

TECHNICAL AND SOCIAL PROGRESS  
(TASP)  
(MALAYSIA AND INDONESIA)

Board Approval: September 21, 1972

Total Budget: \$125,514

File Number: 3-P-72-0022

Evaluation of Technical and Social  
Progress (TASP) Project  
(Malaysia and Indonesia)

1. The introduction of high yielding varieties of crops, irrigation, fertilizers, pesticides and other agricultural inputs, which has been credited with the so-called "Green Revolution," has aroused, in many countries additional questions of who benefits from the products of these innovations. In Malaysia and Indonesia, where a large segment of the population depends on agriculture for livelihood, the governments have actively provided assistance to farmers to encourage them to adopt "modern" farming practices. This policy seems to have gained dramatic results, as seen in rice yields and rubber production figures. In Indonesia, where the average yield in rice was 1,762 kilograms per hectare in 1961-1965, production went up to 2,686 kilograms per hectare in 1975. West Malaysia also achieved positive results, with average yields of 2,503 kilograms per hectare in 1961-65 going up to 3,009 kilograms per hectare in 1975. In rubber, total production in Indonesia in 1969-71 was an average of 838,000 tons per year. This increased modestly to 855,000 tons in 1974. Malaysia, however, had better results, with production rising from an average 1,285,000 tons per year in 1969-71 to 1,549,000 tons in 1974.\*

2. While increased agricultural production is a prominent goal in the development plans of Malaysia and Indonesia, governments are also firmly committed to the ideal of "social justice," defined in both countries in terms of a more equitable distribution of the benefits among social classes and ethnic groups as well as the geographical areas of the countries. Concern as to whether or not the poor rural farmer is benefitting from the new agricultural technology has been growing. Policy makers are asking whether it is not for the most part the wealthier landlords and "progressive" landowners who are reaping the benefits from the Green Revolution. It was pointed out that when new technology was introduced in the Muda River Scheme in North West Malaysia, many peasant farmers did not make use of it. The question has also been raised whether the costs of the new technology are so high that in the long run, the poor farmer ends up being worse off after getting into debt to adopt the innovations. Policy makers were also concerned about the effects of certain structural inequalities, such as land tenure and the size of farmlands, on the long run effects of the new agricultural technology.

---

\*Food and Agricultural Organization, Commodity Review and Outlook, 1975-76.  
(Rome: 1976), p.158.

29th July, 1977.

3. When the IDRC was approached by researchers from Malaysia and Indonesia to support a study on the distributional effects of the Green Revolution in 1972, the governments of both countries were grappling with the questions mentioned above. They were in the process of evaluating their agricultural programmes and wanted to introduce modifications which would achieve improved agricultural production (Technical Progress) and more equitable spread of the benefits from increased production (Social Progress). In both countries, it was felt that a better understanding of the relationships between these two variables could be used to alter the main instrument available to government to influence them; Government Aid.

#### The Project

4. The Technical and Social Progress study was started in November 1972. Although the IDRC grant went to two Asian and one Canadian Universities (Universiti Sains Malaysia, Universitas Syiah Kuala and Universite Laval), most of the conceptual work and research execution became the responsibility of two Canadian academics: Dr. David Gibbons, a faculty member at USM and Dr. Rodolphe DeKoninck, a geography professor at Laval. Gibbons, who directed the Malaysian study, is a political scientist at USM who works full-time at the Centre for Policy Studies and the Faculty of Comparative Social Sciences. DeKoninck is a graduate of the University of Singapore and did his doctoral thesis research on small farmers in that city-state before joining the Laval faculty. The work in Indonesia was mainly carried out under the leadership of Dr. Ibrahim Hassan, the head of the Economics faculty at Syiah Kuala University in Banda Aceh, northern Sumatra.

5. The project involved an initial grant of \$77,636 over two years. Aside from the three primary researchers, the research involved about 80 graduate and undergraduate students from the Asian Universities and two Canadian graduate students from Laval. Field work was done during the long vacation in the two Asian Universities. Between vacations, the primary researchers and a number of Asian students worked on the collation, tabulation and analysis of the data.

6. The areas chosen for study were the states of Penang, Kedah and Perlis in North-West Malaysia and the state of Aceh in Indonesia. Before beginning the field work, government officials in all four states were consulted about the project. Public documents, especially those involving rural development efforts in the states were studied. Farmers' associations and local government councils were also visited to obtain their support and cooperation.

7. The research work was divided into two phases: (a) an exploratory phase during the first year when the situation in the four states would first be described and (b) an intensive survey phase during the second year when the hypotheses formulated in the first phase would be verified and "tested." The goal during the first phase was to become familiar enough with the village situation to identify the indicators which would most effectively measure the three main variables of Government Aid, Technical Progress and Social Progress.

29th July, 1977.

8. During the academic year 1972-1973, the researchers worked in a random sample of 50 villages in the four states. The student assistants were sent to live with the seven "most progressive" and the seven "least progressive" families in each of the 50 villages during the two-month long vacation. During this period, the students noted the types and amounts of assistance the Government gave to the farmers, the degree to which the farmers adopted or rejected the new technology and the degree to which the farmers benefitted or not from the new technology. After the first year, the researchers found that they had gathered a great deal of data and it soon became apparent that it would take considerably more time than originally expected to organize and analyze the data. The researchers, therefore, requested the IDRC to add an additional year to the life of the project, and also sought and obtained a supplemental grant of \$47,878 from the Centre.
9. The second year of the project, therefore, was spent verifying field information and formulating the hypotheses to be tested. In the third year, the intensive survey was conducted, which involved work in 32 villages (16 in Malaysia and 16 in Indonesia). The sample villages were chosen for similarity in certain characteristics (climate, distance from a major city, dependence on agriculture, crops grown, ethnic composition of the population, etc). A random sample of 30 households per village was drawn for the questionnaire survey. Families included in the sample were purposively chosen to represent tenurial status (whether the farmer was an owner-operator, an owner with tenants, or a tenant farmer). The families were also differentiated among those earning more than 50 per cent of their income from rice farming or those earning more than 50 per cent of their income from rubber farming. Each village was visited for two days by the researchers, who interviewed each of the selected households using the pre-coded questionnaire.
10. After the second year's field work, all questionnaires from the 960 farm operators surveyed were collated and data were edited, coded and punched on cards. Much of the data processing was done at Laval, and periodic consultations among the three primary researchers were held in Penang, Banda Aceh, Quebec City, Ottawa and Paris. In November 1975, preliminary findings were presented in a seminar hosted by the researchers in Penang, Malaysia, attended by other researchers from six other countries also working on rural development. The research results are now planned to be published in two companion volumes: Volume I, tentatively titled "The Green Revolution, Methods and Techniques of Assessment: a Handbook of a Study in Regions of Malaysia and Indonesia (already completed and to be issued by Universite Laval), and Volume II "The Green Revolution, Distributional Impact: a Study in Regions of Malaysia and Indonesia (due to be completed September 1977).

### Evaluation

11. In evaluating this project, five specific dimensions are used:

- (a) methodology
- (b) substantive research findings
- (c) administrative relationships between the researchers and the IDRC
- (d) impact of the project on the careers of researchers; and
- (e) impact on policies and institutional environment of the project.

## Methodology

12. The first conceptual problem confronted by the researchers in this project was how to define and make operational the three main variables chosen for study: Technical Progress, Government Aid and Social Progress. Findings in the first year's exploratory study, suggested that Technical Progress should be defined in terms of four main components. Foremost among these were Agricultural Inputs, such as the use of high yielding varieties, chemical fertilizers, insecticides, pesticides and weedicides. Also included were Farming Methods, which included the use of modern agricultural practices, improved agricultural equipment, or better cropping patterns; the use of Hired Labor in addition to family labor; and Entrepreneurship characteristics which included specialization in a certain crop, commercialization, and the investment of financial resources. (See Table I, Appendix).

13. To define and give an operational meaning to the variable, Government Aid, five types of factors were used. These included: (a) Infrastructure such as roads and irrigation services; (b) Farm Inputs such as supplies of seeds, agricultural extension, and plowing and planting services; (c) Financial Inputs such as credit for purchase of land or subsidies for specific commodities; (d) Marketing and Processing Services; and (e) Others, such as access to the services of agriculturally-based institutions. (Table II).

14. The most difficult variable to define was Social Progress. Here, the researchers formulated an index that included five factors. These are: (a) Ownership and control over the means of production; (b) Ownership of durable consumer goods; (c) Children's attainments; (d) the farmer's quality of life; and (e) the farmer's Political Culture. (Table III).

15. To give operational meaning to the five factors, a number of tangible indicators were used. Thus, a farmer who owned his land, owned farm machinery and work animals, and who was a member of a farmers' organization had achieved more Social Progress than a tenant farmer who did not own any machinery or work animals and who was not a member of a farmers' organization. A farmer who owned his house or a transport vehicle would have achieved more Social Progress, as was one whose children were being educated or had found gainful employment. Similarly, as far as Quality of Life was concerned, a family's health, unity and cohesion, as well as its participation in community affairs and religious activities were considered in indicating whether it had achieved Social Progress or not. Finally, to measure a farmer's "political culture," questions were asked which probed his awareness of certain political events; his sense of efficacy vis a vis the political system and his evaluation of how useful the political system was.

16. After defining the three main variables, the hypothesized relationships among them were indicated. The hypotheses are shown in the following diagram:

TECHNICAL PROGRESS

Social Progress	High			Medium			Low		
	GOV'T AID			GOV'T AID			GOV'T AID		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
High	x								
Medium		x		x	x		x		
Low			x			x		x	x

17. From the diagram, the various hypotheses can be deduced quite easily. One hypothesis, for example, is that where Technical Progress is High and Government Aid is High then Social Progress will also be high. However, even if Government Aid is High, if Technical Progress is only medium, Social Progress will also be medium. It was hypothesized that Government Aid was the central variable as it served to link Technical Progress and Social Progress.

18. As defined in operational terms, the three variables lent themselves to a nominal system. For example, if a farmer used new high yielding varieties, fertilizers and pesticides, he would be "judged" to have achieved some degree of Technical Progress. As to how much Technical Progress he had achieved, this could not be easily determined. To provide some measurable indicator of this, the researchers worked out a points system to give "scores" to farmers. Thus, a rice farmer who used high yielding varieties was given ten points, a rubber farmer using chemical fertilizers received 15 points, etc. (Table I). Necessarily, of course, the assignment of point values had to be rather arbitrary. It was hoped that the researchers' knowledge of the situation provided some validity to the points system. It could also be urged that the values assigned did not matter much, provided the measures were used consistently, the Student Research Assistants who made the judgement were reliable, the farmer asked were co-operative, and the time period for scoring was not too spread out. To the fullest extent possible, the researchers tried to control these factors which were potential sources of serious errors.

19. The choice of indicators to measure the main variables of Technical Progress, Government Aid and Social Progress was also a potential source of error in the study. This is especially the case with the Social Progress Index, where the component items in the index suggest a higher social class bias. For farmers at the subsistence level, ownership of the means of production may be a hoped for ideal but it is closer to wishful thinking than reality. Even if they start

adopting modern agricultural inputs and practices, there may be a considerable time lag between their attainment of Technical Progress and their scoring high on the Social Progress index. Most of the component items in the Social Progress Index, in fact, are bound by long time constraints. Thus, even without attributing a causative relationship between Technical and Social Progress, the correlation between these two variables may not show because in the Indonesian and Malaysian situation, one has to consider the time lapse at work among the indices that make up the variables.

20. Another serious limitation in the methodology related to time is the fact that data gathered for the study constitutes only one point in time in the lives of the farmers studied. With no trend data available, the information provided is based on what is declared or observed at the time of the study, augmented by facts recalled by the interviewee. The recall factor is a most difficult problem in rural research, especially in cultural settings where literacy is low and record keeping is not common. Of course, the data from the study may be considered a "baseline" which future researchers with access to the data can build upon. For this particular study, however, this time constraint must be always kept in mind when analyzing the results.

21. Dividing the research project into an exploratory and a field testing or survey stage made sense. However, the researchers grossly underestimated the time and effort necessary to sort out the voluminous materials gathered during the exploratory phase. To gather materials on fifty villages in four states in two countries over a two month period should have been expected to yield much data. This is so, since the researchers themselves gave detailed instructions on what bits of data would be gathered, including the preparation of detailed maps for every village.

22. The underestimation of the volume of data gathered served to delay the project by at least a year, with the result that additional funds became necessary to continue the work. The tardiness was made more serious by the fact that intensive activity in the project was only possible during the long vacation period, when the student assistants were not in their classrooms and the principal researchers were not engaged in teaching and other activities. One of the principal researchers and two research associates had to fly all the way from Quebec City to Penang and Banda Aceh to do the field work. The researchers found it extremely difficult and frustrating to effect consultations through the mails, thereby necessitating expensive trips to get together to sort out research details.

23. To the credit of the researchers, they tried to cope with all the difficulties of the research in a systematic and methodical manner. Their efforts to cope with such problems as language, government suspicions, wariness of farmer interviewees, training students to interview properly, etc., have been amply documented in the first volume to come out of the study. This methodological volume is a careful and detailed account of the problems faced and how the researchers attempted to solve them. It serves as a good guide to other researchers who may attempt to do field investigations in countries similar to Malaysia and Indonesia.

### Research Findings

24. To date, only preliminary research findings which were presented in the November 1975 Penang seminar are available in this study. These preliminary findings suggest that the project's central hypothesis does not stand: the nature and extent of Government Aid does not seem to establish a close linkage between Technical and Social Progress. The predicted relationships among the three variables were not corroborated by the survey materials. What emerged from the analysis of the survey data was a "mixed picture". The researchers are hoping that with further data analysis, the picture may become clearer.

25. Even with the central hypothesis not being fully verified, there are a number of interesting findings which merit attention. These are as follows:

- (a) Technical Progress associated with techniques that brought about the "Green Revolution" has spread widely in both Malaysia and Indonesia. This is especially true among wet rice farmers. The adoption of the new rice technology has reached even small-scale farmers. However, in general, Technical Progress has not been able to overcome pre-existing structural inequalities especially in farm size and land tenure, with the result that progressive farmers have benefitted greatly from the Green Revolution but poorer farmers have been left behind.
- (b) Technical Progress among Malaysian farmers is much higher than among Indonesian farmers. At the same time, the Social Progress gap between the well to do Malaysian farmers and the poorer ones is also much wider, indicating, over-all that the extent of social justice in Malaysia (the sharing of the benefits from technical progress) is worse than in Indonesia. There are a number of tentative "explanations" for these findings. First, that the narrow Social Progress Gap among Indonesian farmers is a feature of communities at lower levels of development. The system may be more "egalitarian" but it is an egalitarianism based on "shared poverty" rather than of shared riches. Second, that increased Government Aid may accelerate Technical Progress but that it takes more time to bring about some changes in Social Progress. And, finally, that rapid Technical Progress may benefit the most "modern" farmers very rapidly, leaving behind the more "traditional" farmers. The widening gap between the two groups may be true during the initial stages of the modernization process. In other words what is needed is that production must enlarge the pie first before slices can be shared.
- (c) For research projects of this type, the village rather than the individual farmer or household may be a much better unit of analysis. Score differences from farmers within villages were much smaller than the score differences between villages. There is a greater homogeneity among modern and traditional farmers within a village, suggesting that the village community might be an important mediating influence between Government Aid on the one hand and the reaction of people on the other.



29th July, 1977.

- (d) The type of crops produced by farmers/villages makes a great deal of difference in their Technical Progress. This is partly due to Government Aid, which is usually tied to efforts to increase production in specific crops (rice is given more attention than rubber in agricultural extension in both Malaysia and Indonesia). Crops also influence Social Progress but in a peculiar way - there is partial evidence that farmers who plant both rice and rubber in small holdings tend to have more homogeneous characteristics (their Social Progress scores do not show a wide gap). Since the scores, however, are consistently lower over all compared to rice farmers, there is a suggestion, again, that this is due to "shared poverty" among small rice and rubber farmers rather than true Social Progress.

26. The research findings are still very tentative and there is suspicion among the researchers that their "mixed findings" may be due to methodological factors. Considerable computation and substantive analysis is still being done on the findings. This has delayed the writing up of the final report, which is scheduled to be finished in September, 1977.

#### Relationship between IDRC Staff and Researchers

27. The relationships between the researchers in this project and staff members of the IDRC responsible for monitoring it and providing it with technical and administrative support have been cooperative and cordial, although there have been cases of conflicts and tensions arising from honest differences of opinions. To begin with, this project does not conform to the usual social sciences projects supported by the IDRC in that it involves collaboration of developing and developed country institutions. As already mentioned, also, the conceptual and operational leadership, especially in Malaysia, was in the hands of Canadian academics. Though both the Indonesian and Malaysian institutions were especially receptive to the leadership and assistance provided by both De Koninck and Gibbons, the two Canadian academics were extra careful not to over-extend their welcome. The result of this sensitivity to

the attitude of the local hosts partly explained the desire of the Canadian researchers to avoid administrative hitches and delays. Thus, when such delays and problems occurred, they were quick to bring this to the attention of the IDRC in flurries of impatient cables and letters. It could almost be said that since the Canadian researchers saw the IDRC as another "Western Institution," they could press their demands for efficiency and effectiveness on the Centre more directly and with less need for polite protocol than if they were dealing with a local institution. One problem, though, was that the responsible IDRC officers were a Filipino and a national of Bangladesh, and despite the professionalism of everyone, the cultural nuances in the administrative relationships resulted in some tensions and conflicts.

28. In some IDRC supported social sciences projects, the substantive relationship between researchers and the IDRC staff is usually an active one. For

.....9/.....

29th July, 1977.

various reasons, this was not the case in this study. Although there were informal discussions between the researchers and the IDRC staff members, there was no sense of actual collaboration in the project. Perhaps, this lack of substantive dialogue could be explained by the nationalities and personalities of the people concerned. Some of it could also be traced to the fact that the particular activity schedule of the project (intensive work during long vacations and less work in between) did not fit into the work schedules and travel activities of the IDRC staff members.

29. Some serious personality problems were encountered in regard to one young Canadian research associate who was assigned to assist in the field work and data analysis in Malaysia and Indonesia. Perhaps, because of this person's inexperience with living in another cultural setting, he had extreme difficulties relating not only to the food, climate, lack of the usual amenities and services and most serious of all, to the indigenous researchers working with him in the field. After less than a month, this person was forced to return to Canada and it took some time before the ill will created by his failure to adjust to the local situation was smoothed out.

30. As in other IDRC projects, this one involved the selection of researchers for post-project scholarships abroad. Two Malaysians and one Indonesian were given grants by the IDRC for studies leading towards masters (and hopefully, doctorate) degrees abroad. Considerable delays were encountered in the selection of the Indonesian, delays which included at one point, the loss of the documents related to the individual's application to a foreign university. However, the sensitivity of the Canadian primary researchers to "what the Indonesians will say" made them very upset about the delays in the IDRC processing of the awards. What had happened was that the promise of post-project awards had raised expectations among the junior researchers and when delays were encountered, tensions arose.

31. The difficulties encountered in the relationships between the researchers and the IDRC staff serve to highlight once more the complications of collaborative projects that involve institutions and researchers from developed and developing countries. For what is at play in such relationships go much beyond the substantive aspects involved in a cooperative venture. Questions of differential meanings given to efficiency, status, time-consciousness, "face" and friendship lead to tensions and conflicts. This is especially true in the case of relationships among young researchers from North and South.

32. If there are any lessons learned from the problems in the relationships mentioned above, they could be summed up as follows: (a) collaborative efforts between North and South institutions should be carefully planned with sensitivity to factors that go beyond the substantive coverage of the research project; (b) the sending of inexperienced Northern researchers to do research work in developing countries should be avoided; (c) post-project awards should not be seen as a "right" of researchers involved in a study and they should not be used as a tangible "incentive" to encourage younger researchers to join or remain in a research project.

.....10/.....

### Impact of Project on the Researchers

33. It is extremely hard to attribute what has happened to some individuals attached to the project directly to their participation in the project itself. However, to the extent that work on the study contributed to the persons' knowledge, skills and career pattern, it may be said that the project has had a positive impact on the lives of the people concerned.

34. Two indigenous junior researchers are currently studying for their doctorates abroad as a result of their involvement in the project. They were awarded post-project grants and are pursuing doctorates in political science (University of Hawaii) and public finance (London School of Economics). One Indonesian graduate student is also scheduled to leave soon to get a masters degree in agricultural economics (University of the Philippines at Los Banos).

35. The three primary researchers (Gibbons, De Koninck and Hassan) have gone on to more responsible positions. Gibbons is Acting Head of the Centre for Policy Studies at Universiti Sains Malaysia, De Koninck just spent his sabbatical year as Senior Fellow in a French University, and Hassan has become Rector of the Universitas Syiah Kuala. When the volumes from the study come out, it can be assumed that the professional status of the three primary researchers would be enhanced some more. In general, therefore, the project seems to have contributed positively to the lives and careers of most of the researchers.

### Policy and Institutional Impact

36. It is equally difficult to trace the policy and institutional impact of the project as there are so many factors that may be associated with a particular policy change or institutional reform. However, it seems clear that in Banda Aceh, Indonesia, the results of the study have had some positive effects in that the study results were fed directly to the plans of the Aceh Development Board. This is not surprising at all because Hassan exerts strong leadership in the Board and with the additional information provided by the study, he was able to influence the plans prepared by the Board.

37. Policy impact in Malaysia is harder to trace, mainly because Penang is not that close to the policy making process centred on Kuala Lumpur. Within the Universiti Sains Malaysia, however, the research project seems to have contributed to the research and publications output of the Centre for Policy Studies. The project also provided a considerable number of undergraduate and graduate students the opportunity to learn how to do research by actually engaging in it. It is possible that some of these younger students will be influenced to pursue social science research and/or teaching as a career because of their exposure to the research experience.

### Conclusion

38. In general, despite delays, tensions and problems, the Technical and Social Progress Project seems to have been a worth-while investment on the part of the IDRC. The study made possible the application of sophisticated social science methodologies on a local setting. It provided some lessons

29th July, 1977.

on what a proper relationship between researchers and the IDRC staff can be. It seems to have enhanced the career of some of the researchers involved in the study. And finally, at least in the case of Indonesia, the research results seem to have found their way in policy and program recommendations and actions. With all of these achievements, one can say that the project, over-all, was a success. Of course, a firmer evaluation can finally be made when the final research report is already made available to the IDRC for possible publication and dissemination.

Table I  
Technical Progress Index

Main Category	Weight	Component Items	Weight	
			Padi	Rubber
1. Inputs	30	(a) High Yielding Varieties	10	15
		(b) Chemical Fertilizer	15	10
		(c) Insecticide, Pesticides, Weedicides	5	5
2. Farming Methods	25	(a) Cultural Practices	10	10
		(b) Improved Agricultural Equipment	5	5
		(c) Cropping Pattern	10	10
3. Employment	10	(a) Hired Labour	10	10
4. Entrepreneurship	35	(a) Crop Specialization	5	5
		(b) Commercialization	20	20
		(c) Financial Resources	10	10
Totals	100		100	100

Table II  
Government Aid Index

Main Category	Weight		Component Items	Weight	
	Padi	Rubber		Padi	Rubber
1. Infra-structure	45	15	(a) Irrigation	30	-
			(b) Roads	15	15
2. Inputs	15	20	(a) Extension	5	5
			(b) Supply of Seeds, Cloves, etc	10	10
			(c) Plowing & Planting	-	5
3. Financial Resources	20	35	(a) Credit for Land	10	25
			(b) Subsidy	10	10
4. Marketing & Processing	10	20	(a) Marketing and Processing	10	20
5. Other	10	10	(a) Agro-based Institutions	10	10
Totals	100	100		100	100

Table III

Social Progress Index

Main Category	Weight	Component Items	Weight	Totals
1. Ownership & Control of the Means of Production	25	(a) Land (b) Farm Machinery & Animals (c) Farmers' Organization Membership	15 5 5	100
2. Ownership of Durable Consumer Goods	15	(a) House (b) Transport Vehicles	10 5	
3. Children's Benefits	30	(a) Educational Attainment (b) Job attainment	20 10	
4. Quality of Life	20	(a) Health (b) Family & Community Solidarity (c) Voluntary Religious Donations	10 10 5	
5. Political Culture	10	(a) Awareness (b) Efficacy (c) Evaluation	4 3 3	
				100