sympathy for the Organization for an Independent Papua (Organisasi Papua Merdeka, or OPM). As these people are repatriated, they are not allowed to return to their villages, but are placed in a special transmigration "resettlement location" where they are held under "special guidance" (Najib 1985 cited by Budiardjo 1986, p. 114).

Involuntary deportation. Theoretically, transmigrants present themselves voluntarily to representatives of the Ministry of Transmigration, which screens them for inclusion in the program. In fact, however, some are involuntary. A significant number of the transmigrants come from urban backgrounds, despite the long-standing objective of relieving rural overpopulation. The urban people are often unemployed and are sometimes even beggars or suspected of being potential thieves. In some cases, shanty-town dwellers are offered new houses in the transmigration areas, but prefer to stay in their shacks in Jakarta or other Javan

cities. They frequently change their minds and accept the government's offer of transportation to a transmigration area after bulldozers move in and destroy the slums.

The use of transmigration areas as destinations for urban deportees should be kept in perspective within the overall program. The great majority of transmigration has always been rural-rural in character. The number from Jakarta (<7000 families) is less than that city's share of the population of Java. Nevertheless, even a relatively small number of involuntary transmigrants would represent an affront to human rights, the seriousness of which is not diminished by the massive scale of other components.

The existence of a waiting list for transmigration is often cited as evidence that transmigration is voluntary (e.g., Botafogo 1985, p. 209). Such a list, however, is hardly sufficient evidence in itself to assure that forced migration is not occurring along with voluntary movements. In addition, the transmigration program had difficulty in recruiting volunteers in 1991 and 1992, despite reduction in the number of places offered in the scaled-down program (Peter Gardiner, personal communication, 1992), because of more urban employment opportunities in Java since 1986, as a result of movement of manufacturing activity to Indonesia from Taiwan and other Asian industrial sites.

Some general transmigrants have been people forced to move because of development projects on Java, such as 20,000 people displaced by the Kedung Ombo Dam filled in 1989 with World Bank financing (INGI 1989, Van Tuijl 1989). The resettlement impact of such projects needs to be more carefully considered both in deciding on the wisdom of the dams and in accepting the constantly repeated claim that all transmigration is "voluntary."

Settlement of local population. The settlement of local population is very much a two-edged sword. Local people living near or displaced by transmigration projects often want the health care, education, and other benefits accorded transmigrants. Increasing the share of transmigration plots given to local people is seen as socially beneficial and is identified as a priority in World Bank plans. It can also contribute to reducing uncontrolled encroachment on forest reserves, such as the Sumatera Seletan National Park (see Whitten and others 1987, p. 20). The negative side of local transmigration is when entry into settlements leads to abandonment of tribal culture. In Irian Jaya, the single-family dwelling pattern transmigrants are obliged to adopt unleashes a chain of events leading to cultural disintegration (Monbiot 1989, p. 159, Colchester 1986b, pp. 95-96). It is in Irian Jaya that local resettlement has been given the highest priority: in Repelita III it was fixed at 25% in Irian Jaya versus 10% on other islands (Indonesia, Ministry of Transmigration Staff 1991, p. 6). The wishes of local people were to be taken into account in subsequent Repelitas (Indonesia, Ministry of Transmigration Staff 1991, p. 6).

Within each transmigration area a fraction of the lots is set aside for previous residents. These people are, of course, not volunteers, and they are also not happy about the development, given that they are forced to trade the use of a wide area for a transmigration plot of 2-5 ha.

Human rights and foreign assistance. Transmigration is inextricably linked to questions of human rights, which is a taboo subject in Indonesia. While the human rights situation in Indonesia has improved as compared to the country's horrific past, there are still serious problems. In 1992, Jakarta banned all aid from the Netherlands, both governmental and nongovernmental, out of displeasure over Dutch insistence on raising the issue of human rights in the Intergovernmental Group on Indonesia, the agency which oversaw international aid in the country until it was disbanded as a result of the incident. The Intergovernmental Group on Indonesia was replaced by the Consultative Group on Indonesia, chaired by the World Bank (The Jakarta Post 1992).

PLANNING AND EXECUTION

Choice of Sites

Corruption is a seldom-mentioned factor in development decisions. Indonesian nongovernmental organizations (NGOs) mention a figure of 17% as the leakage to corruption from transmigration projects (Jhamtani and others 1987). In addition, profits to influential people may be critical in decision-making even if these profits are not further augmented through corruption. An example may be the clearing shown in Figure 4: in this case, the firm contracted to do the clearing belonged to Mme. Tien, President Suharto's late wife.

The role of geostrategic considerations in selection of transmigration sites is a point of controversy. Troublesome areas have been targeted for settlement, and nonagricultural motives may be important in these cases. Indonesian NGOs maintain that foreign critics have overemphasized this factor (Jhamtani and others 1987). It is important to realize that transmigration is promoted for a variety of reasons and that individual projects have different rationales. For example, the provinces of Jambi, South Sumatra, and East and West Kalimantan have no reason for the current government to worry about separatist sentiment, making a geostrategic role unlikely as a factor in the large projects that have concentrated on these locations.

Cost efficiency fails to provide a convincing explanation for many transmigration projects. Given that it is much more expensive to settle transmigrants in Irian Jaya than in Sumatra, and the soils, markets and other factors result in more successful agriculture in Sumatra, why is Irian Jaya a top priority destination? For that matter, why was Trans V second stage development focused on admittedly marginal sites in the Merauké area of Irian Jaya (Indonesia, Ministry of Transmigration Staff 1991, p. 9)? The possibility of simply relocating these settlements from Irian Jaya to other islands appears not to have been considered.

Environmental Impact Statements

Since 1984 there has been a requirement for an environmental impact statement. This is done by consultants paid by the companies proposing the development project in question, and the impact statement is included as an appendix when the proposal is submitted to the

government. Similar systems have resulted in many unfortunate decisions in other countries, such as Brazil (Fearnside 1989). The project proposals and environmental impact statements are not publicly debated or available. The law requiring the impact assessment mentions that local people "must be included" in the process--but this is interpreted to mean only "included" as sources of data (Augustinus Rumansata, personal communication, 1992).

In the case of the silvicultural plantations now being installed, an additional problem with environmental impact analysis also has parallels in many other parts of the tropics. This is the initiation of construction of pulp mills before the environmental impacts of the plantations that will feed them have been analyzed. Once substantial investments of this kind are made, any questions that may arise as a result of the environmental studies cannot affect the decision on whether or not to implement the project.

World Bank Review

The World Bank has a set of policies covering its approval of projects in areas containing tribal peoples (World Bank 1982). If applied, these policies can provide substantial protection to such peoples. The case of transmigration illustrates the gulf that still exists between bank policies and project appraisal and implementation in practice. The bank's Staff Appraisal Report for the Trans V loan was dramatically altered between a draft version produced by a consultant (dated April 1985) and the final version used in making the decision (dated May 1985). Copies of the two versions were obtained and compared by Survival International (a London-based NGO for defense of tribal peoples) (relevant sections are reproduced in Colchester 1986a, pp. 64-66). The draft version makes extensive reference to the bank's policies on tribal peoples and provides a list of measures that would be required to comply with these; the final version makes no reference to the bank's policies and replaces this section with a summary of Indonesian government policies. Measures dropped in the revision include provision of adequate land to sustain the traditional economy, protection against new diseases, and a forum for participation of local peoples.

Problem of Secrecy

One of the most omnipresent impediments to Indonesia improving its record of development with disastrous environmental and human consequences is the prevalence of secrecy. Government officials are unwilling to divulge information without authorization from their superiors. Much of the planning and execution of development projects is done by a vast subculture of consultants and the staffs of multilateral development banks and international aid agencies who are sworn to secrecy by their contracts and who follow the convention that foreigners should praise any project visited and keep their true opinions to themselves. These people are often well aware of the damaging nature of the projects in which they participate. Foreign academics are also careful not to be critical of government projects or policies in order not to risk losing their investment in research in the country. Indonesian researchers, of course, have even more to lose if they become visible critics. The result is a conspiracy of silence.

The effectiveness of this kind of conspiracy of silence is much greater than is realized by many participants, who often assume that unmentionable problems of transmigration are common knowledge. The situation is directly parallel to that of human rights, where threat of even greater personal losses enforces silence among those who might otherwise speak out. Amnesty International (1977, p. 114) finds that "there is widespread ignorance about the problem in Indonesia, despite the scale and depth of its effect on society."

LESSONS OF TRANSMIGRATION

Critical to the decisions of the World Bank and other international agencies to become involved in transmigration is the extent to which "it is going to happen anyway" is accepted as an argument. Acceptance of this as a valid rationale opens up virtually limitless possibilities for funding destructive projects, for no matter how bad a project, it can always be funded on the grounds that it could be made a bit better. Trying to have some influence over an "inevitable" process has led to misadventures at many levels--from individual consultants forfeiting their freedom to argue for a "no-project" option, to the involvement of governments and banks. The World Bank has been drawn into some of its worst debacles through the "it's going to happen anyway" argument, including the Polonoroeste project in Brazil (Fearnside 1987b).

The effect of transmigration in diluting (one might also say replacing) native cultures in the outer islands is more than just a side effect and represents one of the key motivations of the transmigration program in areas such as Irian Jaya. This and other unpalatable aspects are a fundamental problem in justifying the international support that the program continues to receive.

The reorientation of the program to try to salvage the agricultural situation in existing settlements leads to the question of the proper extent to which the World Bank and other sources should bail out failures that would have been unacceptable if examined in the light of their social and environmental impacts. Freeing governments to transform unacceptable plans into faits accomplis, subsequently to be carried financially by international agencies, is hardly a pattern that can be expected to result in wise development.

The experience of the World Bank with transmigration illustrates the need for more comprehensive assessments of the environmental and social impacts of projects the bank supports. In the case of transmigration, even the narrowly defined direct impacts are greater than the benefits in terms of the program's declared objectives. The gulf is even greater if consideration is given to impacts of the wider program carried forward by the ministry created under the bank-financed project. Inconsistencies with current bank policies on environment, indigenous peoples and human rights are evident. Transmigration also violated the less stringent requirements that the bank had at the time the loans for projects specifically named as "transmigration" were approved (1976-1985). Since then a number of improvements have been made in the bank's procedures and staffing for dealing with environmental and social impacts. These include the creation of an Environment Department in 1987 and the creation of a center for distribution of information in 1994. Both changes were made in response to public concern

over Fatal Five projects: Polonoeste in the case of the Environment Department and Narmada in the case of the information center. In addition, the bank's policy on indigenous peoples was clarified in 1982 (World Bank 1982), but apparently this had no effect on approval of the Trans V loan in 1985, which included transmigration in Irian Jaya. These improvements notwithstanding, current bank procedures hardly preclude serious problems such as those associated with the transmigration loans (see, for example, Thibodeau 1995).

In the minds of many, transmigration has ceased to be a problem. Transmigration during the 1990s has been slower than it was during the 1980s--the target was 550,000 families in Repelita V (1989-1994) versus 750,000 families in Repelita IV (1984-1989). The reduced rate is frequently used to imply that the environmental and human problems of transmigration have gone away.

The perception that transmigration has ended is also due to the end of World Bank loans bearing the name "transmigration," the decreased scale of the program under this name in Indonesia, and a variety of improvements in how the projects are planned and implemented. Estate crop and silviculture programs continue as forms of transmigration under other names. The long-term objective of moving massive populations to the outer islands has not been abandoned, and the passage of time may see the same events occur at a slower pace. The use of labor supplied by the Ministry of Transmigration for estate crops and silvicultural plantations indicates large impacts in the coming years, especially in furthering deforestation.

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FIGURE LEGENDS

Figure 1. Indonesia.

Figure 2. Transmigrants with hand tools in the first year of settlement at Kubang Ujo, Jambi Province, Sumatra.

Figure 3. Five years after settlement at Singkut III, Jambi Province, Sumatra, the landscape is dominated by alang-alang (Imperata cylindrica) grass.

Figure 4. Part of a 9000-ha clearing at the Hitam Ulu transmigration project, Jambi Province, Sumatra.

Figure 5. Clearing for upland agriculture (ladang) by transmigrants in Teluk Delam, East Kalimantan.

Table 1. Population moved in transmigration projects

Years	Repelita	Target (families)	Numbers actually moved	
			Families	Persons
1905-28			5,922	27,338
1929-31			0	0
1932-41			35,225	162,600
1942-49			0	0
1950-65			84,576	390,402
1966-68			6,003	27,712
1969-74	I	38,141	36,483	182,414
1974-79	II	250,000	118,000	544,688
1979-84	III	500,000	535,000	2,469,560
1984-89	IV	750,000	230,000	1,061,680
1989-94	V	550,000		
Total (1905-1989)		1,051,210	4,866,394	

^a Jones (1979).

^b Number of families calculated from number of persons using average for 1973-74 (4.616 persons/family).

^c Sevin (1989).

^d Suratman and Guinness (1977, pp. 85-86). Families moved calculated from number of persons using ratio of families to persons in Repelita I targets.

^e Gardiner (1992).

^f Number of persons calculated from families using average for 1973-1974 (4.616 persons/family).

^g Indonesia, Ministry of Transmigration Staff (1991).

^h RePPPProT (1990, p. 205).

(Table 1, part 2)

Persons/ year	Notes
1,189	a,b
0	c
18,067	a,b
0	a
26,027	a,b
13,856	a,b
36,483	d
108,938	e,f
493,912	e,f
265,420	f,g
	h

Table 2. World Bank transmigration projects in Indonesia

Project name	Year approved	Bank loan amount (US\$ million)	Families moved

Transmigration I	1976	30	4,500
Transmigration II	1979	157	30,000
Swamp reclamation I	1980	22	3,200
Transmigration III	1983	100.1	
Transmigration IV	1983	63.5	6,000
Swamp reclamation II	1984	65	11,500
Transmigration V	1985	160	
Smallholder nucleus estates			
Second Stage Development	1992	222	
	Total:	----- 82055,200	

^a World Bank documents quoted by Searle (1987).

^b Colchester (1986a, p. 67).

^c IBRD and IDA (1992).

(Table 2, pt. 2)

Area cleared (ha)	Location	Site selection	Source	
		----- Families	Area (ha)	
60,000	Sumatra		200,000	a
45,000	Sumatra		225,000	a
9,000	Sumatra			b
2,000	Sumatra	300,000		a
17,550	Kalimantan			a
30,000	Sumatra			b
	Sumatra, Kalimantan, Irian Jaya	300,000		a
	Various			
	Sumatra, Kalimantan, Irian Jaya			c
----- 163,550				

Table 3. Estimates of Deforestation Rates in Indonesia

Deforestation rate (10 ⁶ ha/yr)	Year interval	Source	Basis
1.2	1980s	Myers (1991, p. 14)	FAO (1990) ^a
0.75 ^b	1980-1986	World Bank (1990)	
0.837 ^c	1982-1990	Indonesia, Ministry of Forestry and Food and Agriculture Organization of the United Nations [(FAO) 1991, p. 22]	
1.212	1981-1990	World Resources Institute (1994, p. 307)	FAO (1993)
0.62	1981-1985	World Resources Institute (1994, p. 307)	
1.804	1986-1990	Implied by 1981-1990 and 1981-1985 rates	

^a The FAO (1990) forestry sector assessment did not consider conversion of forest to silvicultural plantations as a form of deforestation [see Pramono (1991, p. 29)].

^b Excluding forest fires and "logging."

^c Excluding forest fires.



0 200 400 600 800 1000 Km







