

ASIAN DEVELOPMENT BANK

RES:INO XXX

Reevaluation Study Series (Number 21)

REEVALUATION OF THE

**SOUTH KALIMANTAN LIVESTOCK DEVELOPMENT PROJECT
(Loan No. 444-INO)**

IN

INDONESIA

June 1996

I. HIGHLIGHTS

1. **Objectives and Scope.** The Project was to distribute cattle and goats to smallholders under a modified form of repayment-in-kind credit and to provide production and marketing support. This was expected to lead to higher farm incomes from the sale of animals and crops, the latter resulting from the use of cattle for plowing. Additionally, South Kalimantan was expected to achieve a surplus of livestock for contribution to the national meat supply.
2. **Implementation.** The Project distributed 23,100 head of cattle, which was about 30 percent more than planned. The procurement of goats was reduced to 80 percent of the targeted 32,000 head because of unsatisfactory goat survival during the early part of the Project. Similarly, owing to insufficient need, livestock marketing facilities were improved in only one of the nine centers planned at appraisal. The livestock production support services were expanded as planned, but most of the physical facilities established under the Project have since ceased operation. Despite early delays, the Project was completed in 1987, within the allotted seven-year time period. The actual Project cost was \$19.5 million, which was 57 percent of the expected amount. Large savings occurred because of the devaluation of the rupiah and the reduced need for the substantial financial contingencies provided at appraisal. The Bank disbursed \$14.18 million of an approved loan amount of \$20.5 million.
3. **Postevaluation Assessment.** At postevaluation in 1989, many of the distributed livestock were found to have died or been sold for slaughter. The resultant provincial cattle herd was smaller than planned and was expected to decline further over the short term before starting a slow but steady growth, reaching about 100,000 head by 2005. The goat herd was expected to stabilize at about 2,000 head, about 7.5 percent of the number introduced. Cattle were being used for draft, but the average area plowed was found to be less than that expected at appraisal. The production support components were considered ineffective. Although smaller than expected, the benefits were assessed as sustainable and were expected to yield a recalculated economic internal rate of return (EIRR) of 2.7 percent compared with the appraisal expectation of 18 percent. The Project was rated as partly successful.
4. **Reevaluated Project Performance.** The reevaluation confirms many of the general findings and assessments of the postevaluation. However, the cattle herd was growing faster than expected at postevaluation. Conversely, the goat herd had not stabilized as expected but had disappeared. In 2005, the provincial cattle herd is expected to reach 113,000 head compared with the 1980 pre-Project number of 53,000 head and the estimated without-Project number in 2005 of 68,000 head. Livestock productivity is comparable to that in other parts of Indonesia, but is lower than expected at appraisal. The credit system, which was to enable a post-Project program of livestock distribution for the continuing rapid expansion of the provincial livestock base, did not work. Many of the cattle are used for land preparation for crop production as expected, but, as found at postevaluation, the increase in cropped area resulting from the increased availability of draft animals is less than expected.
5. **Socioeconomic Impact.** Established transmigrants, as distinct from both the indigenous farmers (termed Banjarese) and recently arrived transmigrants, appear to have been more successful in maintaining distributed livestock. Livestock upkeep requires large

amounts of farm labor, but for those families with sufficient labor, the benefits are substantial. Returns from the sale of surplus cattle are equivalent to 15-20 percent of the poverty threshold income for rural areas outside Java, while the additional crop production income from introducing a draft cow is on the order of 35 percent of the poverty threshold income. There were no significant separate impacts on women.

6. **Institutional Impact.** The functions and capacity of the provincial livestock services (PLS), comprising those at both the provincial and municipal levels have been expanded, but the impact of the strengthening on livestock output has been small. PLS was not given adequate budget allocation to take over the activities and responsibilities that were transferred from the Project Management Unit (PMU) at the completion of Project implementation. As a result, some services were not continued, or were continued with limited effectiveness.

7. **Environmental Impact.** By increasing the amount of manure available for use on soils, the Project has led to an improvement of farm lands.

8. **Economic Impact.** The EIRR was recalculated to be 5 percent, better than that recalculated at postevaluation but still substantially below the appraisal expectation. The improvement relative to postevaluation is due mainly to a higher economic price for cattle, itself a result of devaluation of the rupiah and decreasing local supply of meat. The large difference relative to the appraisal expectation is, in addition, due to the smaller actual cattle herd size and output, absence of any continuing benefit from goats, and lower benefits from crop production.

9. **Reevaluation Assessment.** The socioeconomic and environmental impacts are positive. Nevertheless, the extent of these impacts has been constrained by the large losses of livestock, while the economic impact is only moderate. Although the reevaluation shows the Project to be slightly better than at postevaluation, the limited achievements confirm the partly successful rating given at that time.

10. **Lessons Learned.** The main lessons learned brought out in the PPAR are confirmed by the reevaluation. In particular, the Project highlights that the size and implementation pace of smallholder livestock projects ought to be related to the extent to which the smallholder farming systems are understood, and that new facilities should be introduced only where there is a clear need for them. Credit systems for livestock should be simple, well understood by those involved in the implementation; designed and implemented in such a way that accounts are opened as livestock are distributed, and have adequate provision for credit supervision.

II. BACKGROUND

A. Project Description

11. The purpose of the Project was to increase the number and productivity of cattle and goats owned by smallholders, including transmigrants, in South Kalimantan. This was expected to lead to higher smallholder incomes from the sale of animals and, as a result of the

greater availability of cattle for draft power, from increased crop output. Through the sale of animals, the Project would increase the national supply of meat and help reverse the decline in livestock numbers apparent at the time.

12. To achieve its purpose, the Project was to distribute cattle procured from overseas and other provinces to smallholders under a type of repayment-in-kind credit system (see para. 13). The cattle were to be distributed as single animal packages and raised on the recipients' farms under predominantly stall-fed or tethered grazing systems. The majority of the cattle were for breeding and draft use, but a small proportion were for fattening. Additional cattle were to be distributed to minibreeders and ranches to be raised under range grazing systems in order to utilize the areas of extensive grasslands. Breeding goats from Java were to be distributed to smallholders under the same credit program in packages of six animals to be raised under stall-fed systems. The Project also aimed to improve the provincial livestock support services for production extension and animal health by expanding staff numbers and providing facilities, including three transit centers, and training; establish livestock marketing centers at strategic sites within the province; establish two goat breeding centers in Java to supply some of the Project's goats; upgrade the quarantine facilities in South Kalimantan and in the livestock supply areas; and provide fellowships and technical assistance. The three livestock transit centers were expected to facilitate livestock movement as well as training and extension activities.

13. Under the credit system, the recipients were to breed the cattle or goats and return two animals for each one given. The returned animals were valued for purposes of liquidating the recipient's loan account, and then either redistributed to other smallholders under the same credit terms or, if unsuitable for breeding, sold. The sequence of return and redistribution was expected to enable a continuous, long-term expansion of the number of breeding cattle and goats in the province, which would eventually expand to other nearby provinces. At the time of appraisal it was expected that the value of two returned animals would exceed the principal and interest of the loan, and the farmer would receive the difference as cash.

14. The Project was appraised in 1979. The total cost was estimated at \$34.17 million, for which the Bank approved a loan of \$20.5 million from the ordinary capital resources on 17 December 1979. Implementation was to occur over a seven-year period from 1980 to 1987. The Executing Agency was the Directorate General of Livestock Services (DGLS). Implementation of the main part of the Project was to be done through a PMU to be formed for the purpose and which would operate in parallel with PLS, also under DGLS. PLS was expected to assume responsibility for the Project upon completion of implementation. The credit arrangements were to be implemented by the Bank Rakyat Indonesia (BRI).

B. Major Postevaluation Findings

15. The Project procured and distributed about 23,100 head of cattle, which was about 30 percent more than planned. However, about 20 percent of the goats were not procured because of unsatisfactory goat survival during and immediately after shipment. A little over 27,100 goats were distributed. The minibreeding and ranch forms of cattle raising were found to be more difficult to establish and less suitable than the smallholder system and were abandoned after a few minibreeders were established. Only one marketing center was equipped, the other eight being found unnecessary at the time. The three transit centers were

established, but at the time of postevaluation neither these nor the new market facilities established under the Project had been extensively utilized. The other supporting infrastructure was established and facilitated the movement of Project livestock as planned.

16. Significant delays occurred during the initial years, but these were made up by the end of the implementation period so that, apart from the changes noted in para. 15 and the nonprocurement of some vehicles and equipment, the Project was fully implemented within the allotted time period. The actual Project cost was \$19.5 million, which was 57 percent of the expected amount. Large savings occurred because of the devaluation of the rupiah and the reduced need for the substantial financial contingencies provided at appraisal. The Bank disbursed \$14.18 million of the approved amount of \$20.5 million.

17. The postevaluation, conducted in the second half of 1989, concluded that the Project was partly successful. A major factor in this assessment was the limited net expansion in livestock numbers. A large proportion of the distributed livestock were found to have either died or been sold for slaughter. The extension support for livestock production was assessed as being limited, and livestock performance did not achieve the expected levels. As a result, by 2005, the size of the introduced cattle herd was not expected to be significantly more than that existing at the end of the Project implementation period. The introduced goat herd was expected to stabilize at about 2,000 head, equivalent to less than 10 percent of the original number introduced. The crop benefits also were assessed as being much less than expected because of farms being smaller than expected and because of an increase in proportion of the area planted to permanent crops that do not require draft animals.

18. The credit program was not well administered and appears to have been too complex and not well understood, resulting in substantial arrears. The implementation arrangements vested responsibility for most Project implementation and operations during the implementation period in the PMU. This created a difficult situation at the end of the implementation period for PLS, which was not given a sufficient budgetary allocation to absorb the activities and responsibilities of the PMU. Consequently, many of the livestock support activities were not properly continued, which prevented progress in improving livestock performance.

19. The EIRR was recalculated to be 2.7 percent. A higher result of 4 percent was considered possible if (i) the loan accounts of the recipients of distributed livestock were rehabilitated, (ii) the budget of the provincial livestock service was augmented so as to enable it to pursue an effective extension and support program, and (iii) there was an improvement in smallholder livestock nutrition. For those smallholders who had managed to maintain their livestock successfully and make their repayments, the financial rewards were assessed as good. The others would not suffer financial loss but would have expended a large amount of effort for little or no gain. There were no significant social or environmental impacts.

20. The postevaluation drew attention to several design and implementation weaknesses of the Project. In particular, it was noted that the Project design required innovation by beneficiaries in three areas, namely, the adoption of plowing, the management of exotic livestock, and the achievement of reasonable levels of livestock nutrition. However, the requirements for smallholders to acquire the appropriate skills in each of these areas were assessed as not being sufficiently well understood at the Project design stage, which led to overoptimism in what could be achieved and underestimation of the inputs required to effect the changes. The reliance on imported cattle, which had low performance because of the stress of travel and/or unsuitability to the local situation, and not placing implementation under PLS,

which was to be responsible for operation over the long term, were also cited as design weaknesses. The implementation problems noted at postevaluation included the late fielding of consultants, coupled with communication problems resulting from the consultants not being fluent in either English or Bahasa Indonesia. Delays in the construction of the transit centers, and poor coordination between the dispersal of animals and the establishment of loan accounts were also highlighted.

C. Livestock Sector Background

21. The Project was designed at a time when the populations of cattle, buffalo, sheep and goats in Indonesia were declining. At the same time, the demand for meat and for draft animals to supply to transmigrants was increasing. Output was falling short of demand. A few areas, such as Nusa Tenggara and South Sulawesi, had surpluses of cattle and supplied the deficit areas, which included South Kalimantan (the Project area) and most of Java. Parts of Java had surpluses of goats. To help reverse the decline in numbers, the Government imposed a ban on the slaughter of productive female cattle and buffalo. Although this ban continues to the present, there are many ways of circumventing it, and it has had only limited effect. The Government also embarked upon a number of livestock development projects with funding from the Bank, the World Bank, the International Fund for Agricultural Development, and other agencies. A key component of many of these externally funded projects as well as several domestically funded projects is the introduction of breeding animals into deficit areas to build up local livestock populations. The Project was one of these, and through it South Kalimantan was expected to generate a surplus of cattle and goats above its own needs for supply to other provinces.

22. In 1994, the supply of red meat in Indonesia was 314,000 tons of carcass, whereas the demand was estimated at 404,000 tons. The majority of cattle, buffalo, sheep, and goats were owned by smallholders, who generated about 80 percent of the domestic supply. Feeder steers (200,000 head in 1994) are imported, mainly from Australia, to augment local supply, including in the Project area. The current increase in demand is about 12 percent per annum, and the local supply deficit is expected to increase over the foreseeable future.

D. Objectives of Reevaluation

23. The Project was based on the introduction of livestock into the province. Given the losses during the movement and distribution of the livestock and the low performance while the new owners were evolving a management system, the rate of increase of the cattle and goat populations would initially be slow. Moreover, the livestock were distributed over a vast area. Consequently, changes in livestock populations and output could be expected to become noticeable only several years after completion of implementation. Implementation was completed in 1987, and the Bank's reviews of the Project at completion and again at postevaluation in 1989, therefore, were based on expectations, without the benefit of actual market data showing changes in output. This reevaluation study attempts to provide a firmer assessment of the Project, now that approximately eight years have passed since Project completion and the effects of the Project ought to be visible and reflected in the data on provincial livestock sales. A major focus of the reevaluation study is to assess the increase in the size and output of the provincial cattle and goat herds due to the Project, and the impact these are having on the beneficiaries and on the national economy.

24. This reevaluation study report is based on the findings of a Reevaluation Mission (REM) that visited the Project area during November 1995 and on a review of the Bank's previous postevaluation findings; material in the Bank's files; and discussions with officials of the Executing Agency and other agencies of the Borrower, traders, and beneficiaries. Prior to the REM, a staff consultant was engaged to survey smallholder livestock herds in the Project area to provide a better assessment of livestock performance to complement the livestock trade data. The draft report was circulated to other departments of the Bank and the Executing Agency for their review and comments before being finalized. Comments received have been incorporated in the final draft.

III. REEVALUATION FINDINGS

A. Operational Performance

1. Provincial Cattle Herd

25. The Project has enabled a more rapid increase in the number of cattle in South Kalimantan than would otherwise have occurred (see Table 1). The provincial cattle herd was estimated to total 90,700 head in 1995, an increase of 34 percent over the pre-Project herd of 53,000 head (see Appendix 1). By 2005, the number of cattle is expected to increase further to 113,000 head. Without the Project, the cattle herd would have grown much more slowly, reaching just under 68,000 head by 1995 and just over this number by 2005.

Table 1: Provincial Cattle Herd

Item	1980	1995	2005
With-Project Herd Size	53,000	90,700	113,000
Without-Project Herd Size	53,000	67,900	68,600
Net Increase due to Project	-	22,800	44,400
Net Increase as a Proportion of the Without-Project Herd	-	34%	65%
Net Increase as a Proportion of the 1980 Herd Size	-	43%	84%

26. The increase in herd size relative to the without-Project situation is due to the introduction of cattle under the Project, the good reproductive performance characteristics of some of these introduced cattle, and small improvements in the performance of the existing livestock. Without these changes, the annual net output of the herd would have been sufficient only for meeting part of the market demand for slaughter stock, leaving few, if any, stock to contribute towards herd growth. The net increase of 44,400 head by 2005, however, is lower than the targeted increment of 113,000 head. The lower achievement is due to a higher than expected attrition of the introduced breeding animals; a smaller than expected redistribution program; smaller than expected increases in overall livestock performance; and cancellation of the minibreeding and ranch components, which were expected to produce significant numbers of breeders for redistribution and sale.

27. A total of 18,241 head of breeding cattle were introduced under the Project and distributed to smallholder farmers. An estimated 20 percent of the introduced cattle died or were sold for slaughter soon after introduction. Many factors, often operating in combination, caused this high attrition rate. The main cause appears to be the inappropriate timing of many of the distributions in relation to the capacity of the recipients to care for the animals, itself a cause of inadequate selection and/or preparation and supervision of the recipients. Those transmigrants who had been settled for three years or less, or were located in a very difficult production environment, were too concerned with their own survival to provide adequate care for the cattle. Moreover, many transmigrants as well as the Banjarese recipients were not experienced with cattle raising. These circumstances, coupled with the stresses of travel for the cattle, would easily have caused high rates of mortality. Some farmers, faced with the difficulties of their own survival, and others who had less interest in cattle raising would have found the sale of their recently acquired livestock a source of income as well as a relief from having to care for it.

28. The recipients of the distributed cattle were to repay the Government by giving back animals (see para. 13), a large proportion of which were to be redistributed on the same basis, thereby setting up a continuing cycle of cattle distributions. An implicit assumption of the appraisal design was that this redistribution program would increase the herd growth rate, presumably because many of the distributed breeding females would otherwise have been sold for slaughter. Up to 1995, only 2,700 head of cattle, inclusive of males, had been redistributed, which was much less than expected. Because of the current problems in the credit system, further Project-related redistribution is unlikely (see paras. 39-41). Despite a Government ban,

productive female cattle do get sold for slaughter, and underachievement of the redistribution program will mean a smaller herd size than would have been possible.

29. The introduced cattle were of three basic types, namely, bali and ongole breeds, which were procured within Indonesia, and brahman cattle imported from Australia. The bali cattle have much better calving performance under smallholder conditions than the other types. In addition, many of the cattle were distributed to transmigrants who, despite initial problems related to their own survival, were able to provide better management and get higher performance from their livestock than the Banjarese livestock raisers. The combination of bali cattle and transmigrant management has been very productive. Field investigations indicate that, in recent years, the productivity of other cattle types and management systems has also improved. Overall, cattle productivity within South Kalimantan is higher than the levels prevailing before the Project (see Appendix 1, Table 3) and is comparable with other provinces of Indonesia but lower than expected at appraisal.

30. Compared with the assessment at postevaluation, reevaluation has found the losses of cattle during the implementation period to be higher. However, the cattle are considered to be performing better, and the substantial decline in livestock performance and cattle numbers in the postimplementation period, predicted by the postevaluation, did not occur. By 2005, cattle numbers ought to be significantly higher than that prevailing at the end of the implementation period, which is different from the position predicted in the Project Performance Audit Report (PPAR; see para.17).

2. Introduced Goat Herd

31. Almost all of the 27,130 head of goats introduced under the Project are believed either to have died or to have been slaughtered for meat. The remainder are too few to generate a significant future impact. The effect of the Project was a temporary increase over the period 1982-1996 in the provincial goat herd and its output (see Appendix 2). At postevaluation, the goat herd was predicted to decline to around 2,000 head, where it would stabilize. Unfortunately, reevaluation has found that even this level was not sustained.

32. High rates of mortality were recorded for the introduced goats, all of which were procured from within Indonesia. The Government has recently found that the shipment of goats must be done in small consignments in order to keep the rate of mortality low. In addition to mortality, the high attrition rate appears to be due to high rates of sale and home consumption. Similar to the situation for cattle (see para. 27), for the transmigrant recipients who were having problems with their own survival, and for those recipients who were less interested in livestock raising, the sale or consumption of the distributed animals would have provided attractive immediate benefits.

3. Market and Production Support Facilities

33. Livestock marketing improvements were implemented in only one of the nine centers proposed at appraisal, comprising the construction of yards to handle cattle and goats, sheltered areas, and livestock scales at an existing market place. Although completed, few of the new facilities were used, and all have now deteriorated and are no longer usable. While

useful for handling large groups of livestock, the facilities are not appropriate for the type of trade in South Kalimantan, which is characterized by many livestock owners and traders, each with individual animals or, at most, small groups of animals. The three transit centers were also completed as planned, but were completed too late to provide major support for the Project. The long-term functions of these facilities are no longer appropriate, given the decline in nonsmallholder cattle breeding and the presence of alternative sites for research, and they are no longer used for livestock activities. The land of the Pleihari center has been redeveloped for sugarcane production, for which none of the Project-supplied facilities is used. The field offices and livestock movement facilities such as the quarantine stations established under the Project continue to be used, however.

4. Impact on Provincial Meat Supply

34. Over the 15-year period from the start of the Project to 1995, based on the with- and without-Project herds outlined in para. 25, the Project is estimated to have generated an aggregate incremental output of 22,060 head of slaughter cattle which is projected to increase further to 47,500 head by 2005 (See Appendix 3, Table 1). These are equivalent to increases of 25 percent and 28 percent, respectively, over the without-Project outputs for the same periods.

35. At appraisal, a higher increment in output was expected. Further, the province was expected to achieve a surplus position and to become a net supplier of cattle to other parts of Indonesia. The trade data (see Appendix 1) indicate that, at least up to the end of the analysis period of 2005, South Kalimantan will continue to rely upon cattle from other parts of Indonesia as well as imports from other countries to satisfy its demand for beef. Prior to the Project, the provincial cattle herd supplied about 36 percent of local beef consumption. In 1995, the local supply had increased to account for 45 percent of consumption. However, if the human population growth rate and the per capita meat consumption rate continue to increase as they have in the past, the future growth in consumption will exceed the growth in the provincial cattle herd and its output, such that by 2005 the herd will supply only about 40 percent of consumption.¹

36. The Project had a temporary impact on the provincial supply of goat meat, providing just under an estimated 13,000 head of incremental supply over the period 1982-1996 (See Appendix 3, Table 1).

5. Impact on Crop Production from Draft Cattle

37. By 1995, a total of 13,100 head of cattle were estimated to be used for draft (see Appendix 3, Table 2). At appraisal 14,800 head of the introduced cattle were expected to be used for plowing by 1995. The difference is due to the mortality of introduced cattle and to changes in the pattern of distribution between the Banjarese and transmigrant farmers. The latter point is important, since, whereas most transmigrant farmers use cattle for plowing, few of the Banjarese do so. At appraisal, the number of draft cattle was expected to increase to 108,000 head by 2005 largely as a result of the availability of cattle under the redistribution

¹ The beef trade in South Kalimantan is dominated by cattle. Buffalo comprise only a minor component.

program and a demand generated by a continuing influx of transmigrants. Given the slower herd growth, the effective cessation of the redistribution program, and changes in transmigrant (and Banjarese) farming practices with tree crops becoming more important, the actual number of animals used for draft is not expected to be substantially more than that in 1995, and the appraisal target will not be achieved.

38. For the typical farms that received cattle, without a draft animal, each farm family was limited to the area they could prepare by hand, which was about one hectare (ha) of total crop per year, spread over several growing seasons. With the introduction of a draft animal, the area of crop is estimated to have increased by an average of 0.55 ha per year per farm (see Appendix 4). This is less than the potential of both the cattle to prepare land and the area of land available. Most of the recipients using cattle for draft are transmigrants. Their farms are distributed over several blocks, and they use only the blocks of land close by the settlements for arable crop production. The blocks located further away from the settlements suffer from problems with pests, and tree crops rather than arable crops are preferred for such areas. At appraisal the pest problem was not evident, and a much larger impact was expected and all the available land was assumed to be plowed and planted to annual crops. In total, the Project will have contributed to enabling an additional 7,200 ha of land to be cropped.

6. Livestock Credit Program

39. A total of 20,767 credit packages with an aggregate value of Rp12.1 billion have been formalized by BRI. The program comprises cattle breeding packages including 604 packages under the redistribution program, cattle fattening, and goat breeding packages. About 2,000 packages, mostly goats, were not included under the credit program, either because the animals died or the recipients could not be located prior to registration. The failure to register the loans simultaneously with distribution was an unfortunate and avoidable implementation error. As of the third quarter of 1995, 83 percent of the number of registered loans representing 79 percent of the value of the animals distributed were outstanding (see Appendix 5). Given the long period since the animals were distributed, the chance of repayment of these loans is low. This is particularly so for the goats, since all of the animals have died or disappeared. The repayment performance is lower than that for other agricultural credit programs administered by BRI, where delinquency rates are in the range of 60-65 percent. The reasons for the poor repayment performance include (i) records not being updated to reflect the death of distributed animals, for which further repayment is not required; (ii) poor reproductive performance by the livestock because of stress and inadequate husbandry; (iii) inadequate supervision of the beneficiaries to ensure that offspring are returned to the PMU or PLS as repayment; (iv) lack of effective penalties for nonrepayment; (v) poor understanding of the credit system's features by those responsible for its implementation; and, (vi) the high cost of the distributed animals relative to the value of their offspring (see para. 41).

40. Further loans under the Project credit system are unlikely because of the problems encountered and the effective cessation of redistribution from returned Project livestock. The banking system does not provide any other credit for livestock, including for fattening. Equally, the Project did not create a continuing demand for formal credit for livestock production. The nonmonetized repayment-in-kind credit for breeding and fattening, which existed before the Project, has continued, however. This credit comes from various local and project sources and is implemented by PLS.

41. The credit system was complex in that the normal repayment-in-kind livestock credit arrangement used in Indonesia was monetized. The intention at appraisal was to make the system more favorable to the beneficiaries, since repayment of two animals for each one distributed was considered to be onerous. Under the monetized system, the beneficiary would pay back two animals, which were expected to have a higher value than the principal plus the interest of the credit package and would result in a balance being returned as cash to the beneficiary. A key requirement for this to work was that the principal amount of the loan was to be calculated according to the local market value of the animals, rather than the Project's purchase price.¹ The difference between these two values would be equivalent to the cost of importing the animals from other islands or abroad and was to be borne by the Project. Recipients were also to return animals of the same age as they received. However, these provisions were not implemented. Recipients were charged the full purchase cost, which varied, for cattle, from Rp288,500 to Rp1.53 million per head. Recipients also returned animals at an early age, generally just after weaning. An analysis of the credit packages shows that, for cattle, the average sale value of two returned animals was only 56 percent of the average principal value of a distributed cow. For goats, the average sale value of two returned animals was 60 percent of the cost of each distributed breeder. Given these circumstances, most of the recipients were not able to clear their debts even after paying back the required number of animals. Those beneficiaries who received locally procured Bali cattle, which had the lowest purchase cost relative to the sale value of the progeny and were the most productive animals, had the best chance of repaying their loans.

7. Sustainability

42. The Project has resulted in the establishment of a larger cattle breeding herd with slightly improved performance parameters than before. Technically, these gains are sustainable. However, sustainability will depend upon the pressure exerted on livestock owners to sell breeding animals for slaughter, and their responses. Currently, the pressure is slight, as adequate supplies of slaughter stock can be imported from Australia or obtained from other parts of Indonesia to cover the shortfall in production from the provincial herd. However, with rising demand for meat in other areas of Indonesia as well as other countries, these supplies are soon not expected to be enough, and the pressure to slaughter breeding stock will increase. This is a common problem throughout Indonesia and one for which the Government is seeking solutions. Fortunately, a large proportion of the Project cattle are in the hands of transmigrant farmers, who value the animals for draft, and it is most probable that the breeding base represented by these stock will remain even though the demand pressure for slaughter stock becomes quite high.

43. The goat herd has already effectively disappeared, while many of the physical facilities created under the Project do not provide a useful function and have not been sustained. The credit program did not lead to the establishment of a sustainable demand for formal livestock credit.

B. Project Design and Implementation

¹ See Appendix 8 of the Appraisal Report for a detailed description of the credit packages.

44. The broad design of the Project was straightforward and comprehensively addressed the key aspects needed to achieve the stated Project purpose. However, several aspects of the detailed design were inappropriate, in some cases reflecting inadequate Project preparation. These design deficiencies were exacerbated by implementation shortcomings (see para. 45). The comments of the PPAR on Project design (see para. 20) warrant expansion in three areas. Most noticeably, the size of the Project and the time frame for implementation were inadequately assessed at the design stage. In retrospect, there was insufficient information to correctly select farmers, determine the best time for introducing livestock to each farm type, design appropriate supporting programs for the PLS/PMU, and establish workable administrative and monitoring procedures. As a result, targets were overestimated and the resources needed to effect change were underestimated. Recognition of the limitations at the design stage would have resulted in a different design. In such cases as the Project, where the farm systems are only poorly understood, it would seem prudent to embark upon longer term development that incorporates a large degree of flexibility and progressively builds upon trial introductions of specific components.

45. The credit system was an amalgam of a banking system and the traditional repayment-in-kind credit system. However, in joining the two together, an effective mechanism for supervising the borrowers and managing the credit system was not incorporated. BRI, which had expertise in credit administration, was only to maintain the accounts and was not expected to provide extensive field support to encourage repayment by the recipients of livestock. The latter was to be part of the functions of the PMU and later PLS. Partly, this was due to the lack of field staff within BRI. In addition, BRI was to receive a fee for its work based on the value of the accounts established and, as a result, did not have any financial incentive to work for higher repayment rates. Neither the PMU nor PLS, which had sufficient field staff, had the expertise or orientation for credit supervision; and both were more concerned with the technical issues of livestock production. Consequently, the credit system operated without an effective credit supervisory or policing mechanism.

46. The support facilities for training and extension at the transit centers and those for the marketplaces were based on needs perceived by the Project designers. These needs proved to be overestimated and not matched to the type of operations, and the potential for change, within the livestock sector. In the case of the transit centers, the facilities assumed a much larger and dynamic livestock support program, which was not consistent with the budget, staff capabilities, and focus of activities of PLS. PLS activities are of a more basic nature, such as livestock distribution and animal health services, which do not need sophisticated supporting facilities. Since they do not readily fit in with PLS activities, they have not been sustained. The live animal scales, yards, and livestock handling facilities of the livestock markets assumed that sale of animals by live weight and the handling of animals in groups would become common. This was an overoptimistic expectation, given the extent of change required in how livestock are owned, handled, and traded.

47. As indicated in the PPAR, implementation of the Project suffered from early delays caused by unfamiliarity of the Executing Agency and the PMU with Bank procedures, and the late fielding of, and communication difficulties with, the consultants. Nevertheless, the delays were overcome so that the Project was completed on time. However, this was done only by diverting the attention of Project staff from the management of operations to construction supervision, which prevented attention to overcoming farmer selection problems and provision of needed farmer support, all of which affected the later operational aspects of the Project. A notable feature during implementation was the flexibility displayed by the Executing Agency, the PMU, and the Bank in responding to changed circumstances. As a result of maintaining a

flexible attitude, the full number of goats was not imported in view of the large mortality rates that started to occur; more cattle, particularly bulls, were imported to respond to needs within the province; and eight of the market centers and the miniranches were deleted when they were found to be unnecessary or unsuitable.

C. Socioeconomic Impact

48. For some farm families, such as recent transmigrants, those in areas where crop and grass productivity is low, and those who seek a large amount of off-farm work, the receipt of cattle or goats could be burdensome, since a considerable amount of labor¹ is required for fodder gathering. However, for those farm families who can provide the labor, the cattle have been appreciated. Although many cattle owners sell their surplus offspring at a young age, the sale brings in around Rp300,000 every 18 months to two years, which is equivalent to about 15-20 percent of the poverty threshold income for a family of five persons. The model developed in Appendix 4 shows that where a cow is available for plowing, the monthly per capita farm family incomes increase from Rp12,900, which is below the poverty threshold, to Rp18,700, which is significantly above the poverty threshold.²

49. The Project provided livestock to Banjarese farm families as well as to transmigrants; however, the latter appear to have been more successful. Perhaps, this is because many transmigrants came from Java, where livestock raising is common. Prior to the Project, in South Kalimantan livestock raising was not a common activity. Both women and men are involved in livestock raising. However, the Project did not contain any specific feature to promote women as livestock raisers. On the contrary, most of the loan accounts are with men.

D. Institutional Impact

50. Under the Project, the provincial livestock support services were to be strengthened. To some extent this has happened: the number of technical livestock support staff in the province quadrupled over the period 1980-1995 (see Appendix 6, Table 1); the budget for livestock activities also expanded by a factor of about four (see Appendix 6, Table 2); infrastructure was created; and the range of services increased from the pre-Project focus on animal health to encompass other aspects of production and field extension services. However, the value of the strengthening achieved to date is limited: little of the physical infrastructure constructed under the Project other than the field offices is effectively utilized; the field extension programs are weak; and a large part of the budget and staff activities are expended on the implementation of projects as opposed to routine livestock support. The cost-effectiveness of the artificial insemination program is also poor in view of the low (about 10 percent) rate of conception achieved. A similar situation occurs in other provinces. In South Kalimantan it has resulted in only modest increases in livestock productivity over the levels prevailing before the Project began.

¹ One of the benefit monitoring studies done as part of the Project estimated that the labor input could be up to 93 days per farm per year.

² Rp16,750 per month per capita in 1995.

51. The livestock vaccination and production extension programs are potentially the most valuable of the services provided. However, the vaccination coverage for hemorrhagic septicemia in cattle and buffalo and for bovine viral diarrhoea in cattle is less than ten percent of the population, which is too small to give effective disease control. The production extension program has few useful messages for smallholders. Partly, this is because the program is not based upon any detailed knowledge of the constraints in smallholder production systems, since this type of information is lacking (see para. 55) .

E. Environmental Impact

52. The Project has been environmentally beneficial. The manure from cattle is used to improve the soil condition and fertility of farm lands. The soils of South Kalimantan are acidic, and without regular manuring their productive capacity deteriorates quickly after two to three years of cultivation. Overgrazing and other environmental problems associated with free-ranging animals have not occurred.

F. Economic Impact

53. The EIRR for the Project was reevaluated to be 5 percent (see Appendix 7). This is higher than the 2.7 percent¹ calculated at postevaluation in 1989, but lower than the 15 percent estimate at Project completion in 1987 and the 1979 appraisal expectation of 18 percent. A major factor in the higher reevaluation result compared with that of postevaluation is the higher economic price assumed for beef² --- itself a result of the substantial change in exchange rates between reevaluation and postevaluation and the increasing reliance of Indonesia on imported cattle for beef supply (see para. 22). Other differences occur in the assumed herd structures and productivity levels, with the postevaluation analysis assuming higher output rates and correspondingly, the retention of fewer offspring as breeders, resulting in a slower herd growth compared with the reevaluation. The relatively lower output rate and higher rate of retention of offspring as breeders in the reevaluation analysis were based on the outcome of field investigations of smallholder herds and detailed analysis of livestock trade within South Kalimantan. Although the Project benefits are assessed as sustainable (see para. 42) sensitivity analyses were done to show the effect of a higher rate of sale of slaughter stock. Should sales increase so that the terminal herd in 2005 is 10 percent less than expected, the EIRR would reduce to 4.5 percent. However, if herd performance improves and cattle price increases by 10 percent, the EIRR would increase to 5.6 percent (see Appendix 7).

54. At postevaluation, a larger economic impact was considered possible should several improvements occur in livestock support services and livestock nutrition. Given the low performance levels of cattle in South Kalimantan relative to their productive potential, increases in output are possible and would require improved livestock nutrition as suggested at postevaluation, although, at current productivity levels livestock nutrition appears adequate. Higher livestock prices as a result of increased market demand may stimulate smallholders to

¹ In its discussion of economic impact, the PPAR gives the result as between 0 and 4 percent. However, the calculations in the supporting appendix fix the base case EIRR at 2.7 percent.

² Rp3,880 per kilogram (kg) liveweight at reevaluation compared with Rp1,643/kg liveweight at postevaluation, both prices expressed in 1995 values.

more actively seek productivity increases. Greater extension efforts would then be needed to help improve livestock nutrition. The suggestion at postevaluation that rationalization of the credit accounts of farmers would improve output does not appear valid anymore. Too much time has passed, and most of the originally distributed animals would have died. Moreover, there is no demand for bank credit, given the existence of repayment-in-kind credit available from the provincial livestock services. Nevertheless, delinquent accounts could pose a constraint for lending under other future programs, and the credit accounts should be rationalized.

IV. KEY ISSUES

A. Livestock Data

55. Effective development planning requires accurate information. For example, given the large national deficit of livestock, information on livestock populations, output and trade is needed to prevent the demand pressure from causing excessive sale of productive animals. This information is also required to guide the current interest in private investment in feedlots and other livestock ventures, and to guide the preparation of public-funded field programs for support of smallholder livestock raisers. In addition to basic population data, smallholder programs also need more information on the farming systems into which livestock fit so that appropriate extension supports can be designed. If better information on the capabilities of the transmigrants to support their livestock, and on the attitudes and needs of Banjarese farmers, had been available at the start of the Project, the losses would have been less, and the current cattle and goat herds and their outputs higher. Most of the livestock data currently available are based on data generated as a secondary output of crop production surveys and contain substantial biases, or are derived by applying nationwide assumptions that may not be fully applicable for South Kalimantan, and inaccuracies could occur as a result. A concerted effort is needed to build up a reliable set of data upon which effective development plans can be prepared.

B. Livestock Services

56. The number of livestock service staff in South Kalimantan has increased substantially since before the Project, but the services provided to livestock raisers remain largely ineffective. This is due partly to a lack of information on what services and extension messages are required and upon which the delivery mechanisms should be designed (see para. 55), and partly to the typical bureaucratic constraints of lack of staff training, insufficient resources and supervision, and poor staff motivation. The relatively low performance parameters for the provincial cattle herd highlight the potential for achieving significant gains in livestock output. The number of support staff in the province is generally adequate, but additional efforts are required to understand the livestock sector and design and implement effective support programs. The need for more effective livestock support services is expected to become more important in the future as the demand for livestock products increases putting pressure on the local producers to expand output.

V. CONCLUSIONS

A. Overall Assessment

57. The Project did achieve success in increasing the number and productivity of cattle owned by smallholders. For those farm families still with cattle, the financial gains are significant and should be sustainable. Nevertheless, the Project's achievements have been far less than expected at appraisal, particularly with respect to the goat component, which was not sustained. As a result, the Project is expected to yield an EIRR of 5 percent which is well below the appraisal estimate of 18 percent. Although positive, the institutional and environmental impacts were also small. The reevaluation shows the Project to be slightly better than at postevaluation, but the lower than expected achievements confirm the partly successful rating given at that time.

B. Lessons Learned

58. The main lessons learned, brought out in the PPAR, are confirmed by the reevaluation. These include (i) the need for project design to understand the constraints inherent in the smallholder farming system; (ii) the benefits of maintaining flexibility in project implementation; (iii) the difficulty of achieving high levels of productivity from livestock in a smallholder situation; (iv) the need to consider the possibility of nutritional problems often associated with livestock production in the tropics; (v) the need to include the mechanisms for technology adoption in project design; (vi) the difficulties of maintaining records on smallholders and their livestock; and (vii) the need for benefit monitoring and evaluation to be incorporated in a project as a means for improving design and implementation, rather than as an end in itself.

59. Many of the lessons highlighted in the PPAR point to the need to take into account in the design of smallholder livestock development projects the relationship between the extent to which the smallholder farming systems are understood and the possible size and the time frame for implementation. In cases such as the Project where the systems are only poorly understood, it would be prudent to follow a phased approach based on a long-term development plan that progressively builds upon trial introductions of specific components.

60. The Project also highlights the importance of ensuring that all new facilities to be established are based on real needs as determined by demand analysis. Eight of the proposed nine livestock market centers were not established, and the equipment and facilities provided at one market center, and the three transit centers have not been utilized.

61. The problems in the credit system highlight the importance of ensuring that an effective mechanism for the supervision of borrowers exists, that those responsible for credit implementation fully understand the system, and that the livestock (or other assets) are not distributed unless a loan account is simultaneously opened.

C. Follow-up Actions

62. The chances of further repayments under the credit program appear small, given that few, if any, of the originally distributed animals are still alive, and the large arrears are expected to continue indefinitely. Although this situation will not affect livestock production, having so many outstanding loans may affect future development efforts, which are based on smallholder credit packages to finance innovation. Rationalization of the outstanding accounts established under the Project would be prudent. In some cases, this may involve the correction of errors, such as recalculating the accounts using the local slaughter value instead of the purchase price for the distributed animals, or closing the accounts for those beneficiaries whose animals died before repayment could be made. What to do with the other accounts that may truly be in default is not clear. Merely to forgive the debt may prejudice other credit programs. As a first step, it is suggested that a study of the loan accounts and borrowers be made by staff of BRI and PLS with the support of sociologists in order to devise workable solutions for consideration by the Government.