1975/77
RESEARCH - Agriculture
Vol. II

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Mr. Peter Pollak, EPD/CE October 27, 1977

Stevan Silbiger, EAPNA

Requested Comments for a Research Proposal for a Review of Common Grazing and Nomadic Herding - Theory, Methodology and Data Collection for Introducing Change

1. With regard to your request for comment on the above subject, I found it difficult as:

--the description of the attached research proposal is much too general and adding nothing new to the already known (e.g. the FAO paper "The Improvement of Nomadic and Transhumance Animal Production Systems" - 1974);

--no table of contents is proposed which would, at least, indicate what would be the study's scope, and method of approach; and

--it is unclear what is the goal of the study - theoretical, practical, vade mecum type book of reference, etc.

2. Notwithstanding, I will try to comment on the paper in general; however, I have to limit my observations to my experience gained from this subject in two East African countries -- Somalia and the Sudan.

The Social Importance of Cattle in Nomadic Societies

3. It is now fully accepted that a failure to take into account the social dimension of cattle-keeping in nomadic societies has not only frustrated many attempts to modernizing and improving livestock production but has actually exacerbated a situation of environmental destruction, in particular on the rangelands. Unfortunately many studies of pastoral societies by anthropologists tended to focus disproportionately upon the social role of cattle, thus neglecting the other - and sometimes more basic - production/economic functions of the herds. This one-sided preoccupation engendered a number of generalizations which have persisted over the years. These generalizations generally center on the pastoralist's supposed "economic perverseness", "resistance to change", "bad range and herd management", "irresponsibility", "primitiveness", and "failure to appreciate the benefits of modernization". These views are misleading and it is becoming evident that (i) there is a remarkable

variation in the social role of cattle from society to society stressing the need for adequate social research in situ as part of the planning process; (ii) that pastoralists are often far more innovative than their settled neighbors and are far less conservative than is supposed; (iii) livestock frequently perform more than one role in a society so that the "numbers" syndrome may well relate to the concept of a basic "survival" herd related to years of extreme hardship.

4. Experience has proven that economic functions of livestock in nomadic societies should be fully considered; but simultaneously, not ignoring their social importance, it is unfortunate that many obsolete but ingrained views change slowly in that regard, relating to the nomads and nomadic livestock herding which make modernization efforts difficult, and compounding this difficulty is the fact that usually only a small amount of research is done dealing with social dynamics of nomadism. Often, also, anthropological research is descriptive and static and unsuited to the dynamic needs of planning/implementing development.

Advantages and Disadvantages of Nomadism

5. Nomadism is a specific well adjusted system of animal husbandry with a long tradition in the semi arid regions and which uses the species of animals most suited to these regions. In the more arid regions camels are kept and in the less arid regions camels together with cattle, sheep or goats of types suited to the environment are herded together. As these different species have different grazing habits they do not compete with each other and consequently make good use of the available vegetation.

6. Nomadism is essentially a rational system of conservation of grazing at permanent water sources and the utilization of pastures during the rains in areas where water is only available seasonally and which are uninhabitable for most of the year. This classical pattern is most clearly seen in the more arid regions where camels are kept but, especially with cattle, movements may also be caused by heavy rains and biting flies (tanbanids and in some regions tsetse flies) in the dry season grazing region, which force the herds to move to areas of lighter rainfall. Cattle nomads inhabiting zones of heavier rainfall encroach to a greater extent than desert nomads on settled areas and create, thereby, problems.

7. A clear case can be made for nomadism as a system which has survived, which utilizes land otherwise unusable, and which has not inflicted considerable damage on the environment. It can be argued that the system is good for the animals and conserves the pastures but, by modern standards, it must be admitted that the life of the nomad might be considered to be socially unacceptable; schools, hospitals and modern amenities being conspicuous by their absence.

8. Factors which have created problems in nomadic areas include the success of veterinarians in controlling epidemic diseases. This has resulted in a greatly increased animal population, and the provision of ill-considered water supplies which almost invariably lead to uncontrolled settlement by people and the inevitable destruction of

the environment by cultivation and overgrazing. It should be noted that tribal leadership which is sometimes blamed for many of the ills can be an essential component in effective nomadism, and should be fully utilized and acknowledged.

9. The nomad considers that as cattle cost him nothing to keep, he would be foolish to sell them before they were mature. This results in cattle usually not being sold before five years of age and, in the Sudan, for instance, it is estimated that of the total number of cattle owned by nomads only 5% to 7% are sold annually. The question of . . . "what the nomad could or should do with additional money if he would sell more or younger cattle which he should and could" . . . should also be thoroughly explored. This also raises the question of creating larger "demand" for which the nomads would need additional money, and how to create a reliable hedge against inflation by inducing the nomads to sell more livestock and save money instead of keeping live animals which automatically appreciate in value. Nevertheless, an increased offtake is essential if the environment is to be preserved, however sometimes reluctant are governments to taking any meaningful action; the usual response being attempts to settle nomads and the imposition of a policy of improving the breed to get more production from fewer animals, without meaningful improvement of fodder availability.

10. The feedlot system based on the idea that nomads or trans-humant pastoralists have plenty of cattle and that a rational policy is to fatten those that are sold holds certain promise; but the prices of cereals and other concentrates in many regions is too high for it to be an economic proposition at present. The same can be the situation with irrigated fodder production. Nevertheless, it is basically part of the answer to increased beef production from nomadic cattle.

Specific Comments on the Proposed Work

11. Related to the attached paper I have the following specific comments:

(a) page 1, beside "common property rangeland", the individual ownership of cattle nomads should be mentioned. These two basic features are relevant problems to introducing more adequate nomadic livestock production systems in relation to the carrying capacity of the range;

(b) page 2, herders are not always the "poorest of the poor". A closer look would show that (1) there is a big variety of "wealth" and "poverty" between nomadic herders; and (2) usually small subsistence oriented crop producers are poorer and more vulnerable to climatic conditions than a large proportion of the nomadic livestock herders;

(c) page 3, in reviewing all available literature with particular attention to the Sahel zone of W. Africa and of French language documentation, the extensive English and also German language documentation if possible, should be considered.

SSilbiger:mld

cc: Messrs. K. Meyn
P. Sihm
D. Sutherland
E. A. Files: Desertification/Nomadism

University of Minnesota

Department of Agricultural and Applied Economics

A Review of Common Grazing and Nomadic Herding: Theory, Methodology and Data Collection for Inducing Change

Principal Investigator:
Malcolm J. Purvis, Associate Professor

Submitted: August 19, 1977

Duration: September 1, 1977 to August 31, 1978

Signed: _____

W. B. Sundquist, Head
Department of Agricultural and Applied Economics

_____

Malcolm J. Purvis, Associate Professor

This Proposal has not been submitted to any other sponsor.

Relevance of Proposed Work to A.I.D.

Throughout large areas of Africa the principal method of human exploitation of the environment is through nomadic and transhumant livestock grazing. These environments are ecologically fragile and many have been subjected to severe degradation as a result of increasing human and animal populations and climatic stress (drought). These resources are normally exploited in various forms of common property rangeland which creates particular problems for their improvement, development or even the stabilization of a fundamental resource on which significant numbers of human lives depend. A.I.D. is already involved, particularly in Sahelian West Africa, in a number of programs to maintain and improve common property rangeland and its economic production. Although the theory of common property has been explored in Western Economic literature there has been little coordinated attempt to understand the nature of the complex problems involved in inducing change in the African utilization and management of common property rangeland or even more pragmatically in defining minimum data needs for such activities and methods of their collection. A number of projects have been carried out in this area by A.I.D, and other agencies--almost all of them apparently unsuccessful or of very limited application or extendability.

If significant improvements in African rangeland productivity are to be realized, generalizable low cost (per unit area for livestock unit) development methods have to be found. Many of the problems are socio-economic rather than technical (e.g. reasons for overgrazing and wealth accumulation in cattle). It is widely recognized that unless effective solutions to this widespread problem are found further ecological

deterioration and consequent disruption of development objectives of large areas of Africa will occur. The consequences of such continued degradation for welfare of herders (usually the poorest of the rural poor), for rural-urban migration, nutritional and health status of children and even for political stability are among the more obvious. An improved understanding of the common rangeland/nomadic herding problem and of alternatives for inducing change is a fundamental requirement for program and policy development in this area.

An equally severe problem is that of data collection in areas of nomadic herding. Evaluating animal numbers, herding practices, marketing arrangements, relationships in time and space to forrage and water supplies and social economic relations to other herding or sedentary groups are indispensable. However, quantification of existing situations, let alone of measurement of program impacts, are extraordinarly difficult. Information based on high technology approaches (e.g. satellite imagery) all the way down to village level and anthropological micro studies have been suggested. There is a need for more careful definition of minimal information requirements and optimal and feasible methods of data collection.

This lack of an appraisal of historical experience, of appropriate methodology and of information collection systems deprives decision markers of a basis for evaluating alternative development policies program and projects. Without such a basis livestock development programs will continue to be stabbing in the dark with limited probability of success.

Scientific Aspect of Proposed Work

The objectives of this proposal are to carry out a review of:

1) Economic literature on common property rangeland utilization by nomadic/transhumant herding.

2) Schemes that have been carried out, successfully or unsuccessfully, for improvement of nomadic/transhumant herding.

3) Information needs and methods of collection for assessing current practices and potentials and impacts of development programs and projects. Such a review is an essential first step in better formulating a definition of this complex problem and will provide a background for developing a more precise research agenda for its solution. This proposal does not include provision for field work or involvement of African counterparts. However, it is intended that this "pre research" activity will form the basis for the design of a research activity which would have such components.

This work would be initiated on September 1, 1977 and would be carried on for 12 months. A final report will be written at the end of the project which will 1) report the findings of the review detailed above 2) make specific recommendations for the development of minimal needed new field research necessary as a basis for developing successful development programs for improvement of design of projects aimed at assisting transhumant herding.

Facilities and Resources

This work will be carried out in St. Paul, Minnesota. However, particular effort will be made to review all available literature relevant to the subject with particular attention to the Sahel zone of W. Africa and of

French language documentation. Important library collections exist at other U.S. universities and these resources will be fully explored (University of Michigan, MIT, etc.).

The qualifications of the principal researcher are detailed in Appendix 1. Malcolm Purvis has worked extensively in Africa and recently returned from leading a sector assessment TOR team in Mauritania--an economy which is predominantly a herding/nomadic one.

Budget

The budget for this project is $20,500 details are shown in Table 1.

Table 1: DETAILS OF PROJECT BUDGET

1.	Salaries		
	Project leader (2 working months)	$5,000	
	Research Assistant (12 working months)	7,500	
			$12,500
2.	Overhead (50%)		6,250
3.	U.S. Travel		
	2 trips to Michigan, MIT, etc.	$740	
	1 trip to Washington, D.C.	190	
	Taxi, hotel, meals	300	
			1,230
4.	Other Direct Costs		
	Duplicating, photocopying, typing, bibliographic work, supplies		20
		Total	$20,500

Research - Agriculture

Those listed below

April 21, 1977

Orville F. Grimes, Jr., VPD

Panel to Review Research Proposal

1. A panel consisting of Messrs. R. Picciotto (Chairman), M. Ahluwalia, G. Baldwin, G. Donaldson, and A. ter Weele has been established to review the attached research proposal on Thursday, May 5 at 10 a.m. in Room A730.

Proposal	Staff Responsible
Socio-Economic Aspects of Household Behavior in Rural Botswana	D. Chernichovsky

2. As is customary, the panel should seek answers to questions like (a) Are the issues raised by the proposed research of interest to the Bank? and (b) Is the study so designed as to deal meaningfully with these issues? To aid in considering these questions, some informal guidelines for review panels, together with more recent guidelines for preparation and submission of research proposals, are attached.

3. The recommendations of the panel should be sent to me by Tuesday, May 10.

Attachments

Distribution: Messrs. Picciotto, Ahluwalia, Baldwin, Donaldson, ter Weele

cc: Messrs. B. B. King, Avramovic, Stoutjesdijk, T. King, Chernichovsky

OFGrimes:gm

Research - Agriculture

Mr. P. Goffin, Asst. Director, LCP

April 4, 1977

P. Z. Kirpich, Division Chief, LCPA4

Agriculture and Rural Development:
Research Projects undertaken by Bank Staff

1. Reference Mr. Quijano's memorandum of March 28 and your covering note of March 30.

2. The project list contains four studies dealing with countries in this Division:

a) Agriculture Sector - Mexico (Project 670-16), executed by DRC and basically completed some time ago. This is the study that produced the CHAC model, and it dates from before the reorganization of the Bank.

b) Land Reform in Latin America (Project 670-80). It includes Mexico and Peru, and appears to have been completed in 1976. We were not consulted nor had any information about this study.

c) Country Case Studies of Agriculture Prices and Subsidies (Project 671-42). Mexico is included. We were informed of this study (Memorandum of Mr. Dutt to Mr. Egbert of January 14, 1977, copied to me). The study, conducted by a consultant (Professor Yakir Plessner, of the Hebrew University), is underway. The main purposes of the study are to trace the impact of agricultural tax, price and subsidy policies on production, level of technology, employment, and income distribution; and to calculate the country's comparative advantage in different crops, using the CHAC general equilibrium model for the agricultural sector. It was initially envisaged to use an updated (1975-76) version of the model carried out in Mexico. This has not been possible, however, and the 1968 version is being used. Mr. Plessner did his research in Washington and returned to Israel to write his report, which should be available when our economic/sector mission returns from Mexico. Mr. Plessner's results should provide valuable insights into past policies and developments, although their relevance for current problems and policy recommendations is questionable since the model is presumably obsolete.

d) Consequence of Risk for Agriculture Policy (Project 671-43). Mexico is included. We were neither consulted nor informed about this study, which appears to just be getting underway. Mr. Ballesteros will follow-up on this.

MBallesteros:fk

cc: Division Files
M-0.41
P-0.41

Research - Agriculture

Mr. E.V.K. Jaycox

March 28, 1977

Messrs. M. Yudelman and L.E. Christoffersen

Rural Housing

In connection with the recent discussions between your department and the East Asia and Pacific Region on the possible inclusion of a rural housing component in a proposed rural infrastructure project in Korea, we would appreciate an opportunity to discuss our interest in this subject matter with you. For almost two years one of our staff members (Mr. Kulatilaka) has been following rural housing issues as they relate to our general rural development work. We have had several meetings with outside groups dealing with rural housing in developing countries and we have been approached about including housing components in other experimental projects.

We would be grateful if you could share any relevant documentation and also if you could ensure that we are kept fully informed of discussions between you or your colleagues and regional staff. We shall be glad to share whatever information we have with you.

LEC:jo'd

cc: Messrs. Baum
van der Tak
Kulatilaka
Turnham

Research Aging

Mr. Ted J. Davis, AGP

February 11, 1977

Orville F. Grimes, Jr., VPD

Poverty-Focus in the Bank's Research Program

I understand that you will be a Bank representative at the forthcoming meeting in Geneva of the ILO task force on rural development. During the meeting there may well be questions about the derivation of the estimates of poverty-related research furnished to Mr. Dunkel with Leif Christoffersen's letter of February 8. The relation of these estimates to the expenditure figures presented in the Bank research report (January 13, 1977), for example, is far from obvious. It might therefore be necessary to re-emphasize that the estimates provided are highly personal to the author, that a large measure of arbitrariness attaches to any such set of numbers, and that they should not be viewed as carrying any sort of official designation.

Cleared with and cc: Mr. B. B. King
cc: Messrs. Christoffersen, Leiserson, Abraham

OFGrimes:gm

Research - Agric

February 2, 1977

Dr. F. Conant
Hunter College
University of New York
695 Park Avenue
New York, N.Y. 10021

Dear Dr. Conant:

Many thanks for your letter of January 26, 1977 and for the attached Abstract "A First Interpretation of East African Swiddening Via Computer-Assisted Analysis of 3 Landsat Tapes". I think you are definitely on the right track in the study of swidden agriculture and it would be excellent if LARS were to include such in their training efforts. The fact that your review and Reinings recognizes the value of doing interpretation not only from CCT's but also from aircraft and doing it on a temporal basis leads me to believe that useful information can be derived but research efforts in the field are essential. It is much easier to study wheat or even paddy production and expect solid results than to become involved in swidden agriculture.

Do send me a copy of the final paper when it is published and again many thanks for the Abstract.

Sincerely yours,

Wolfram U. Drewes

Wolfram U. Drewes
Senior Resource Planner
Agriculture and Rural Development
Department

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

Research Agriculture

TO: Files

DATE: January 14, 1977

FROM: S.A. Draper

SUBJECT: FORESTRY - Possible Research Activities
Improving Wood/Energy Conversion in Domestic Use

David Dapice has pointed out an error in the arithmetic in calculating the potential savings indicated in my memo of January 10. These should be double the magnitudes shown. A new page 2 to the memo is attached which sets out the corrected figures.

SADraper:jd

Attachment

cc. Messrs. J. Spears
C. Keil
N. Brouard
H. Wagner
A. Ewing
D. Dapice

Then:

(1) (1400 million x 0.8 x 5) - (280 million x 10)

5600 m. - 2800 m. = $2,800 million/year

(2) (1400 million x 0.8 x 7) - (280 million x 10)

7840 m. - 2800 m. = $5,040 million/year

(3) (1400 million x 0.8 x 9) - (280 million x 10)

10,080 m. - 2800 m. = $7,280 million/year

Labor Savings

Assume: 4 Man Days/m^3 for felling, splitting and carting wood.

Assume: 3.0 Man Days/stove/year for stove manufacture/maintenance

Then : 1400 million x 0.8 x 4 = 4,480 million Man Days

Less, labor for stove manufacture, 280 million x 3.0 = 840 million Man Days

3,040 " " "

at 250 Man Days/year = 12 " Man Years/Year

available for other productive work.

Land Savings

Assume: 2 m^3/ha./year fuelwood growth (1)

3 m^3/ha./year fuelwood growth (2)

4 m^3/ha./year fuelwood growth (3)

Then : (1) $\frac{1400 \text{ million} \times 0.8}{2}$ = 560 million hectares

(2) $\frac{1400 \text{ million} \times 0.8}{3}$ = 336 million hectares

(3) $\frac{1400 \text{ million} \times 0.8}{4}$ = 280 million hectares

available for other forestry or other agro-forestry activities.

SADraper:jd

cc. Messrs. J. Spears
C. Keil
N. Brouard
H. Wagner
A. Ewing
D. Dapice

yellow

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

Research Agriculture

TO: Files

DATE: January 10, 1977

FROM: S.A. Draper

SUBJECT: FORESTRY - Possible Research Activities
Improving Wood/Energy Conversion in Domestic Use

1. FAO estimates (see Mike Arnold's draft of April 4, 1976) indicate some 1,400 million m^3/year of fuelwood is used in domestic consumption, about 80% of which is consumed in developing countries. In aggregate, supplies are insufficient to meet demand, with the result that large scale depletion of growing stocks is taking place and the use of agricultural residues and animal manure as wood substitutes is widespread. This deficiency has directed attention to the supply side and as a consequence, a number of projects and programs are under implementation for increasing supply which incorporate research into developing fast growing species. Thus a systematic approach is being developed for this aspect of the problem.

2. However, the possibility of introducing improved techniques in using domestic fuelwood, which could be equally important in its total effects on the overall situation arising from fuelwood shortage, does not appear to be receiving explicit attention. This memo is a preliminary attempt to quantify possible benefits from research into this aspect.

3. In arriving at their estimates of total consumption FAO implicitly use present wood-burning practices. These use about 6% of the potential heat energy of the fuelwood. This low utilization in developing countries compares with an expected 50 to 60% efficiency in wood-burning domestic stoves in the U.S.A. (see Univ. of Vermont Paper 1976) and in Europe, sophisticated stoves are being marketed which claim even higher efficiency levels. The FAO report (page 13) also quotes trials in Indonesia which with simple improvements in stove design, predrying firewood before use and using a cooking pot specially designed for the stove, increased efficiency from 6% to over 60%.

4. On the basis of these rough data, the potential savings which could be obtained from research into improving domestic wood using systems, in money terms, in labor and in land, could be of the following orders of magnitude.

Cash Savings.

Assume:	Present efficiency	10%
	Possible efficiency after research and development	50%
	Value of wood	US\$5/m^3 (1)
		US\$7/m^3 (2)
		US\$9/m^3 (3)
	Cost of wood stove, including maintenance	US\$10/year
	Number of stoves required $= \frac{1400 \text{ million } m^3}{5 m^3}$	= 280 million

Then:

(1) (1400 million x 0.4 x 5) - (280 million x 10)

2800 m. - 2800 m. = $ 0 million

(2) (1400 million x 0.4 x 7) - (280 million x 10)

3920 m. - 2800 m. = $ 1,120 million

(3) (1400 million x 0.4 x 9) - (280 million x 10)

540 m. - 2800 m. = $ 2,240 million

Labor Savings

Assume: 4 Man Days/m^3 for felling, splitting and carting wood.

Then : 3.0 Man Days/stove/year for stove manufacture/maintenance

1400 million x 0.4 x 4 = 2240 million Man Days

Less, labor for stove manufacture, 280 million x 3.0 = 840 million Man Days

1,400 " " "

at 250 Man Days/year = 6 " Man Years

available for other productive work.

Land Savings

Assume: 2 m^3/ha./year fuelwood growth (1)

3 m^3/ha./year fuelwood growth (2)

4 m^3/ha./year fuelwood growth (3)

Then : (1) $\frac{1400 \text{ million} \times 0.4}{2}$ = 280 million hectares

(2) $\frac{1400 \text{ million} \times 0.4}{3}$ = 168 million hectares

(3) $\frac{1400 \text{ million} \times 0.4}{4}$ = 140 million hectares

SADraper:jd

cc. Messrs. J. Spears
C. Keil
N. Brouard
H. Wagner
A. Ewing

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

Research Agriculture

OFFICE MEMORANDUM

TO: Files

DATE: December 23, 1976

FROM: Messrs. C. Keil and S. Draper

SUBJECT: Developing Forestry Energy Resources - Mitre Study

1. The Metrak Division of the Mitre Corporation (Westgate Research Park, McLean) is nearing completion of a study, commissioned by Energy Research and Development Administration at a cost of US$0.5 million, of the possible development of forest plantations for bio-mass production as an energy resource in the U.S.A. The study, which is scheduled for distribution in February, 1977, is expected to provide ERDA with a base document for evaluating the desirability of proceeding with further in-depth feasibility studies in specific locations in the U.S.A.

2. Mitre is a private, non-profit earning, corporation funded mainly by Federal Government contracts, but with some contracts directly with individual States within the U.S.A. and foreign governments. Its function is to address research and development activities which are not being adequately dealt with by the private sector or by other institutions. It employs about 2,000 staff, about 1,200 of whom are engaged on military work. The main activities being pursued by the remaining staff include civil aviation air traffic control, systems development for ground transportation, medical services, and other public services; environmental protection, and, energy resources. The Energy Resources Division employs some 55 technicians and has sections concentrating on fossil fuels, electricity, and other energy technology; the latter covers wind, solar, oceanic and bio-mass.

3. On December 21, we had discussions with Dr. R.S. Greeley, Director, and Messrs. Martin M. Scholl, Robert E. Inman and Charles Bliss to obtain a preview of their conclusions with the objective of relating their work to forestry/energy development in other countries.

4. The study has developed models for some 12 plantation situations in various States, each producing 250,000 bone dry tons of fuelwood a year from plantations areas of between 20,000 acres to 40,000 acres. Intensive irrigated plantations with coppicing species with 6-year rotations, producing 5 to 12 tons/acre/year have been developed as a base model. Several wood-energy conversion technologies, using processes which are currently used or have been proven and planned for implementation have been evaluated, including wood-fired electricity generation, pyrolysis gas and gas-fired electric power, methanol, ammonia.

5. Preliminary conclusions of the study indicate promising results, particularly for wood-fired electricity generation, which on the basis of the models developed so far would result in a production cost of around US$37/million KWH, on the basis of an estimated cost of US$1.5/million BTU equivalent delivered chipped wood to generating plant. This equates with a delivered wood cost of about US$20/$m^3$. In developing countries wood of this type can often be produced at around US$10/$m^3$.

6. The analysis made so far has used a plant scale limited to annual plantation production of 250,000 bone dry tons wood/year to (20,000 acres - 40,000 acres). Quadrupling the plant scale, i.e., increasing plantation area for one large plant to 80,000 acres - 160,000 acres, would significantly reduce the plant production cost.

7. The report should be of considerable interest in the Bank. On the assumption that the optimistic results anticipated will be reflected in the final conclusions, this type of development could have potential in a number of countries where the resource base for power generation is lacking and could meet the triple objectives of generating local rural incomes, securing a stable land use pattern over marginal areas subject to erosion and supply power into a national energy system.

8. Mr. Scholl has undertaken to forward us a copy of the report in February and has indicated he will be inviting the Bank to nominate delegates to attend a conference (at the Sheraton Hotel, Dulles Airport) on February 15-16, when the report will be presented.

CKeil/SDraper:pm

cc: Messrs. Christoffersen
Turnham
Spears

Research - Agric

Mr. John Spears

November 22, 1976

Sydney A. Draper

Forest Research for Developing Countries

1. It seems that the IDRC approach stems from a defensive position (policing function of forestry) and then spreads out to make recommendation for research covering every aspect of forestry without pin-pointing priorities. It then appears that the research is for the purpose of supporting the policing function. Another approach to evaluating research needs is to view forestry from the contribution it can make to economic development by new innovations.

2. With regard to the policing function, you have rightly pointed out that replacing natural forest by other forms of land use has been, and will continue to be, a continuing process and from a forestry point of view, the best means of controlling the ill effects of this is to introduce land use planning based on land capability. In this respect, the research priorities which emerge include :

(a) identification, continuation and replication of the Pierrera-type studies carried out in East Africa;

(b) methods of institutionalizing land-use planning at the various levels of government; and,

(c) means of securing cooperation of local land users in implementing a rational land-use plan.

3. For the innovatory approach, there are three aspects which merit special emphasis,

(a) Maintaining existing research and information dissemination centers which are providing a technical base for replication over large areas, e.g., Samaru in Nigeria, Solo Watershed project in Indonesia. This could include the development of extension services for -

- the setting up of mobile teams of specialists who could travel to various countries to demonstrate techniques. E.g., nursery practice is often the weak link in ongoing planting programs which could be significantly improved by a short-term assignment of a true expert in this work, such as Bill May of EAFFRO;

- follow-up dialogue for species introductory trials and plantation management systems with the permanent center.

(b) For fuelwood usage, research and development of low cost cooking and heating systems which would significantly reduce the present quantities of wood used.

(c) For local use poles and timber, development of low cost wood preservation systems which would have similar effects to (b).

4. I have not had the opportunity to study the FAO proposal for genetic research (D.W. William's draft) nor to assess how far this has been deliberated within UNDP/FAO and IUFRO. Quite evidently, any proposal to set up a new independent agency which would replicate this aspect of research would need to be supported by strong arguments acceptable by IUFRO (representing member governments) and FAO.

SADraper:jd

Research - Agric.

Mr. Montague Yudelman

October 22, 1976

W.H. Spall

Cost of Agricultural Credit Operations

1. Dr. C.D. Datey, Executive Director, Reserve Bank of India, has been engaged as a consultant to assist in final preparation of a report on the Cost of Agricultural Credit Operations. He commenced work only on October 11 and his conclusions given below are only preliminary and are based largely on conditions prevailing in India:

2. Four major components make up the total direct cost to institutions providing agricultural credit:

i) Cost of capital
ii) Administrative costs
iii) Cost on account of risk
iv) Taxes.

To these must be added costs of extension, cooperative services, etc. No allowance has been made for inflation.

3. The actual financial cost to the institution of funds raised primarily through deposits will be at least 11 per cent under present Indian conditions.

4. Administrative costs include only those incurred in connection with servicing the loan and exclude those on extension, etc. Administrative costs will vary considerably according to whether lending is direct to individual farmers or to a group. The highest administrative costs will be where lending is direct to individuals and from commercial banks where the salary structure is generally higher than in the cooperative banks. It is estimated that the average minimum cost will not be less than 4 per cent. If the cost of lending to small farmers is treated separately, it may well be at least 10 per cent assuming that such farmers account for 20 per cent of the loans, but form about 60 per cent of the total number. For direct lending by commercial banks the average may come to 6 per cent and for small farmers 12 per cent.

5. The recovery performance in India is generally not satisfactory. A recent study by RBI of some 29,000 borrowers has shown that contrary to a generally held opinion recovery in respect of small farmers and tenants loans is the worst. No estimates of bad debts are available. But it will be prudent if the lending agency builds up a reserve of at least 5 to 6 per cent of total outstanding loans.

6. There is in India a tax on all scheduled banks at 7 per cent of the gross interest received by them. The incidence of this varies from ½ per cent to 1 per cent. There is also the tax on income which commercial banks have to pay and not the cooperative banks.

7. The following table shows the direct cost of agricultural credit operations in general and for small farmers in particular:

	General	Small Farmers
Cost of capital	11%	11%
Administrative costs	4 - 6%	10 - 12%
Reserve for bad debts	1%	3%
Taxes	½ - 1%	½ - 1%
Total	16⅔% - 19%	24½% - 27%

To these direct costs must be added the "indirect" costs of extension, cooperative department services, etc. These are in the course of being analyzed and the actual total cost of agricultural credit operations will therefore be higher.

cc: Mr. Datey

CDatey/WSpall:sj

FORM NO. 27
(11–75)

Research - Agric + Rural

WORLD BANK / IFC
OUTGOING MESSAGE FORM
(TELEGRAM/CABLE/TELEX)

☒ IBRD
☐ IDA
☐ IFC
☐ ICSID

722-7366

TO: ~~USAXXX~~ AMEMBASSY

DATE: OCTOBER 21, 1976

ORIGINATOR'S EXT.: 4686

COUNTRY: ~~MANXXA~~ MANILA

CLASS OF SERVICE: LT elx/REA

CABLE NO. & TEXT:

FOR LANE HOLDCRAFT USAID

YOU ARE INVITED TO PARTICIPATE IN INTERAGENCY WORKSHOP ON MONITORING AND ONGOING EVALUATION OF RURAL DEVELOPMENT PROJECTS TO TAKE PLACE IN COPENHAGEN FROM SIX TO TEN DECEMBER STOP PURPOSES ARE TO ASSESS CURRENT METHODS AND DEVELOP PRACTICAL GUIDELINES STOP COST PER DAY WOULD BE US DOLLARS 38 INCLUDING LODGING AND MEALS STOP PLEASE CONFIRM PARTICIPATION

LEIF CHRISTOFFERSEN
RURAL DEVELOPMENT
INBAFRAD

NOT TO BE TRANSMITTED

REFERENCE:	AUTHORIZED BY *(Name)*: L.E. Christoffersen
DRAFTED BY: G.J. Deboeck	DEPARTMENT: Agriculture & Rural Development
CLEARANCES AND COPY DISTRIBUTION:	SIGNATURE *(Of individual authorized to approve)*:
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Oct 21 11 58 PM 1976

Research-Agric.

October 20, 1976

Mr. Budd L. Hall
Research Officer
International Council for
Adult Education
The Ontario Institute for
Studies in Education
252 Bloor Street West
Toronto, Canada M5S 1V6

Dear Mr. Hall:

Several of us have reviewed your proposal for the development of participatory research in connection with rural development and have the following comments.

Depending upon the emphasis you choose to give, it might be considered (in our terminology) as much operational as research. By this I mean that if the exercise were actually to first identify a target group or learning clientele and then involve members of that group in the identification of its learning needs and in the design of a delivery system to meet those needs, it would come within our definition of operational analysis and conceivably could be of interest to the Bank. A more generalized, and therefore more abstract and less operational, approach would probably arouse less interest.

As for the meeting on November 17-19, for which you have kindly invited our participation, I am not certain whether Clifford Gilpin would be available. If not, we would try to find a substitute, but frankly that too would depend somewhat on the question I have raised above. Another comment I would have is on the proposed membership of the meeting. We know one or two people on your list, but we wonder why there are not more representatives from agencies like the Bank and (if I am correct) a smaller proportion of research specialists. I suggest this not because you might have in mind to involve them later in the financial support of the project but more because the design of the project might benefit from the comments of people with operational concerns.

Finally, I regret to say that we would not be able to contribute to the expenses of the meeting. Our very modest contribution to the preparation for Dar-es-Salaam was unusual and made possible only by the fact that last year I had a small surplus which could be allocated for the preparation of papers. This time we would not be in a position to help.

I would be grateful to have your reaction to these various points and please be assured of our continuing interest in your work.

Sincerely yours,

D S B.

Duncan S. Ballantine
Director
Education Department

DSB/hl

Research Agriculture

FORM NO. 27
(11–75)

WORLD BANK / IFC
OUTGOING MESSAGE FORM
(TELEGRAM/CABLE/TELEX)

☒ IBRD
☐ IDA
☐ IFC
☐ ICSID

TO: DR. J. E. BESSELL
UNIVERSITY OF NOTTINGHAM
SUTTON
LOUGHBOROUGH LEI 25RD
COUNTRY: ENGLAND

DATE: OCTOBER 4, 1976

ORIGINATOR'S EXT.: 5618

CLASS OF SERVICE: LT ITT

CABLE NO. & TEXT:

CANDLER WILL MEET AT STRAND PALACE HOTEL AT 12 NOON OCTOBER 12 STOP REGRET DELAY STOP

MAJOR INTEREST SUPPLY RESPONSE TRADITIONAL PRODUCERS STOP LIKE TO DISCUSS STOP

ONE STRATIFICATION VILLAGERS VS FARMERS STOP

TWO MAJOR CONSTRAINTS TO INCREASE TRADITIONAL PRODUCTION STOP

THREE REGIONAL DIFFERENCES IN TRADITIONAL SUPPLY RESPONSE STOP

FOUR POWER OXEN LABOUR TRACTOR PROFILES FOR TRADITIONAL CROPS STOP

FIVE TRADITIONAL RESPONSE TO PRICES MAIZE AND GROUNDNUTS STOP

SIX WEATHER VS YIELD VARIABILITY STOP

SEVEN FERTILIZER HYBRID SEED MANAGEMENT RESPONSE TRADITIONAL VS COMMERCIAL STOP

EIGHT LABOUR HIRING PRACTICES SUBSISTENCE AND COMMERCIAL SECTORS STOP

NORTON

NOT TO BE TRANSMITTED

REFERENCE:	AUTHORIZED BY *(Name)*: R. D. NORTON
DRAFTED BY: WILFRED CANDLER	DEPARTMENT: DRC
CLEARANCES AND COPY DISTRIBUTION:	SIGNATURE *(Of individual authorized to approve)*: R D Norton
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FORM NO. 27
(11-76)

WORLD BANK / IFC

OUTGOING MESSAGE FORM

(TELEGRAM/CABLE/TELEX)

DISPATCHED

IBRD [X] IDA [ ] IFC [ ] ICSID [ ]

OCT 5 12 20 PM 1976

COMMUNICATIONS

DATE: OCTOBER 4, 1976

ORIGINATOR'S EXT.: 5618

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UNIVERSITY OF NOTTINGHAM
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✓ Research - Agriculture
(Livestock)

October 1, 1976

Mr. Greg Sullivan
Department of Agricultural Economics
Texas A & M University
College Station,
Texas 77843

Dear Greg,

Thank you very much for your letter of September 24, and the enclosed data which I had requested. I share your appreciation of the value for all concerned of the data that you have collected, and would personally welcome the establishment of a formal relationship with Texas A & M for further livestock research in East Africa. I look forward to receiving your preliminary ideas in this regard, so that we could jointly prepare a proposal along the lines we have discussed.

To acquaint Dr. Farris and yourself with the nature of the exercise which I.J. Singh and myself are engaged upon, and the use to which we intend putting your data (hopefully we could jointly interpret results and follow-up the many lines of enquiry that will emerge), I am enclosing the following draft documents for your use and critical comment:

(i) Three memos by Mr. I.J. Singh dated September 14, 20 and 21;

(ii) Draft outline titled "Derivation of Expected Outputs from Traditional Cattle Herd, Mwanza/Shinyanga";

(iii) Tables titled: "Smallstock: Derivation of Technical Coefficients from Texas A & M data", and "Estimation of Expected Outputs from Traditional Flocks using Technical Coefficients derived from Texas A & M data";

(iv) Four handwritten tables outlining analyses of expected outputs from sheep and goat populations in Mwanza and Shinyanga respectively.

The latter three documents require some explanation, as the work depicted has yet to be formally written up. The derivation of outputs from the traditional cattle herd (attempted for an "average herd" straddling both Mwanza and Shinyanga regions and based primarily on Rossiters' data) was prepared primarily to have the methodlogy checked by several livestock colleagues (i.e. the use of a "zero growth" herd projection as the primary analytical tool, combined with your information on the disposal pattern). I now intend to apply this methodology to the data for varying herd sizes supplied by you. The analysis

cannot be fully completed until I receive from you the requested breakdown of animal disposal data by herd size category. Ultimately I hope that you can supply the same matrices broken down to the district level, which will enable us to re-aggregate them to conform to the four basic agro-economic models used for the cropping systems model. The results will be incorporated into our agro-economic model in a way reflecting the ownership pattern of cattle in villages surveyed by our preparation team.

The analyses of sheep and goats will be similarly incorporated, although until you can supply the data broken down by flock-size categgry and by district, the analyses shown are as refined as possible. The "equilibrium" herd compositions shown in the tables were arrived at after a laborious iterative procedure, for which I have prepared a table describing the procedures and set of assumptions necessary to complete the exercise. You may wish to adapt the methodology for your own work.

"I.J." and myself are excited about the possibilities inherent in the model being assembled, and feel that the data being used for both crop and livestock components is of high quality. Please feel assured that we will continue to fully reference the sources of data used in internal and external documents, and hopefully to involve you closely in the work as it proceeds.

Once again, thank you for the valuable data and your continuing interest in our work. Keep in touch.

Yours sincerely,

James P. Edgerton
Rural Development Division

JEdgerton:pm

Attachments: 4

cc: Messrs. I.J. Singh and D.Sutherland
Division File

Research Agriculture

Mr. Don Stoops and Persons Listed Below September 28, 1976

August Schumacher

Research Proposal Submission Titled: "Latin American Beef Policy"

1. Attached is a submission for IBRD funding ($81,750) for a three-year study of government policy in Latin America in relation to beef production and marketing. Dr. Simpson a recent PHd from Texas A and M, has proposed that he spend about three quarters of his time in undertaking the study. I attach a summary of his proposal. He has written extensively on Latin American beef subjects from the economic and financial viewpoint.

2. From a quick review of his proposal, I don't think it would add a great deal to what we already know about the problems and policies of the Latin American beef sector. It would have been much more useful if it were to analyze "Livestock System, Government Policy and Lending Agency Policies".

3. My suggestion is that the Bank reject his proposal and suggest he approach other sources of finance, particularly CIAT, the Inter-American Development Bank and AID.

Messrs: C. Bruce
P. Goffin
K. Haasjes
P. Kirpich
D. Sutherland
Ms. F. Stone
C. Finne

ASchumacher/cp

Research Agriculture

All Those Concerned

September 28, 1976

Graham Donaldson GFD

Seminar: "Progress of IRRI Small Farm Machinery"

Dr. Bart Duff, Head, Agricultural Engineering Department at the International Rice Research Institute in the Philippines will give a seminar in the Bank on:

"Progress with the Development and Use of IRRI Small Farm Machinery"

in Room D556

on Tuesday, October 12, 1976

at 2.30 p.m.

All persons interested are invited to attend.

cc: Messrs.

Yudelman	Goffin	Rowe
Darnell	Haynes	van Gigch
Christoffersen	Hendry	Vergin
Grimes	Gittinger	Scandizzo
Bruce	Turnham	Hazell
Burki	Weiss	Hofmeister
Coulter	Downing	Kaneda
Leiserson	Gafsi	Pickering
McInerney	Peprah	Allison

GFDonaldson:mt

Research Agriculture
(Rural Dev)

Mr. Alun Morris

September 24, 1976

August Schumacher

Attached Notes on "Lending for Rural Development"

Leif Christoffersen has asked me to attend a Conference on Rural Development to be held at Michigan State on September 26-28th. You may recall my earlier note to you on this subject, as you had asked for a copy of the "Note on Mexican PIDER Project" which we subsequently sent to the Director, Dr. Niehoff for conference distribution. They have also asked that the Bank provide a copy of Mr. Noone's film on Mexico to start off the Conference. Following the film, Dr. Niehoff has asked me to talk informally for about 20 minutes on the Bank's involvement in rural development, with particular reference to Mexico. The attached paper contains the notes for that discussion.

cc: Mr. D. Turnham
ASchumacher/cp

E. Asia Files

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

Research - Agriculture

OFFICE MEMORANDUM

TO: Mr. H. Vergin

DATE: September 22, 1976

FROM: Owen T.W. Price

SUBJECT: Land Settlement Issues Paper Dated July 16, 1976

1. As might be expected, many divisional staff members read the Land Settlement Issues Paper (Settlement Paper) and I attach their comments for your perusal should you so desire. In this note I will attempt to briefly summarize the main comments and reactions to the Settlement Paper.

Reactions to Settlement Paper

2. There was a general feeling that the paper would benefit if it was substantially reduced in length. As now written, the issues, which according to the title one would expect to see highlighted and discussed, get lost in the verbiage. If at the start of the paper the author enumerated the issues to be discussed, it would greatly aid the reader and also help to better focus the paper on its stated purpose, and, thus avoid much of the present discussion which at best should be relegated to annexes.

3. Partly as a consequence of the lack of a clear focus in the paper, precious little operational or policy guidance is given. If the paper is re-written along the lines suggested in paragraph 2, this would help somewhat but the problem may be more basic. In settlement projects there are generally multiple objectives (some conflicting and some complementary) that one is attempting to achieve subject to many constraints (shortages of capital, technical knowledge, trained manpower to name but a few). It is on the trade-offs between different objectives that conflict arises and, unfortunately, the paper provides little guidance or even discussion of some of these issues - issues that have taken so much of this Regions time in the case of Indonesia. Some of these issues (and these have not been addressed) are:

a) trade-off between growth and equity in the short and long run;

b) trade-off between minimizing investment per family and maximizing cost recovery while simultaneiously achieving an agreed target income per family;

c) trade-off between minimizing investment per family to achieve a target income and the fact that, in many cases, risk increases dramatically as investment declines because the technology is essentially untested, and the smallholder response and effectiveness of the support services are unknown in many cases; and

d) formulation of target incomes.

4. If, as is generally conceded, the impact of settlement type projects will be insignificant (regardless of how designed) in alleviating population pressure in countries such as Indonesia compared to other policy options such as stepped up efforts in population control, then is it at all clear what weight should be given to increasing the number of settlers per unit of capital above that determined by strictly efficiency criteria? The paper appears to advocate a policy of designing projects so as to increase the number of jobs created in the short-run from a given stock of capital above that determined by strictly efficiency criteria. Is this consistent with a policy of maximizing employment over the intermediate or longer term, which, in the case of Indonesia, very possibly should be of greater concern than the short run?

Summary

5. In summary, the paper neither clearly enumerates the relevant issues and basic choices that need to be made, nor provides much policy guidance on how to resolve issues in settlement.

MJMcCarry

cc: AEPGA Operational Staff

Attachments

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. O.T.W. Price

DATE: September 13, 1976

FROM: B.S. Gray

SUBJECT: Land Settlement Draft Issues Paper

General

1. The paper appears rather a biased document, continually (and unsuccessfully) trying to justify the views of the "social-welfare" proponents in the Bank. It appears more concerned with supporting these views than in providing genuine assistance to the lower levels where project appraisal is carried out.

2. In fact, because of the lack of clear cut policy directives, the paper provides little if any real assistance to an appraisal mission. No light is shed upon the problems with which we have grappled so wastefully in both the Transmigration I and NES I projects. These are:-

- the balance between economic efficiency and social income distributional goals
- cost recovery policy
- formulation of target incomes
- the acceptable level of project risk

3. Rather than determine major Bank policy through desk studies, a more practical approach would be for a small team of experienced project staff to make field visits to a wide range of selected projects and then provide recommendations on settlement policy.

Specific Points

4. P. 23 para 9

"Successful settlement from the Bank's viewpoint may be considered ...." Bank opinion can change quite drastically over periods which are relatively short in relation to the length of settlement programs. It would be safer to also consider the elements of success considered important by those Governments with viable settlement programs.

5. P. 24 para 12

The conclusion of the Nelson study "that few spheres of economic development have a history of, or reputation for, failure to match that of government-sponsored colonisation in the humid tropics" is much too general a statement. A reasonable conclusion from such a statement, however, might be that settlement should be implemented by autonomous agencies.

6. P. 27 para 16

The comment that the Malaysian settlement program is not viewed as cost effective in terms of poverty amelioration would not be agreed by this Division.

7. P.32 para 3

Others will comment on the error in Jenka I costs.

8. P49 para 5
What are "adequate" rates of return?

9. P.54 paras 11 and 12
As usual the proponents of the low cost approach do not define what this means. Does it refer to costs of (a) management (b) infrastructure, (c) material inputs per unit area, (d) labor inputs or (e) size of farm. A useful analysis would examine in which of these cost items, there are opportunities for cost reduction.

10. P.58 para 19-21
A two phase approach could be difficult in a tree crop project or in a Bank project with a 5 year disbursement period.

11. P68 para 37
What is a "modest" element of subsidy?

12. P70 para 41
There are further difficulties of freehold tenure of small farms. These relate to problems of inheritance and population increase which may prevent efficient farming.

13. It is unclear whether full support is being given to public sector estates as a means of development with known cropping systems.

14. P83 para 4
Others will discuss the danger of the US$7000 figure.

BSGray:bf

cc: P. Melkye, M. McGarry

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. Owen T. Price DATE: September 20, 1976

FROM: Paul Lax

SUBJECT: Comments on the Draft Issues Paper "The World Bank and the Settlement of Agricultural Lands"

General

1. One would expect from an Issues Paper some guidance on questions and issues which have proven problematic in project formulation. Even though there can be no pat answers to the complicated issues raised, the principles involved in the resolution of issues could possibly lead to some innovative operational guidelines and be illustrated by some precedents. However, the paper does not seem to come nearer to a resolution of the various issues which we must deal with in project work. I would illustrate this with reference to the issues which are particularly relevant to our Division's work on land-settlement in Malaysia and in Indonesia.

The Issue of Cost Recovery

2. The principle of cost recovery is in direct conflict with the policy objective of reducing costs per settlers: the more costs are recovered the greater must be the holding size and the greater the development costs. In Indonesia, a recent policy change to reduce cost per settlers by reducing the area under rubber from three to two hectares has necessitated an increased proportion of farm investments to be passed on as grants to settlers. In the Malaysian FELDA projects, upwards of 50% of settler's gross revenues goes into loan repayments, that is, the same income target could be achieved on about half the farm size and half the investment cost per settler. Should our policy be to urge the Malaysian Government to abandon or modify their cost recovery policies in the quest for a lower cost settlement? Should the cropping pattern proposed in our projects be influenced by considerations of cost recovery?1/ Such are the concrete and important questions with immediate bearing on our work. We need policy guidance, or at least a policy framework, which transcends ambiguity.

The ambiguity of the paper's policy statements is only paralleled by the necessary arbitrariness of such numerical guidelines as "development

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1/ A full cost recovery policy will normally discriminate in favor of cashcrop production, even where subsistence production could greatly contribute to full labor utilization and averting the risks of monoculture. It is not a coincidence that a policy of cost recovery usually coincides with monoculturalism. Monoculture also tends to add to costs per settler in that the holding size must be large enough to provide the settler with a margin against unfavorable price developments. The target income must be higher than that for a settler with a reasonably diversified cropping pattern.

costs per beneficiary family in rainfed settlements on average (?) should not exceed about US$ 7,000 (in 1975 dollars)" (p.7) and that "a target income at project maturity at least 25% greater than expected average rural incomes at that time, seems appropriate. 1/ Such guidelines are practically meaningless in evaluating very diverse projects, and their adoption as official policy would only lead to an even more bureaucratized decision-making process.

Statistics on Malaysia: A Point of Accuracy

FELDA's land development schemes are cited in several instances as the extreme example of capital-intensive development. While this example may be appropriate, the supporting statistics are wrong or misleading: on pages 3, 32, and 33, project costs per direct beneficiary are cited at $ 28,000 for the Jengka I Project (Loan 533-MA), where the holding size was 10 acres per settler. In fact, the appraisal estimates and the actual costs were as follows:

	Appraisal Estimates in 1968 Prices	Actual Costs in Current Prices 1968-1975
FELDA Expenditures		
Field Development (10 acres)	3,550	3,850
House and Housing Development	630	740
Processing Facilities	960	1,510
Field Management	1,170	1,720
	6,310	7,820
Direct Government Expenditures		
Village Development and Social Infrastructure	2,560	3,710
Total	8,870	11,530

These costs include infrastructure development and management over a six-year period; costs which are not always included in the definition of direct costs

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1/ Such a criterion is open to endless manipulation. FELDA settlements are most often accused of creating rural elites (although this is probably more true in a political than an economic sense). However, the Johore appraisal (Loan 967-MA) report argued that assuming a "3.5% increase in annual growth rate in real family income in the smallholder sector" the average smallholder will be about as well off in the year 2000 as a FELDA settler. (Annex 4, Page 3, Table 1 in the Green-Cover Report.)

per beneficiary. (Project costs per settler in the more expensive 14 acre holding of Johore and Keratong scheme were US$ 16,500 and 19,400 in constant 1973 and 1974 dollars respectively.)

5. On pages 6 and 34, the paper states that the ratio of target incomes to average rural incomes under the Keratong Land Settlement Project is 8.3. While I am not acquainted with the basis of the calculation the impression conveyed is certainly misleading. The Government's explicit income target for FELDA settlers, in the period between, say, 1972 1/ and 1975, when both the Johore and Keratong projects were appraised, was M$ 300/month, or about US$ 1,500 per year. The farm budget in the Keratong project shows a net income roughly the double of the income projected in the Johore project because of a much more optimistic price projection for palm oil. While the Keratong projection, whether right or wrong, does not express the Government's income target, actual incomes of FELDA settlers range between about M$ 100 to M$ 400 per family per month (US$ 500 to US$ 2,000/year) per year, depending on prices, yields, and loan obligations. Cash incomes of settlers applicants are estimated at about US$ 350 per family/year. Applicants are landless, and their incomes are certainly below average rural incomes. A freeholder with about 6 acres of reasonable rubber who would be an "average" smallholder would have a net income roughly commensurate with FELDA settlers (see also footnote 1 on page 2).

Lending for Government Estates: An Issue for Discussion

6. The paper questions, implicitly, whether the Bank should at all finance Government Estates and State farms.

7. There is a close link between high development costs and estate management. Low-cost schemes are most often low cost because the settler is his own manager and the investment his own labor. It is possible, though rarely ever optimal, to settle people by handing them an axe and a shovel, and before all land. In low-cost settlements farmers have clear title to the land and its produce from early on. Such settlements only work where rewards are commensurate with effort. In estate type projects, on the other hand all factors of production are hired, and land and its use remains the Government's property. (This is ultimately true of FELDA schemes where an uneasy hybrid form of tenure is developing.)

8. It does not help to clarify issues to compare the development cost of individualistic self-help settlements with the investment costs of commercial ventures. If anything, government estates should be compared with industry or transportation rather than with smallholder type settlement in comparing investments per jobs created.

1/ When settlers' holdings were increased from 10 to 12 acres for rubber and farm 10 to 14 acres for oil palm.

9. Agriculture, unlike modern industry, offers the greatest opportunity for fostering a large class of self-employed entrepreneurs. The Bank may want to support smallholder-oriented projects to the exclusion of estate projects, for instance in Malaysia and Indonesia, where the estate sector is well-established and is not in need of financial or technical assistance, and where the smallholder sector has been relatively neglected, and its development is a priority of the Government. If it is the Bank's policy to support smallholders sector rather than the estate sector, this should be clearly stated; the discussion in terms of costs per settler/employee only obscures the choice between two competing forms of organization and even philosophy.

10. In Malaysia, independent smallholders, private estates, and FELDA 1/ coexist in the rubber sector. In Indonesia, public estates inherit the old colonial estates and coexist with a rather inefficient smallholder sector. It should be recognized that each of these sectors may have a legitimate role in the Government's parallel pursuit of several competing objectives. Public policy is always pursuing several competing goals at the same time. As far as publicly financed projects are concerned, a balance between competing objectives is often struck by pursuing one objective in one project and another objective with another type of project. The point bears directly on methods of project evaluation. The proposed methodology, rather than recognizing that different projects may serve different objectives single-mindedly, would have us apply the same weighted objectives for all projects, with some optimal weighting system applied to different objectives such as profits, employment, and income distribution. The implicit compromise between several competing objectives within the same project may after all be fundamentally unsound, and satisfy no one. For instance, some of our colleagues have recently argued that smallholders in Malaysia should cultivate rubber instead of palm oil, even though palm oil appeared more profitable, since rubber was more labor-intensive, and hence would have a higher economic, albeit lower financial rate of return. Essentially they were asking smallholders to work harder for less money in a project whose primary purpose is the raising of smallholder incomes, ignoring that a project with factor use in accordance with shadow-pricing always involves a subsidy, which ought to be paid by the Government rather than the smallholder beneficiaries. This rather theoretical point 2/ bears also on concrete problems of project formulation where financial and managerial considerations have an important role while they cannot be taken into account in economic analysis.

11. For instance, several Bank missions have urged FELDA to modify its settlement method so as to generate a diversified farming-system, where only part of the holding would initially be developed to tree-crops, and the

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1/ (FELDA's program clearly subordinates social and employment objectives to Government profits and foreign exchange earnings, but the system of tenure and income determination are a deviation from a pure estate system.)

2/ Which can be restated by saying that one cannot reconcile n + 1 competing objectives with n variables i.e. factor prices.

other part would be developed by the settlers for subsistence production and livestock. This is in fact the most significant possibility to reduce project costs per settler, short of reducing the holding size.

12. The proposal, while reasonable on paper, has so far been totally unpalatable to FELDA. This is not surprising, since their entire field management is geared to estate management, and since they do not have a capability to prepare and implement a diversified cropping patterns in settlement. More importantly, they do not want to develop such a capability since they deem themselves primarily a commercial enterprise; and have no interest in giving land to the farmers' own use. In fact they would lose considerable management control if farmers would have their own land on which they could produce whatever they liked and would not have to depend on FELDA for wage income (and later, on a fraction of gross revenues after loan repayments and FELDA expenses and profit margins have been duly reduced). It is just very difficult to marry an estate system with a freeholding system under the same management. Besides why should FELDA (they say), give up rubber land for lower value subsistence or livestock productions. That this might reduce the Government's investment, reduce the commercial risks inherent in monoculture, and in the long run lead to fuller and perhaps higher value utilization of labor does not enter FELDA's calculus: they are assured of Government finance and pass on the risk to the settlers.

13. The point is that it might be more productive to pursue one objective at a time with projects. For instance, instead of trying to "reform" FELDA, it might be more productive to work with a different agency whose objective are clearly defined from the beginning of the project as the creation of viable and self-reliant smallholdings with the minimum Government expenditure. Our proposed methodology for project evaluation is too gross to take such arguments into account.

PDAX:adf

OFFICE MEMORANDUM

TO: Mr. Owen T.W. Price DATE: September 9, 1976

FROM: M.J. McGarry

SUBJECT: Land Settlement Draft Issues Paper

1. I enjoyed reading the above paper very much and yet after finishing the entire 100 pages I was left with the feeling that I really hadn't learned all that much that was new. I regard it as useful and valuable to have a paper which covers in some detail all that is known on this subject, but because so little is known it really serves no useful purpose to occupy 100 pages in doing so. Consequently, my first recommendation is that the paper be drastically reduced in length.

2. The paper also contains more than the usual number of platitudes. A cursory reading leaves the feeling that something worthwhile is being said whereas a closer inspection reveals a lack of operational or policy guidance, e.g. the paper considers that successful settlement projects from the Bank's viewpoint would be projects characterized by efficient production systems, equitable income distribution, social justice and protection of the environment (p. 23, para 9). I find it difficult to imagine much disagreement with statements such as the above, but, equally I find it difficult to see that they serve much purpose. It is on the trade-offs between different objectives that conflict likely arises and, unfortunately, the paper provides precious little guidance on such matters.

3. One strength of the paper is that it states quite clearly that more research is needed on a host of technical problems in tropical areas before a reasonable level of technical knowledge will exist. I feel, however, that it inadequately pursues the implications of this for settlement projects which will be implemented before such knowledge is generated. An analysis of likely risks would be pertinent and some guidance as to what the Bank's stance should be in this period. Is this not at the heart of the present disagreements on settlement in Indonesia?

4. I have a basic disagreement with the statement on p. 50: "To facilitate rational decisions with respect to project choice, appraisal of future settlement projects should, wherever possible, include estimates of financial, economic and social returns in accordance with the new methodology." Choices between projects are simply not made at the appraisal stage. The real choices are made at a much earlier stage and unfortunately we pay too little attention to this fact and overemphasize analysis at appraisal when only marginal changes in project design are generally made.

5. There is a mistake in the formula given on page 2 of Annex 3 and I have discussed this with Mr. Goering and in the next draft he will make the necessary corrections.

6. In summary, I agree with the main conclusions of the paper but I feel the paper is too verbose and that it should pursue in more detail the implications for the Bank of the present very limited knowledge of alternative cropping patterns that are possible over the long-run in tropical type soils. Livestock, forestry and tree-crops would probably minimize risk and best protect the environment, but they are certainly not the ones that first come to mind if the objective is to settle families on a few ha at low cost in terms of public investment per family. One thinks instead of food crops but perceived risks escalate because there is so little relevant experience. In view of this, what should Bank policy be? I feel the paper could be strengthened by confronting this issue which I regard as the central issue in settlement in Indonesia.

cc: Mr. Gray

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. O.T.W. Price

DATE: Sept. 9, 1976

FROM: Jose Andreu

SUBJECT: Comments on Land Settlement Draft Issues Paper

1. The report seems to me too long, repetitive and containing a number of statements with which it is very difficult to disagree but which need to be refined for practical application.

2. The basic issue in land settlement is the planting of well known tree crops with assured markets versus annual cropping based on very rudimentary technical knowledge of sustained production in the humid sub tropical and tropical areas with uncertain marketing arrangements. I believe that a combination of the two should be pursued wherever possible and that the role of permanent tree crops should be emphasised inasmuch as they provide the security of cash income which is an essential complement to the subsistence requirements of settlers.

3. Reference should be made to the need for two-way communication between project authorities and beneficiaries and to the accountability of the former to the latter.

4. Perhaps it would be useful also to mention that the introduction of new techniques should be made gradually with the full understanding and cooperation of all beneficiaries. This method will most likely increase returns above those obtained under more attractive (on paper) technology packages.

5. The political aspects of settlement should not be ignored. If only smallholders benefit from schemes, middle size and bigger landowners with much political clout may oppose the schemes and slow or block altogether their implementation.

6. We should keep in mind that many rural people are interested more in a steady income than in owning a piece of land. This is a strong argument for consideration of settlement based on estate development.

7. The statement that "The performance of Bank-assisted projects appears to be superior....." (para 7) is unwarranted if for no other reason that the Bank has benefitted much from the experience of governments and other development insttiutions (Inter-American Development Bank) which did the pioneering work in the field of land settlement.

JAndreu:bf

OFFICE MEMORANDUM

TO: Mr. O. Price DATE: September 15, 1976

FROM: Michael Beenstock

SUBJECT: Land Settlement Draft Issues Paper

At this early stage I would not wish to comment on the details of the paper. However, I hope initial reactions on some of its general principles will not go amiss. With this in mind I would like to identify three main areas where clarification and possibly further consideration might be useful. The first relates to the so-called "New Bank Methodology" of investment appraisal described on page 50. The second is the appropriate financial policy for particular projects with particular reference to the provision of grants rather than loans. The third relates to the choice between land resettlement and competing investment opportunities.

1. The New Bank Methodology (NBM)

The NBM on investment appraisal proceeds from the premise that the classical rate of return criterion might be anti-social in the sense that it might conflict with objectives for income distribution and employment generation. Accordingly the NBM would tend to favor projects where unit family costs were low.

Perhaps the NBM has already received a scientific exposition elsewhere. But as it stands the Paper gives the impression that the NBM falls short of being a methodology which may be applied without creating undue controversy. Instead it appears to be an almost infinitely elastic concept which could always be stretched to satisfy every project appraisor in a different and equally 'meaningful' way.

However, in the first instance it is not obvious that the NBM's basic premise is correct. Secondly, in a 'second best' (in the economic sense) world i.e. where the rate of return criterion happened to conflict with other social objectives the neo-classical approach to investment appraisal could be augmented to allow for premia on social objectives such as employment, income distribution etc. However, these premia along with shadow wage rates etc. would be directly incorporated into the cost benefit calculation and would have to be pre-stated in as scientific a fashion as possible, as is the case with shadow prices and the such like. Otherwise the NBM could lead to the unreasonable conclusion that investments be spread with ineffectual thinness over as large a population as possible.

Income distribution and income creation, in the first instance, should be considered as separate issues which as policy objectives require separate policy instruments. Normally income distribution is essentially a fiscal matter and it would be inefficient to use investment policy to achieve income distribution objectives. Investments which earn the highest social rates of return would generate the greatest social incomes which through an appropriate tax structure would provide the greatest possible base for satisfying income distribution objectives. Under these circumstances

the rate of return criterion does not conflict with income distribution objectives; it complements them. Mirrlees and Atkinson among others have discussed how there could be a conflict at some stage where progressive tax structures might reduce investment and work incentives to a level where the poor suffer instead of benefiting. However, the basic complementarity between income distribution and creation would seem to be clear.

There could be a conflict between income and employment creation. But presumably the main concern of the poor is to obtain income in the first instance rather than work of a lower than otherwise average productivity. However, if we prejudge this not to be so - and we would need very strong justification for so doing - a scientifically appraised employment premium should be incorporated in the standard cost-benefit analysis. Only in this way could the area of ambiguity be reduced.

The fallacy in the employment objective can readily be seen in the case of most oil investment where pre-tax rates of return at present world oil prices are very high, but where employment creation tends to be very low. The employment objective of the NBM would tend to preclude oil development when through the tax structure it may provide significant and desirable amounts of income for the population as a whole. What is true for oil investment is also true in principle for land resettlement; the tax system is the instrument for the redistribution of income and the rate of return criterion indicates where the most income might be created.

But if the tax system is inadequate and cannot be improved and if no other methods for income redistribution are available it may be necessary in this 'second best' situation to incorporate a distribution premium alongside any employment premia into the standard cost-benefit analysis. Once again this premium would have to be scientifically appraised.

2. Grants or Subsidies

The Paper does not sufficiently clarify the criteria for providing a settler with a grant which provides no cost-recovery rather than a loan which does. Moreover, if settlers should be subsidized is it more efficient to provide a grant or a loan at a subsidized rate of interest or some combination of the two? Once again these issues may have been elucidated elsewhere e.g. in Ray's paper.

In the first instance, however, a subsidized loan would be more efficient than a grant since the marginal costs of the loan could be more easily brought into line with the marginal stream of benefits. However, the case for a subsidy would tend to rest on the presence of externalities which create a divergence between the private and social rates of return. If e.g. the social rate of return is 15% on the marginal project whereas the private rate of return is only 12% the loan should be subsidized by three percentage points (or thereabouts). Cost recovery itself would not be a prime criterion. What counts is social cost recovery but this would in any event be reflected in the social rate of return.

3. Land Resettlement versus Other Investments

The Paper does not place land resettlement in its wider context. Perhaps this was not the intention. Nevertheless, the case for resettlement is only a relative one where resources are scarce. In the Indonesian context where transmigration and land resettlement are so interwoven this is particularly important. For example there may be industrial and other projects in Java which enjoy higher expected social rates of return than resettlement projects in Sumatera. Indeed, under-employment in Java and the ostensible need for transmigration might be the symptom of a failure to realize on industrial and other investments in Java on account of macro rather than micro economic considerations such as the possible deflationary effects on the economy of a fixed exchange rate at a time of domestic inflation.

No doubt, at some stage, those issues would be covered in a Programs Paper.

4. Other Issues

i) The Role of Planning:-

The role of government and planning in resettlement is not clearly defined, yet we are told that post mortems indicate that the spontaneous settlements have on the whole been no more unsuccessful than their planned counterparts. Nevertheless, it appears to be taken as axiomatic that planning and government participation is desirable and the spontaneous settlement is harmful. Apart from the provision of infra-structure, the dissemination of information and the provision of scientifically derived subsidies it is not clear what the role of planning is. A crucial question here is who perceives the risk better, the planners or the settlers themselves?

Related to this is the bias towards comprehensive rather than piecemeal planning. After all, the history of the resettlement of the USA is one of competitive provision of finance within a piecemeal context. At some stage the quantitative nature of any planning would have to be justified. My guess is that the spontaneous settlers like the frontiersmen of the last century should provide the basis for investment in resettlement rather than investing in planned resettlement per se unless there are outstanding reasons for so doing.

ii) The Resettlement Premium:-

It is argued that settlers should be offered a 25% income premium as an incentive. If there is so much spontaneous migration it is not clear why such an incentive is required. The appropriate transfer income would be based on the observed income of those who had already resettled. In the absence of spontaneous settlement, most probably a 25% premium would not be sufficient in the light of empirical studies of risk. But under these circumstances the rate of return on resettlement would in any event tend to be manifestly low.

cc: Messrs. Blackwood
McGarry ✓
Gray

mb/mh

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. Owen Price

DATE: September 13, 1976

FROM: W.P. Panton

SUBJECT: Land Settlement Issues Paper
- July 16, 1976 Draft

I do not envy the author(s) of this paper. They seem to have been changed not only with the task of comparing apples to oranges, but also of transforming them to lemons!

Attempting to prepare such a precise policy mould for Bank project appraisal staff guidance (if that is the intention?) out of the numerous issues, many of which could be similarly debated for almost any other Bank agricultural project, is in my opinion highly stultifying, and not worth the effort. In fact, I would go as far as to describe it as potentially harmful to some of our borrowers and unnecessarily restrictive to our agricultural lending program ($7,000 investment costs per family; 25% above average rural income target for beneficiaries are cases in point), if only for the reason that, even on the evidence given in the report itself, we could miss out on some potentially "good" projects, and thereby increase the proportion of "poor" projects.

I find some difficulty in focusing on the issues with which the paper is concerned -- what exactly are they? how many are there? and are they issues anyway? they are not conveniently summarized, but are seemingly submerged in a text, which, while highly informative in many respects, detracts attention from the Issues. I suggest therefore that the report is too long for its own good. There are also too many platitudes and statements of the obvious for my taste.

I have no quarrel with the statements regarding more problem-oriented research (pp 44-45) aimed at improving techniques for settlement of the marginal land which constitute the bulk of the areas available for settlement, but I cannot see how it ranks as a project-oriented issue and therefore warrants such emphasis.

Likewise, the land resource review (pp 38-43) is interesting, but hardly relevant to the title, and might perhaps be more appropriately transferred to an annex.

As for the annexes - Annex 1, Table 1 strained my eyesight considerably, but proved to be a useful summary when examined under a hand lens; Annex 3 concerning the economics of mechanized and manual clearing seems rather too theoretical to be of much practical value, at least for Bank appraisal purposes; while Annex 4, on the use of

remote sensing imagery struck me as being of very limited relevance to the title, or contents, of the main paper. However, if an annex is felt necessary to stress the importance of sound site selection or to advise Bank staff or governments on how to go about it, I recommend that it deals objectively with the entire process of surveying, land quality assessment, and site selection, rather than concentrating on only an aid, albeit a very new and important aid, in this highly technical process. Otherwise the annex stands as a good example of tail wagging dog.

I have many marginal comments on my copy of the draft, which I would be pleased to discuss with the author(s), and I suspect that other division staff will have similar comments. Perhaps we could meet for an hour or so in the division some time this week for the purpose of consolidating our views?

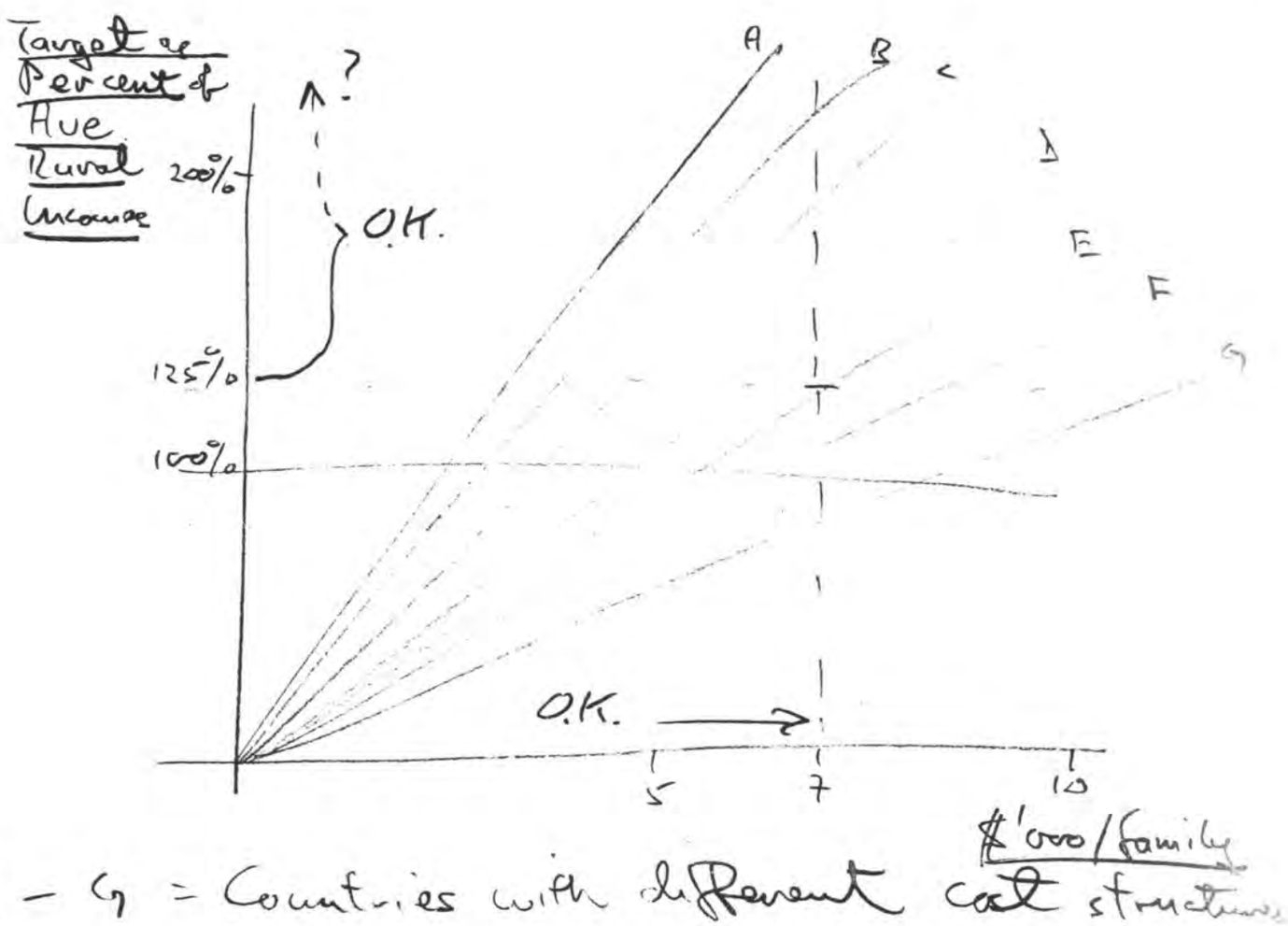
WPPanton/ag

Draft
A.J. Blackwood:gcr
September 9, 1976

TO: Mr. Owen T. Price
From: A.J. Blackwood
Subject: Land Settlement Draft Paper

Some points worth discussing might be:-

1. Effects of a floor target income and a ceiling cost per family (see below)
2. Practicality of introducing a universal maximum US$ cost/family criterion, in the absence of especially purchasing power adjustments but also other country/project specific considerations.
3. In any case the US$7,000 figure seems too high, particularly for low cost countries, and would catch only the more costly settlement projects (in US$ terms) while permitting perhaps less rigorous justification of lower cost (lower facilities?) projects.



WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. O.T. Price

DATE: September 9, 1976

FROM: Theun Prins

SUBJECT: Land Settlement Draft Issues Paper

1. I have the feeling that trying to find a valid common denominator to be used as a yard stick in future Bank projects for different land development projects in different countries is an absolute waste of time. These projects are all unique regarding soils, climate, people and their motivations and aspirations, Government policies, exchange rates etc., etc., and have to be evaluated on their own. What is done in the draft paper is comparing apples with oranges; no workable recommendations can be made.

2. The cost figure of US$ 7,000 per settler family (para 12 d) I would like to see critically examined. I would like to know the breakdown of this figure and how it applies to the project examples given. I prefer to start working from the bottom up instead of from the top down: which are the requirements to make a land development/settlement project an economic success from the smallholders' and from the country's point of view.

3. I sincerely wonder if a projected farm income earned in a land development/settlement project of 25% above the expected rural income will be sufficient incentive to attract droves of enthusiastic settlers willing to leave the home area and relatives behind and to start a new life somewhere else. I would like to have this figure critically examined against experiences in such projects and against smallholders' aspirations.

TPrins:adf

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. Owen Price DATE: September 9, 197[illegible]

FROM: K. Arichandran

SUBJECT: Land Settlement Draft Issues Paper

My comments on above issues paper are as follows:

I. Target Income

1.1 The draft issues paper suggests that at project maturity a target income which exceeds expected average rural income by at least 25% seems appropriate. The paper however does not define target income - (ie) whether it is net farm income before income tax, if any and/or debt repayment or after such deductions. If target income means income after income tax and/or debt repayment then we will be talking about target cash flow rather than target income. This cash flow will, in certain cases, be significantly greater after repayment of the "debt".

1.2 It should be noted that if we compare the average rural income[1/] with the net cash flow of the settler at project maturity, we may be comparing two different positions. In the latter case the settler will own a house and also hold title to a plantation property (however small it may be) whereas earlier he would probably have been a mere wage earner. Whatever basis is adopted, the term "target income" should be defined.

II. Public Sector Development Costs

2.1 In deciding on the above costs, sufficient attention should be paid to the facilities which would be required to attract "sufficient financial, technical and administrative support". A mere provision of "much more attractive terms of service" will not necessarily induce staff with the required expertise to spend some years in distant settlements. It is not an uncommon feature in some countries[2/] for specialist staff to run two homes, one in the settlement area and the other in a developed area to enable their children to have a proper education. This is an undesirable situation.

1/ The rural wage?
2/ Indonesia, Malaysia

KArichandran/ag

INTERNATIONAL DEVELOPMENT ASSOCIATION | INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT | INTERNATIONAL FINANCE CORPORATION

Research Agriculture

OFFICE MEMORANDUM

TO: Mr. O. Price

DATE: September 15, 1976

FROM: Michael Beenstock

SUBJECT: Land Settlement Draft Issues Paper

At this early stage I would not wish to comment on the details of the paper. However, I hope initial reactions on some of its general principles will not go amiss. With this in mind I would like to identify three main areas where clarification and possibly further consideration might be useful. The first relates to the so-called "New Bank Methodology" of investment appraisal described on page 50. The second is the appropriate financial policy for particular projects with particular reference to the provision of grants rather than loans. The third relates to the choice between land resettlement and competing investment opportunities.

1. The New Bank Methodology (NBM)

The NBM on investment appraisal proceeds from the premise that the classical rate of return criterion might be anti-social in the sense that it might conflict with objectives for income distribution and employment generation. Accordingly the NBM would tend to favor projects where unit family costs were low.

Perhaps the NBM has already received a scientific exposition elsewhere. But as it stands the Paper gives the impression that the NBM falls short of being a methodology which may be applied without creating undue controversy. Instead it appears to be an almost infinitely elastic concept which could always be stretched to satisfy every project appraisor in a different and equally 'meaningful' way.

However, in the first instance it is not obvious that the NBM's basic premise is correct. Secondly, in a 'second best' (in the economic sense) world i.e. where the rate of return criterion happened to conflict with other social objectives the neo-classical approach to investment appraisal could be augmented to allow for premia on social objectives such as employment, income distribution etc. However, these premia along with shadow wage rates etc. would be directly incorporated into the cost benefit calculation and would have to be pre-stated in as scientific a fashion as possible, as is the case with shadow prices and the such like. Otherwise the NBM could lead to the unreasonable conclusion that investments be spread with ineffectual thinness over as large a population as possible.

Income distribution and income creation, in the first instance, should be considered as separate issues which as policy objectives require separate policy instruments. Normally income distribution is essentially a fiscal matter and it would be inefficient to use investment policy to achieve income distribution objectives. Investments which earn the highest social rates of return would generate the greatest social incomes which through an appropriate tax structure would provide the greatest possible base for satisfying income distribution objectives. Under these circumstances

the rate of return criterion does not conflict with income distribution objectives; it complements them. Mirrlees and Atkinson among others have discussed how there could be a conflict at some stage where progressive tax structures might reduce investment and work incentives to a level where the poor suffer instead of benefiting. However, the basic complementarity between income distribution and creation would seem to be clear.

There could be a conflict between income and employment creation. But presumably the main concern of the poor is to obtain income in the first instance rather than work of a lower than otherwise average productivity. However, if we prejudge this not to be so - and we would need very strong justification for so doing - a scientifically appraised employment premium should be incorporated in the standard cost-benefit analysis. Only in this way could the area of ambiguity be reduced.

The fallacy in the employment objective can readily be seen in the case of most oil investment where pre-tax rates of return at present world oil prices are very high, but where employment creation tends to be very low. The employment objective of the NBM would tend to preclude oil development when through the tax structure it may provide significant and desirable amounts of income for the population as a whole. What is true for oil investment is also true in principle for land resettlement; the tax system is the instrument for the redistribution of income and the rate of return criterion indicates where the most income might be created.

But if the tax system is inadequate and cannot be improved and if no other methods for income redistribution are available it may be necessary in this 'second best' situation to incorporate a distribution premium alongside any employment premia into the standard cost-benefit analysis. Once again this premium would have to be scientifically appraised.

2. Grants or Subsidies

The Paper does not sufficiently clarify the criteria for providing a settler with a grant which provides no cost-recovery rather than a loan which does. Moreover, if settlers should be subsidized is it more efficient to provide a grant or a loan at a subsidized rate of interest or some combination of the two? Once again these issues may have been elucidated elsewhere e.g. in Ray's paper.

In the first instance, however, a subsidized loan would be more efficient than a grant since the marginal costs of the loan could be more easily brought into line with the marginal stream of benefits. However, the case for a subsidy would tend to rest on the presence of externalities which create a divergence between the private and social rates of return. If e.g. the social rate of return is 15% on the marginal project whereas the private rate of return is only 12% the loan should be subsidized by three percentage points (or thereabouts). Cost recovery itself would not be a prime criterion. What counts is social cost recovery but this would in any event be reflected in the social rate of return.

3. Land Resettlement versus Other Investments

The Paper does not place land resettlement in its wider context. Perhaps this was not the intention. Nevertheless, the case for resettlement is only a relative one where resources are scarce. In the Indonesian context where transmigration and land resettlement are so interwoven this is particularly important. For example there may be industrial and other projects in Java which enjoy higher expected social rates of return than resettlement projects in Sumatera. Indeed, under-employment in Java and the ostensible need for transmigration might be the symptom of a failure to realize on industrial and other investments in Java on account of macro rather than micro economic considerations such as the possible deflationary effects on the economy of a fixed exchange rate at a time of domestic inflation.

No doubt, at some stage, those issues would be covered in a Programs Paper.

4. Other Issues

i) The Role of Planning:-

The role of government and planning in resettlement is not clearly defined, yet we are told that post mortems indicate that the spontaneous settlements have on the whole been no more unsuccessful than their planned counterparts. Nevertheless, it appears to be taken as axiomatic that planning and government participation is desirable and the spontaneous settlement is harmful. Apart from the provision of infra-structure, the dissemination of information and the provision of scientifically derived subsidies it is not clear what the role of planning is. A crucial question here is who perceives the risk better, the planners or the settlers themselves?

Related to this is the bias towards comprehensive rather than piecemeal planning. After all, the history of the resettlement of the USA is one of competitive provision of finance within a piecemeal context. At some stage the quantitative nature of any planning would have to be justified. My guess is that the spontaneous settlers like the frontiersmen of the last century should provide the basis for investment in resettlement rather than investing in planned resettlement per se unless there are outstanding reasons for so doing.

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cc: Messrs. Blackwood
McGarry
Gray

mb/mh

Research Agriculture

The EAST-WEST CENTER *Honolulu, Hawaii 96822*

EAST-WEST TECHNOLOGY AND DEVELOPMENT INSTITUTE

September 22,1976

Dr. Michael Cernea
Agriculture and Rural Development Department
The World Bank
1818 N. Street,N.W.
Washington,D.C. 20433

Dear Dr. Cernea;

Aloha! Thank you for your continuing interest in my elusive World Bank paper. Let me give you some further background on it as a way of explaining why I have decided not to write it. In October-November of 1975,we ran an intensive research training workshop for social scientists from Bangladesh,Indonesia,and the Philippines as the first stage in a research project designed to assess the employment and income effects of intermediate institutions. The World Bank Rural Development paper was one of the first readings in that workshop. It was also the topic of a panel discussion by myself,Gary Hansen and Richard Morse of our staff and Dr. Syed Rahim, now of the Communications Institute but formerly with the Bangladesh Planning Commission. In the course of the panel discussion,one of the panel members called the paper a milestone. I thought that excessive and the idea for the paper followed. In the interim, Dr. Dennis Rondinelli was with us as a Senior Fellow. Because of his interaction with the Bank, I was able to learn more about the between the lines compromises. Later discussions with others,including Larry Hannah,now with IDRC in Korea, aided further my insight. The more I came to know,the less inclined I was to draw conclusions and the more inclined I was to ask new questions. Because of that and because of what I believe was a correct judgment,namely that the audience at a Rural Sociological meeting would not be acquainted with or generous toward the work of the Bank, it did not seem appropriate to pursue the matter as originally planned.

However, the questions which I had, have been pursued elsewhere and in an indirect way,form a central element of a major project we are now developing. If you will pardon a deluge of materials,the Asian Survey,Agricultural Administration,and Social Information papers all represent my perspective on a number of the questions raised in the Sector paper. For me, the major question is the broad one of social information,--what kinds of information are relevant and how can they be fruitfully inserted into critical portions of the policy and planning processes. Questions of sustainment,equity,and access are not subject to economic operationalization alone,--however elegant!

The EAST-WEST CENTER Honolulu, Hawaii 96822

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September 22,1976

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However, the questions which I had, have been pursued elsewhere and in an indirect way,form a central element of a major project we are now developing. If you will pardon a deluge of materials,the Asian Survey,Agricultural Administration,and Social Information papers all represent my perspective on a number of the questions raised in the Sector paper. For me, the major question is the broad one of social information,--what kinds of information are relevant and how can they be fruitfully inserted into critical [illegible] of the policy and planning processes. Questions of sustainment,equity,and access are not subject to economic operationalization alone,--however elegant!

The fourth paper, the one on Technology Assessing, is the one about which I would like to pick your brain. It represents an early think-piece on a very broad problem but one that is keyed around the following emphases: what are the processes and dimensions which guide the allocation of research resources and what are the processes and criteria which shape the evaluation and translation of research outputs into policy and planning options? By focusing on the interaction between technical and social information we are trying to determine the degrees to which the organizational implications of alternative technologies and alternative policy instruments to encourage efficient technology transfer and utilization are present in the allocation of R and D resources and in research evaluation. What are the roles of scientific and social scientific communities in the above processes? What are the major interrelations between alternative technologies and social organization and what are the mechanisms available for incorporating that information on a systematic basis into critical policy arenas? The think piece pursues these emphases in some greater detail.

I am leaving on October 22nd for a rather lengthy trip to Europe and Asia as part of the development of the Technology Assessing project. I will be in the Washington area from November 3rd to 6th and would like very much to meet with you during that time to get your feedback on the technology assessing paper and to talk a bit more broadly about your own view of the role of social information in the Bank's operations. If you think there are others I should also be talking to I would be very appreciative. I should note parenthetically that the Countries most likely to be involved in the Technology Assessing project are Iran, Nepal,India,the Philippines,Taiwan, and Japan. If you have any thoughts about with whom we might be talking in those Countries,particularly Iran, I would find that very helpful.

Dr. Cernea, I know this represents an imposition,but I would very much like to meet you and get your insights on these questions. If you can confirm an appointment time and get it to me before October 22nd,that would greatly assist my own planning.

I look forward to hearing from you.

With best wishes.

Sincerely,

Bruce Koppel
Research Associate

SOCIAL INFORMATION AND POLICY CHOICES: THE IMPLICATIONS OF THE "INDIGENOUS" GREEN REVOLUTION

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ABSTRACT

Research conducted in the Philippines suggests that the conventional understanding of sustained agricultural change is not operating. What is operating, in the context of the 'green revolution', is confusion between measuring administrative performance and indigenous social change. After indicating what the difference between these two might be empirically, the problem which remains is: What questions does social information have to answer if it is to play an important role in the articulation,allocation,and evaluation of policies to encourage sustained agricultural change? The question is answered in a preliminary fashion through discussion of 3 points: (1)the distinction between utilization and indigenization of new technologies,(2)the concept of social opportunity costs and(3)the characteristics of an appropriate social information system.

SOCIAL INFORMATION AND POLICY CHOICES: THE IMPLICATIONS OF THE "INDIGENOUS" GREEN REVOLUTION

INTRODUCTION

The enthusiasm which accompanied the introduction of high-yielding rice varieties in the mid-1960's has been replaced by a concern for sustaining utilization where adoption has already occurred(Barker,1971;Mukerjee and Lockwood,1973;Welsch and Tongpan,1973;Herdt and Wickham,1974;Koppel,1976a)as well as extending adoption to new areas. In order to meet these objectives policies are being designed in several countries and being promoted by major international assistance agencies which are based on two assumptions. First,HYV(high-yielding variety) utilization is a bridge to agricultural intensification and broader commercialization where a bridge was not previously available(Brown,L.,1968). While it is recognized that HVY seeds are only one element in a package composed of seeds plus complementary chemical and managerial inputs, it is the seeds which make the application of those inputs sensible(Falcon and Gotsch,1971;Sindhu,1974). Second, public policies which emphasize making important technical inputs(materials and information) available can shorten the time needed for farmers to move from simply HYV adoption to intensified private investment in complementary inputs(Hardin,1969;Brown,D.,1971;Schutjer and

Coward,1971;Fisher,1972;Owens and Shaw,1972;Hayami,1974; Cohen,1975;Lele,1976).

The object of this paper is to argue that both assumptions are more appropriate as descriptions of administrative performance than as indicators of indigenous social change. In making that argument,two themes will be stressed:(1)the adoption of high-yielding rice seeds and increased investment by farmers in complementary inputs(water,chemicals)are not two points on the same diffusion curve and (2)technology delivery policies have not contributed to strengthening the link between seed adoption and private investment in agricultural inputs. The argument is extended to critical aspects of rural development policy,--client group identification and policy evaluation,--where two broad themes are discussed:(1)the distinction between utilization and indigenization as elements of sustained technological change and (2)the concept of social opportunity costs and how it might be related to the allocation of policy resources. Finally, it is argued that the development of policies to encourage sustained change will require a significant increase in the role of social information in expanding policy choices and in assessing the efficacy of particular choices. The paper will draw principally on research conducted in the Philippines.

ARE THE TWO ASSUMPTIONS VALID FOR THE PHILIPPINES?

The two major assumptions of the green revolution literature are derived from a broader paradigm(Schultz,1951;

1953,1964;1968)that has dominated conceptualization about policies and agricultural change. That paradigm is presented schematically in figure 1. New technologies disturb the

FIGURE 1 ABOUT HERE

basic equilibrium of agricultural economies,principally by allocating major new income streams to early adopters. Two problems result. The first is that since new income may not be reinvested into productive activities locally, but rather is exported from the region through purchase of consumption goods, the levels of inequality within regions may increase. The assumed employment and income externalities of new technologies often do not materialize at the point of utilization. The second problem is that for a variety of reasons, early adopters will attempt to limit broader access to the new technologies,-- a limitation which may threaten a regime's welfare and even stability goals. The recommended response from the public sector is to implement re-equilibrating policies to capture and productively channel new income streams and compensatory policies to enhance access to new technologies and provide the benefits of (subsidized)market participation. Beyond their immediate objectives, the policies encourage two significant responses. First, they lead to an increase in effective demand for a variety of economic goods and services locally. Second, they lead to a positive response to that demand through private investment in an enlarged economic infratsructure.

The combination of demand for and supply of economic institutions represents an expansion of the effective scope of the market economy(Schultz,1968;Schutjer and Coward,1971). It is this expansion which facilitates the return to equilibrium and it is widened participation in the market which assures the benefits of new technologies are distributed more broadly (Ruttan,1966;Hymer and Resnick,1969). The two assumptions of the green revolution literature are derived from this paradigm. The first asumption argues that without new technologies, intensified production will only be a limited possibility and there will not be many compelling reasons for market expansion that is locally based. The second assumption argues that the time needed to move from the introduction of new technologies to a broader commercial response(the creation of private demand for complementary inputs and the meeting of that demand through various supply activities)can be significantly shortened through the effective use of re-equilibrating and compensatory policies.

Are those two assumptions appropriate characterizations of the green revolution in the Philippines? To answer this question,research was conducted on 84 potential green revolution barrios[1] in the heart of the leading rice-producing province (Iloilo) in the Philippines. If the two assumptions are correct, then classification analysis should yield the following

patterns:

Before HYV's introduced:	Low private investment in all barrios, but eventual green revolution barrios characterized by higher levels of market infrastructure.
After HYV's introduced:	Higher levels of private investment in green revolution barrios, especially where there is a combination of existing infrastructure and supportive public policies operating.

The criterion variable for the classifications is HYV adoption. If more than half the cultivated land in a barrio is planted to HYV's by 1970, three years after the seeds first became available, the barrio is defined as an HYV barrio. By 1970, 60% of the Province's riceland was planted to HYV's. That proportion has increased since 1974, but this reflects withdrawl of land from rice cultivation rather than wider diffusion of seeds. Since variation in tenure categories or parcel sizes is not large, basing the variable on land use is a reasonable surrogate for aggregated farm-level choices. Five groupings of classification variables are employed: village social structure, market structure, alternative land uses, agricultural

inputs provided through public policy,and agricultural inputs applied through private investment. The groupings represent important influences on choice and mix of agricultural technologies in a community. Village social structure taps the group context within which individual farm household resource allocation decision are made(Coughenour,1964;Sandhu and Allen,1974). Market structure refers to accessibility to supporting services and outlets(Mosher,1969;Frankel,1969; Hayami and Ruttan,1971). Alternative land uses indicate where rice cultivation itself is a variable(Hsieh,1957;Afzal, 1971). Agricultural inputs made available through technology delivery policies and those incorporated into particular production functions through private investment constitute the two sources of complementary inputs(Falcon and Gotsch,1971; Child and Kaneda,1975). The variables and their indicators are described in table 1.

TABLE 1 ABOUT HERE

A discriminant function classification for 1967(the year before HYV availability)is the basis for assessing which barrios in 1967 could be expected to be HYV barrios by 1970. The assumptions under questions would suggest that barrios with higher indicators of economic infrastructure(market access, differentiation) would be the likely candidates for rapid HYV adoption. Increasing distance from the Municipal market center, higher levels of differentiation and a higher probability of

maximum coverage by public soil testing policy during the 1961-1967 period are the major variables supporting HYV classification. Privately initiated soil testing, solidarity and private investment in improved irrigation delivery capacity are the major variables supporting classification as a non-HYV barrio.

TABLE 2 ABOUT HERE

The 1967 function runs counter to the two assumptions. Private investment in agricultural inputs precedes the availability of HYV's in the region and is not tied to publically provided inputs. Distance from the poblacion is important,but its role is not consistent with market access expectations: barrios more distant from the poblacion are more likely to be classified as HYV communities. Higher levels of 1967 differentiation are associated with HYV adoption,--supporting hypotheses that have been expressed since the early days of the green revolution (Von Der Mehden,1969:64). However, the association of another structural variable, solidarity, with private investment in agricultural inputs and with non-HYV barrios is intriguing. If barrio solidarity is an important aspect of group social structure having implications for the likelihood of individual innovation(March and Coleman,1956;Young and Coleman,1959; Van den Ban,1960;Coughnenour,1964,Qadir,1966)then the new seeds apparently were not to represent innovation in a region where formerly there was no innovation. Private investment was already underway,but not in the HYV barrios.

If the two assumptions at issue are correct, there should be a greater correspondence between private investment in agricultural inputs,complementary inputs provided through the public sector, and an HYV classification in the 1970 function. To test this, the 1970 function includes all the variables for the 1967 function plus variables covering the 1968-1970 period. For the 1970 function, the major variables associated with an HYV classification are: high differentiation, high probability of maximum allocation of public soil tests,and high utilization of pumps provided through the public sector. Classification as a non-HYV barrio was associated with the development of new commercial sugar farming,privately initiated soil testing, and solidarity in the period prior to HYV availability. Private investment in agricultural inputs after HYV's became available does not play a significant role in discriminating HYV and non-HYV barrios. The basic pattern associating private investment and community social structure is established before HYV availability. If public policies affect this relationship at all, it is through the consequences of a high-payoff production strategy: access to good seeds was narrowed[2] and private factor supply markets were weakened (Koppel,1976b).

HYV's did not lead to greater private investment in agricultural inputs,but such investment was already occurring outside HYV barrios. A majority of a community's rice-growers

were likely to adopt HYV rice seeds if subsidized inputs were available. It follows that while public policies may have been successful in accelerating seed diffusion, the conventional measure of the green revolution, it would be difficult to conclude these same policies were linked to private investment to acquire similar agricultural inputs, a potential measure of an earlier indigenous green revolution.

The Iloilo research reported here is not the only Philippine research to suggest that the new rice technology was not an "engine of change"(Brown, 1968:694)in a lethargic rural society. In a study of HYV adoption among 866 farmers in another part of the Philippines, Mangahas(1970)concluded that utilization of more advanced production practices(e.g. straight row planting)was the best predictor of HYV adoption. Farm tenure, farm size, interest rate, marketed surplus ratio and pump irrigation were not critical. However, as Castillo (1975) has pointed out, how can the adoption of recommended practices be explained? The Iloilo research suggests the answer does not necessarily lie in conventional aggregations of individual characteristics. The literature is replete with inconsistent evidence of this sort(Mangahas and Librero, 1973; Griffin, 1974; IRRI, 1975). The answer may lie instead in the social organization of rural communities and the relationships of social structure to the probable scope and domain of individual innovativeness. In Iloilo, those relationships

operated prior to the introduction of HYV's and the application of supportive technical policies.

UTILIZATION AND INDIGENIZATION: ALTERNATIVE ROUTES TO SUSTAINMENT?

The policies which accompanied the diffusion of HYV rice seeds in the Philippines have been generally characterized as good examples of what can be accomplished with high levels of coordination and administrative mobilization(Arcega,1969; DeGuzman,1970;Iglesias,1973). The Philippine research reported here and elsewhere(Koppel,1975a;1975b;1976b)does not contradict the claims for administrative performance,but it does raise some basic questions about high-payoff production strategies and about the ultimate effectiveness of policies which assume that local innovativeness in rural settings is dependent on or reactions to new technologies. To explore this point and particularly its relationship to sustained change, it is necessary to review briefly what the major policy position about sustained agricultural change is. It is a position which rests much more heavily on utilization than indigenization.

A well-established assumption of economic approaches to agricultural change is that utilization of new technologies, if profitable and feasible,will occur until something more profitable or feasible is available. It follows that policies which encourage utilization of new technologies and which make a reasonable return possible, contribute to sustained growth in agriculture(Lele,1976). In these terms,indigenization is measured by private investment and by the emergence of economic institutions

in response to demand for their outputs. Such policies will typically concentrate on individual farmers and will measure their success in terms of area planted and number of farmers planting.

Indigenization can be defined more abstractly as the full absorption of a technology into the broad production systems characterizing a community. One way to measure this type of indigenization is in terms of technology adaptation,-- the selective incorporation of the components of a new technology (Sindhu,1974). Selective utilization may not be a particularly durable indicator,however, in contexts where new technologies are available below their real costs. There is another view which links the problem of indigenization and sustainment to broader organizational capabilities. For example, there can be an emphasis beyond the technologies adopted to the elaboration of practices and behaviors around technologies, elaboration which represents an allocation of resources which might have gone elsewhere productively and thus have an opportunity cost. If that allocation is made under local initiative, then it is assumed it will be maintained under a broad variety of conditions. Another example is the renewed interest in the role of intermediate institutions in rural development(Owens and Shaw,1972;Stavis,1974;Koppel,1976a). The difference between these views of sustainment and their relationship to utilization and indigenization are illustrated in Table 3. As can be seen

TABLE 3 ABOUT HERE

there, the "best" approach to supporting rapid diffusion is not necessarily the "best" approach to ensuring that what was diffused will continue to be used without permanent external support.

The point is not that agricultural change produced by the introduction of technical inputs through policy instruments is unsustainable,--in terms of investment or organizational development. The point is that the choice of policy instruments, the manner in which they are allocated among barrios, and the sequence of their use must draw a balance between (1)bringing new technologies into a locality efficiently and achieving reasonable degrees of predictability and comparability to similar localities in the results of technology utilization and (2)ensuring that new technologies address locally perceived needs and that the organizational implications of technology utilization do not excessively strain local self-management capacities.

SOCIAL OPPORTUNITY COSTS AS A CLASSIFICATION PROBLEM

One implication of the Iloilo research is that classification analysis may provide an approach to client identification that will yield more realistic estimates of the costs of including and excluding particular groups from policy coverage. A second implication of the research is that policies which seek sustained change as an objective rather than utilization

of new technologies alone might have to define social opportunity costs in a different manner than is typically the case. Social opportunity costs are typically assessed in terms of income and employment benefits which are foregone. The Iloilo research suggests that social opportunity costs might need to be assessed more directly in terms of innovative social processes which go unexplicated and unmobilized.

Allocation of public resources is in many basic senses a classification question. Whether the resources are symbolic or political goods or more mundane distribution of pesticides, allocation is usually a problem of reaching some group and excluding some other group. Cost-benefit analysis or some version of it,which guide both feasibility(Squire and van der Tak,1975) and evaluation(World Bank,1974)judgements assess opportunity costs in relation to output levels(income and employment are defined as the outcomes of various economic inputs). This assessment may involve somewhat misleading comparisons. Either there is no 'control group' except the client group before the policy treatment or the control group is matched on access to economic inputs. The first strategy is the classic problem of pilot projects,which fail when generalized;the groups are atypical and the effects of history are often strong(Brown,1971; Cohen,1975). The second strategy yields incorrect conclusions where variance on access to particular economic inputs were not critical factors in explaining different output levels.

If the objective of indigenization is specified, then for the Iloilo communities examined, it could be argued that policies were well orchestrated but directed at the wrong communities. The scope of likely sustainment may be considerably less than the one-half indicated by the proportion of barrios in the HYV group(42 of 84). In 1967, 13 HYV barrios and in 1970,10 HYV barrios were misclassified as non-HYV because they were excluded by policy. However, these same communities had generated significant private investment in agricultural inputs before the HYV seeds became available and they were communities characterized by significant indications of solidarity. It can be argued that these are the barrios in which sustainment is most probable. Identification of appropriate client groups in terms of the levels of particular inputs (located on a public irrigation system) and particular outputs (existing production levels)can be supplemented by attention to the input transformation processes which "utilize" inputs and yield "outputs". That would have the effect of providing a clearer basis for judging the uniqueness of a group and for assessing the costs of allocating policy in one way rather than another. For the communities in this analysis, differentiation and solidarity could have been used as allocation criteria in addition to the agronomic and economic criteria which were used.

The question of client group identification and its link to policy assessment has been given new attention,--partially

because of the inconsistent conclusions of the green revolution research and partially because of altered thinking by major foundations and international lending agencies about the proper emphases in rural development. Reflecting the general shift toward concentration on the rural poor, the recent World Bank Rural Development Sector Policy Paper(1975)shows evidence of some debate within the Bank about whether income or farm size should be the basis for allocation of development resources. Income or farm size may be intelligible in terms of scale factors and as surrogate indicators of access to certain technologies, but they have no automatic relationship to innovativeness, openness to change,organizational skills, and other factors which may be much more closely linked to indigenization and sustainable change.

SOCIAL INFORMATION AND POLICY CHOICES

A major implication of the Iloilo research is that it suggests what some of the roles of social information in the rural development process may be. Policies which have as explicit objectives sustained expansion in agricultural output will need to be characterized by at least three attributes. First,they will need to be tied much more closely to explicating existing organizational and innovative capabilities. Second, they will need to be derived from a broader array of possible policy instruments,reflecting greater accomodation to diverse conditions and the complex tradeoffs implied by decentralization.

Third, to even begin to aspire to the first two attributes, the policy process will need to be infused by significantly greater and more sensitive social information. The criteria which that information will need to satisfy are not exclusively derived from the canons of professional sociology. The criteria will need as well to reflect an awareness of the structure of policy development and the needs associated with implementation.

Any attempt at client group identification,policy assessment and evaluation of true opportunity costs in the allocation of policy resources already depends heavily on available information. This presents some special problems for social information needs. First,beyond problems of reliability and currency, available information is often not constituted in a manner to facilitate policy choices in the terms being discussed here. The heavy emphases on demographic data is only rarely supplemented by occupational data(the latter is of limited relevance in many rural areas because of the importance of seasonal and secondary occupations)and organizational information. Most countries recognize this, which leads to a second problem. The major cost of project by project data generation is not financial. Even a casual perusal of project feasibility reports reveals two points:(1)increasing concern for social considerations has led to a variety of efforts to supply social information, but(2) there is very

little evidence to suggest that the information is anything other than dressing. It probably only has a marginal influence on decision-making by international and national development agencies(Rondinelli,1976). The real cost then is that all concerned may believe they have taken "social factors" into consideration. What are the alternatives?

One alternative is social indicators, but the state of the art both methodologically and substantively is problematical. Most indicator systems in LDC's lack continuity,but what is more serious, they lack a constituency in policy circles. Some systems are,from some viewpoints, good sociology and statistics, but they are not adjusted to policy needs. Some systems are so adjusted to policy needs,they lack credibility for purposes of evaluating alternatives.

Bell and Duloy(1974:237),in arguing for an approach to clearer identification of poverty groups "and their economic and social characteristics" propose a statistical framework built around the household as a unit of analysis. But how often do policies deal with individual households? In most rural communities, are administrators even seeking indicators so sensitive they can calibrate the appropriateness of all the households in a community for a particular policy? Is it logical to separate households from the social context in which they operate?

The challenge for social scientists is to generate

social information that is discriminating enough to generate new policy options,sensitive enough to represent accurately key social processes and rigorous enough to support choice among alternative policy instruments. At the least that means seven characteristics. First,information must have continuity. Without continuity, arguments about what kinds of information are needed case by case will have diminishing returns in terms of information generated and will contribute to a slowing down in the incremental development of increasingly better information. Second,it follows that what is required are social variables with multiple indicators rather than multiple indicators alone. Commitment to particular variables may be an uncomfortable proposition for some, but without this step, there seem to be few alternatives to the generation of more or less data with scant notion of how or why any might be used. Linking variables to a multiple indicator strategy places data types on some scale of "best approximation" and it provides an opening for a flexible rather than disordered approach to the incorporation of new data types over time. Third,variables have to be able to discriminate within groups, particularly within 'poverty' groups as well as point out that societies have a good deal of inequality.[3] Changes in the overall stratification of rural societies are of less interest than indications of movement within segments of the have-not group. Fourth, variables need to pay major attention to

communities and other intermediate social units as units of analysis. This follows not simply from the premise that the community is the one social organization in which all have membership, but that the factors influencing the growth and decline of intermediate social units are also influencing the structure of poverty and the scope for technological innovation. Fifth, the information system must be feasible, a characteristic that can mean piggybacking existing vehicles of data collection. It can also mean considerably more innovative approaches to data gathering taking advantage of the numerous schools and colleges that dot rural landscapes and developing the ability of communities to monitor themselves. Sixth, social information must have a policy constituency that understands it. This is a crucial point and perhaps the one that existing social information systems have coped with the least effectively. There are several examples in Asia and the United States of very promising starts at social information systems,but their role in the policy process has been severely constrained by the willingness in some instances to leave such systems as cosmetic attributes and the inability in other instances to know how to do otherwise. The lag time between identification of social problems and the articulation of policy choices based on the same data is an illustration of the latter problem. Seventh, there is a need for social scientists to respond to the limits of particular conceptualizations of the relationships between technological change and social organization;

conceptualizations which include the convention of structuring statistical accounting systems to conform to categories developed by and for industrialized societies.

CONCLUSION

This paper has had two objectives:(1)to place the green revolution in a context that has been recognized relatively recently,that of sustaining agricultural change, and to ask to what extent conventional indicators of the green revolution are measuring administrative and policy performance rather than indigenous social change;and (2)to suggest what some of the major policy implications of the sustainment problem are with emphasis on the role of social information in policy processes. The paper has not argued that the new seed technology is a failure. The argument has been made ,however,that the complementarities critical for full productive capacity have not been wholly dependent upon the availability of HYV's for emergence. By concentrating on a narrow spectrum of agronomic and economic attributes, extension and technical support policies risk incomplete appropriation of available innovative possibilities. In that sense, the high-payoff production strategies may prove to be low-payoff sustainment strategies. This is not equivalent to an argument for sacrificing welfare objectives on the alter of rural entrepreneurship. To the extent that welfare can be linked to economic growth, however, it would seem necessary to begin where local innovation

is already occurring. The challenge is to infuse into policy processes a broader understanding of social innovation and its economic implications.

Much rural development policy evaluation amounts to an assessment of alternative policy instruments in terms of delivery capabilities. This carries an inherent bias against local change and often leads to definitions of success which assume that local change is absent. A concern for the emergence of local structures to generate and utilize new technological inputs,whatever the welfare objectives, requires greater attention to the local and regional forces behind the choice of technologies and to the difference between change which is a guage of local creativity and change which is a measure of administrative performance. The most crucial role of social information in the policy process is to make that difference clear.

NOTES

1. From a population of 338 contiguous barrios,chosen because they constituted the heart of the Province's rice area, 84 barrios were identified as potential green revolution barrios if either of the following conditions held: (1)paddy rice was the major agricultural land use in the year before HYV's became available(1967),or(2)topographically and agronomically ,the barrio was suitable for lowland rice cultivation on all its land.

2. In late 1967, HYV seeds were made available to 18 farmer-cooperators by the Agricultural Productivity Commission (APC). The farmer-cooperators then engaged in seed-production while APC extension workers informed other farmers who was the closest farmer-cooperator. By 1970,the Bureau of Plant Industry(BPI),which had formal responsibility for certified seed production, began to take a more active role in producing certified HYV seeds in Iloilo. Access to both APC and BPI seeds was restricted to those farmers covered by the Rice and Corn Production Coordinating Council program,--essentially farmers having direct access to a public irrigation system. Other farmers had to purchase seeds from unregulated private growers,where quality was problematical,or from the black market.

3. I want to thank Ruth Young for emphasizing this point to me. Subsequent discussions in Bangladesh, Indonesia and the Philippines substantiated its relevance.

Figure 1. Agricultural Change:
The Conventional Scenario

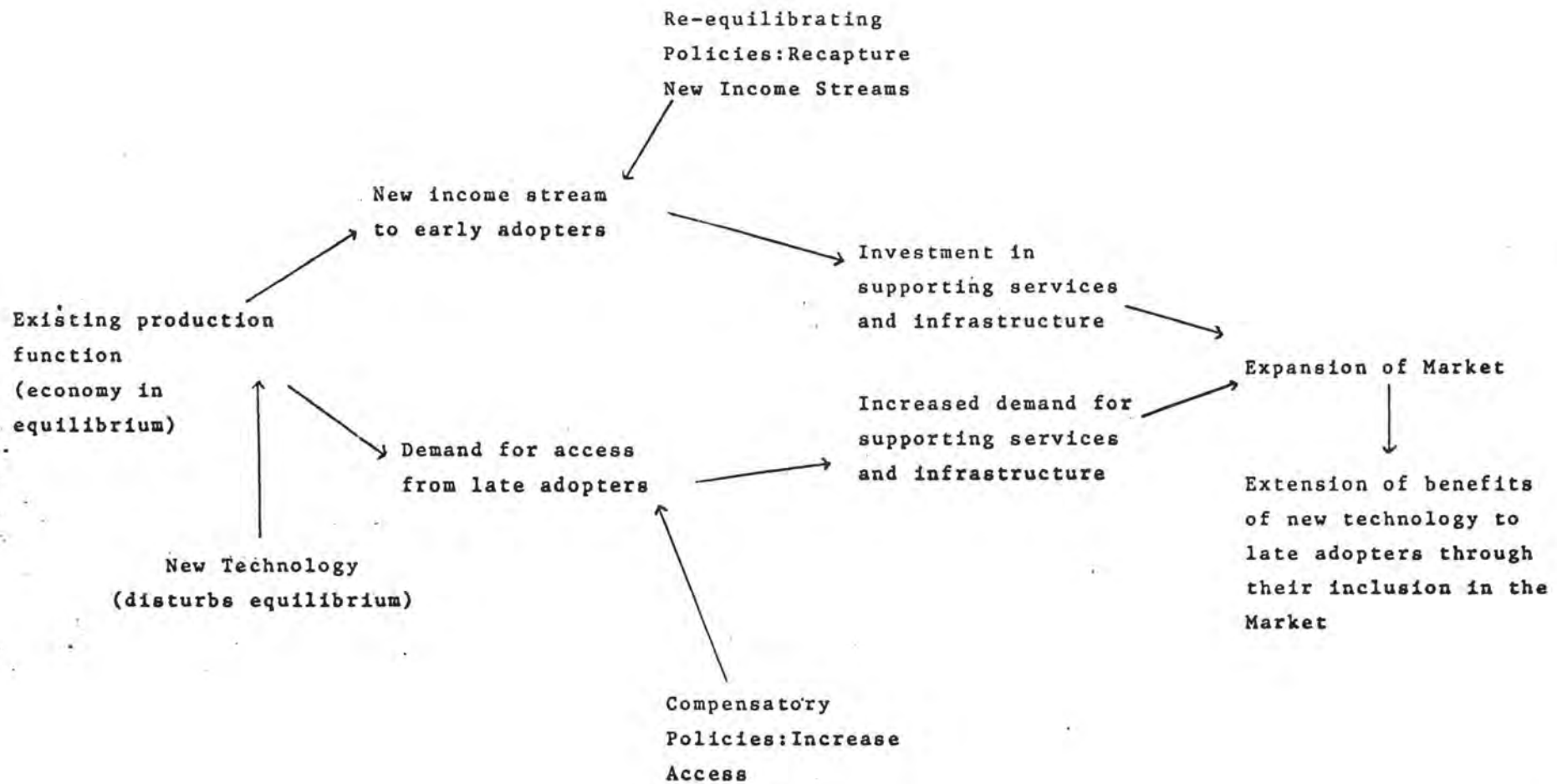

Table 1. Classification Variables.

GROUPING	VARIABLE	OPERATIONALIZATION
Village Social Structure	Differentiation[1]	Guttman Scale of Village Institutional Complexity. Items:elementary diversification,processing local production for local consumption, secondary agricultural production,local services for household consumption,metal fabricating,specialized retail, legal-accounting. Coefficient of Scalability(Goodenough): .85(1967);.82(1970).
	Centrality[2]	Guttman Scale of Village Recognition. Items:Formal barrio,physical link to Municipal center(poblacion), particularistic recognition from municipal center,limited recognition from Manila, continuing recognition from Manila. Coefficient of Scalability: .88(1967); .82(1970)
	Solidarity[3]	Factor scores(First factor was barrio solidarity;second and third factors were municipal and provincial solidarity). Weighted items: agricultural strike,boundary dispute, locally supported non-Catholic church,unrecognized cooperative
Market Structure	Market Accessibility[4]	Distance to poblacion by most direct route utilized all year.
	Market Size[5]	Population(1960,1970);annual rate of population growth 1960-1970
Alternative Land Use	Export Agriculture[6]	Presence of at least one 20 hectare sugar farm
Agricultural Inputs Provided Through the Public Sector	Irrigation [7]	Factor Scores. For 1961-1967: Two factors(Distribution, Conveyance). Items: main canal length,lateral length,sublateral length,number of concrete checks. For 1968-1970:Two Factors (Utilization and Capacity). Items: pump size(inches), pump engine horsepower,average hours operated per year, average liters fuel consumed per year,rated irrigable area, average number pumping days per year

Table 1. Classification Variables(continued).

GROUPING	VARIABLE	OPERATIONALIZATION
	Soil Tests[8]	Ratio of actual number of tests allocated to any barrio to the maximum number allocated to to all barrios(1961-1967, 1968-1970)
	Land[9]	Public land sold or granted by area and number of parcels (1961-1967,1968-1970)
Agricultural Inputs Provided Through Private Investment	Irrigation[10]	Factor Scores. For 1961-1967: Three Factors(Improved Water Intake,Basic Irrigation Infrastructure,Improved Delivery Capacity). For 1968-1970: Three Factors(Basic Irrigation Infrastructure,Improved Water Intake,Improved Delivery Capacity). Items: Pump,Canal length,concrete diversion, earthen diversion,mixed(concrete and earthen)diversion,dam length, liters per second water flow
	Soil Tests[11]	Number of soil tests requested (1961-1967,1968-1970)
	Land[12]	Sale of private land by area and number of parcels(1961-1967,1968-1970)

Data Sources:

[1,2,3] field survey,key informant interviews,Iloilo Times, economic censuses(1961,1967),various government records

[4] topographic maps,aerial photos,field survey,key informant interviews

[5] 1960 and 1970 Census of Population

[6] field survey,key informant interviews,aerial photos,Sugar Central records,sugar producing association records

[7] National Irrigation Administration,Irrigation Service Unit, aerial photos

[8] Bureau of Soils

[9] District Land Office

[10] National Irrigation Administration,Irrigation Service Unit, Official Gazette,Department of Public Works and Community Development,Rural Banks,aerial photos,field survey,key informant interviews

[11] Bureau of Soils

[12] District Land Office

Table 2. Discriminant Classifications.

1967

		Classified As	
		NON-HYV	HYV
ACTUAL	NON-HYV	30	12
	HYV	13	29

1970

		Classified As	
		NON-HYV	HYV
ACTUAL	NON-HYV	30	12
	HYV	10	32

Table 3. Strategies of Change

Operational Objective of Strategy Is	Clients of Strategy Are: INDIVIDUALS	Clients of Strategy Are: GROUPS	Likely Resulting Change
UTILIZATION	Get individuals to adopt something new. When enough have adopted, the ensuing demand for support will be met by private sector. E.g.: conventional agricultural extension, technical assistance	Develop Institutions which compensate for market weakness of client group. Support development of such institutions through allocation of inputs, provide protected marketing outlet. E.g.: Administrative development, many cooperative programs	Rapid Change
INDIGENIZATION	Individuals adapt or modify new inputs to fit an existing pattern. E.g.: Most Community Developmemt programs	Develop institutions which build explicitly on existing organizational capabilities. E.g.:Decentralization and cooperative programs which involve local goal-setting	Sustained Change

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The EAST-WEST CENTER *Honolulu, Hawaii 96822*

EAST-WEST TECHNOLOGY AND DEVELOPMENT INSTITUTE

DRAFT (8-18-76)

PROJECT PROSPECTUS

TECHNOLOGY ASSESSING AND PLANNING FOR ALTERNATIVE TECHNOLOGICAL FUTURES

Bruce Koppel
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CENTER FOR CULTURAL AND TECHNICAL INTERCHANGE BETWEEN EAST AND WEST

An educational institution of the Government of the United States of America in cooperation with the University of Hawaii—An Equal Opportunity Employer

Recent work in technology assessment has been characterized by problems in three broad areas: conceptualization, operationalization and utilization.

Problems in Conceptualization

There are 4 major problems in the conceptualization of technology assessment.

1. While it is generally conceded that national choices are substantially influenced by the choices of other nations, the external sources of and constraints on national choices among alternative technological futures have not been logically and coherently interwoven into assessment models. This does not say that actual decision-making does not reflect an awareness of such external factors, but rather that the conceptualization which underlies the search for refined assessment methodologies has not been successful in linking exogenous factors into the assessment conceptualization.

2. The process of technological forecasting has remained by and large a methodological exercise in the identification of technological complementarities. This type of focus ignores what would appear to be a more basic question: By what processes can future choices be built into current planning while at the same time allowing for continual sensitivity testing of the assumptions which yielded future choices? A major element of the assessment problem is clearly that of forecasting technological externalities, but it is necessary to place that element in the context of the processes by which choices are recognized, evaluated, made and reasoned.

3. The social significance of alternative choices remains a weak area in the technology assessment literature. The absence of significant methodological progress can be attributed to at least three factors: (1) the belief that society adjusts in the long run to technological change; (2) the emphasis on modelling for the particular, an emphasis which amounts to an assumption that there are different systems of intervening relationships which link broader social processes to particular technological changes. The assumption has yielded a style of research which consistently underestimates more general social processes in favor of posited intervening relationships; (3) the unwillingness in most quarters to seek an understanding of

technology at a more abstract level, in terms of which particular technologies and their social impact can be grouped and evaluated.

4. Conceptualization of the processes which structure perception of choices, choice making and consequence anticipation is characterized by assumptions about the range of social and cultural attributes likely to accompany the introduction of particular technologies. This yields a familar brand of impact study. What is missing is a broader understanding of the elasticities between technologies and social organization; the range of possible configurations in interrelationships and the scope of autonomous and dependent variance. Without a broader understanding of technology and social organization and the variety and likelihood of alternative interrelationships, it is difficult to understand on what bases the output of particular assessments are to be evaluated.

Summarizing, 4 problems in conceptualization of technology assessment are identified: (1) significant exogenous variables and by implication several endogenous variables have been misspecified; (2) decision making and administrative externalities of technological forecasting have generally been excluded; (3) the social significance of alternative choices is evaluated in terms of unvalidated intervening mechanisms, -- the broader social processes are often unincorporated; and (4) the absence of consistent and substantive external criteria for evaluating alternative technology assessments.

Problems in Operationalization

There are two broad problems of operationalization which trouble most work in technology assessment.

1. As suggested by the discussion of problems in conceptualization, operationalization is beset by the implications of conceptual misspecification. The exclusion of significant parameters on decision making makes those indicators which are used inadequate by implication. The emphasis on defining elaborate interrelationships for particular cases leads to significant levels of redundancy and multicollinearity, reflecting unawareness of more general dimensions which are being artifically decomposed.

2. By admission of most assessment practitioners, the inclusion of adequate social information is much more difficult and has been much less satisfactory than needed. One source of this difficulty is what can be called the fallacy of generalizing the particular. It is often assumed that by building up models of interrelationships from the technology, an adequate guide to the categories of appropriate social information can be ascertained. What is required is a strategy which begins in more general social processes and moves to evaluate their significance in terms of particular technologies at the same time that a similar effort is initiated from the technology side, i.e.; a strategy which begins with more general categorizations of technology and moves to evaluate their significance in terms of particular social categories. Work on social indicators has not been fruitful because it yielded an open-ended listing of 'concerns' without any necessary attention to endurance, process and relevance.

Summarizing, 2 problems in operationalization activities in technology assessment have been identified: (1) inadequate operationalization resulting from conceptual misspecification; and (2) an unfruitful strategy for developing the role of social information in the assessment process.

Problems in Utilization

There are two broad problems in the utilization of technology assessments:

1. Assessment products seem to be geared more to be inputs to plans than to the process of planning. This is because they come out as evidence for a decision, but not tools for decision making. Assessment is typically a one-shot affair; that is implicit in the term assessment. But actual decision making and actual planning are incremental processes which however indirect or diffuse, can be better characterized as technology assessing. The assessment conceptualization and the derived methodologies assume that one time decisions are being made and that planning is an exercise in decision making which seeks and enforces closure. These may be valid characterizations some of the time, but to the extent they are not, the utility of technology assessments is limited and may be even perverse, --where they force closure prematurely.

2. Assessment outputs assume that decisions about technologies are made autonomously and independently; that neither the decisions or the decision making process are substantially buffetted by decisions and decision making in other areas. That of course is not ture and most assessment practitioners would be the first to admit this. But in the shaping of their outputs they have not been successful in translating this insight into conceptual and operational terms so that their output would find utility in, rather than in spite of, the empirical context of decision making.

Summarizing, two problems in the utilization of technology assessment outputs were identified: (1) assessment outputs are useful for assessment but not for assessing; and it is the latter that is the more prevalent process; and (2) assessment outputs are not shaped to affect the multiple sets of decision making within which the choice of alternative technology futures proceeds. It assumes the sets are basically disjoint, an assumption which will be correct in very few instances only. Moreover, because the role of technology assessment should be to cull out the broader interrelationships involved in technology decision-making, acceptance of disjointness would seem to be basically inconsistent with the system assumptions of most technology assessment models.

All of this leads to what is perhaps a summary problem: the manner in which technology assessment identifies problems (lack of needed complementarities, lack of required infrastructure, etc.) is only marginally related to the real decisions which need to be made, decisions involving the allocation and distribution of scarce resources. Assessment should direct policy attention to those choices and the kinds of information necessary to expand those choices and weigh them effectively.

Directions for Compensatory Research

Fruitful basic and applied research, the objectives of which would be the redressing of the conceptual, operational and utilization problems discussed above can be initiated based on three broad lines of inquiry. After characterizing those lines of inquiry, a scheme for their translation into a concrete research program is described.

The Lines of Inquiry

1. The first line of inquiry relates to the international structures which affect the circulation of alternative technological futures. The structures range from a wide variety of multinational organizations to patterns of international exchange and have their most important influences in two areas: (1) the organization of scientific communities and their perception of what is and is not important, relevant, 'professional' (2) the second is the limitation on the autonomy of public and private sectors to recognize, consider and make alternative choices about technological futures. The assumption of this line of inquiry is that 'research on research' can yield important insights into the relationships between local choices and interdependence. A second assumption is that research on the organization of research choice-making and research utilization within the public and private sectors can also yield significant evidence on the relationships between local goal setting and interdependence.

2. The second line of inquiry is related to the elasticities in relationships between technology and social organization and to the multidimensionality of alternative technological futures. As a conceptual problem, this line of inquiry asks: what about technologies makes a difference in social terms and what about alternative technological futures is significant in social terms? This is a question which can look strongly for assistance to work on sociotechnical systems, externalities and public goods, and work in other social sciences on interdependence. As an operational problem, this line of inquiry directs itself at the outset to the role of social information in technology choices and decision making and in the role of technical information in decision making and choices relating to social concerns. The former question is of particular interest because we lack a sufficient baseline in this area. What types and where does social information enter the policy processes involved in alternative technological

future decision making. In what forms does that information get typically packaged and what are the sources of these forms and their consequences on social information. The assumption of this line of inquiry is that the ultimate arbiter conceptually of a technology's impact is how the social information question is answered. The policy process can be seen in these terms as a process of mediation which in one way or another answers or defers answering this question. It is also assumed that a subsequent line of analysis required in addition to the establishment of baseline data is the identification of elasticities and inelasticities in technology - society interaction, --as an element to affect future choice recognition and as the beginning of an approach to evaluate the adequacy of particular assessments.

3. The third line of inquiry is related to the problem of forecasting. The thrust of this line of inquiry is to conceptualize the problem of forecasting as a continuous process, to identify in other words not simply the technological complementarities of particular avenues of technological change, --but to identify the institutional externalities of those choices and of the choice-making itself. The assumption of this line of inquiry is that forecasting is a problem which requires the first two lines of inquiry to have been satisfactorally answered and in addition it requires understanding as a problem for current decision-making: how to maintain an open perspective on future options without simultaneously mistakenly discounting the present value of those options.

A Research Schema

A research schema can be built from these three lines of inquiry which has considerable potential to illuminate the questions under discussion without sacrificing the well-established central concerns of the technology assessment field. The schema has the additional advantage of being more easily adaptable to comparability and multiple cases; --a point that would broaden the scope of technology assessment work not simply in terms of particular technolgoies subject to assessment, but it terms also of alternative decision-making styles; alternative degrees of uncertainty in choice perception and evaluation, and alternative levels of interdependence and autonomy in decision-making.

Figure 1 presents a shematic representation of the major components of a basic and applied research program in technology assessment which would seek to accomplish the following objectives:

1. Elucidate and clarify the major parameters of the interrelationship between technology, understood in terms derived from sociotechnical analysis, and social organization. The major emphasis would be on the identification of those types of interrelationships which were most likely to be stressful and benign.

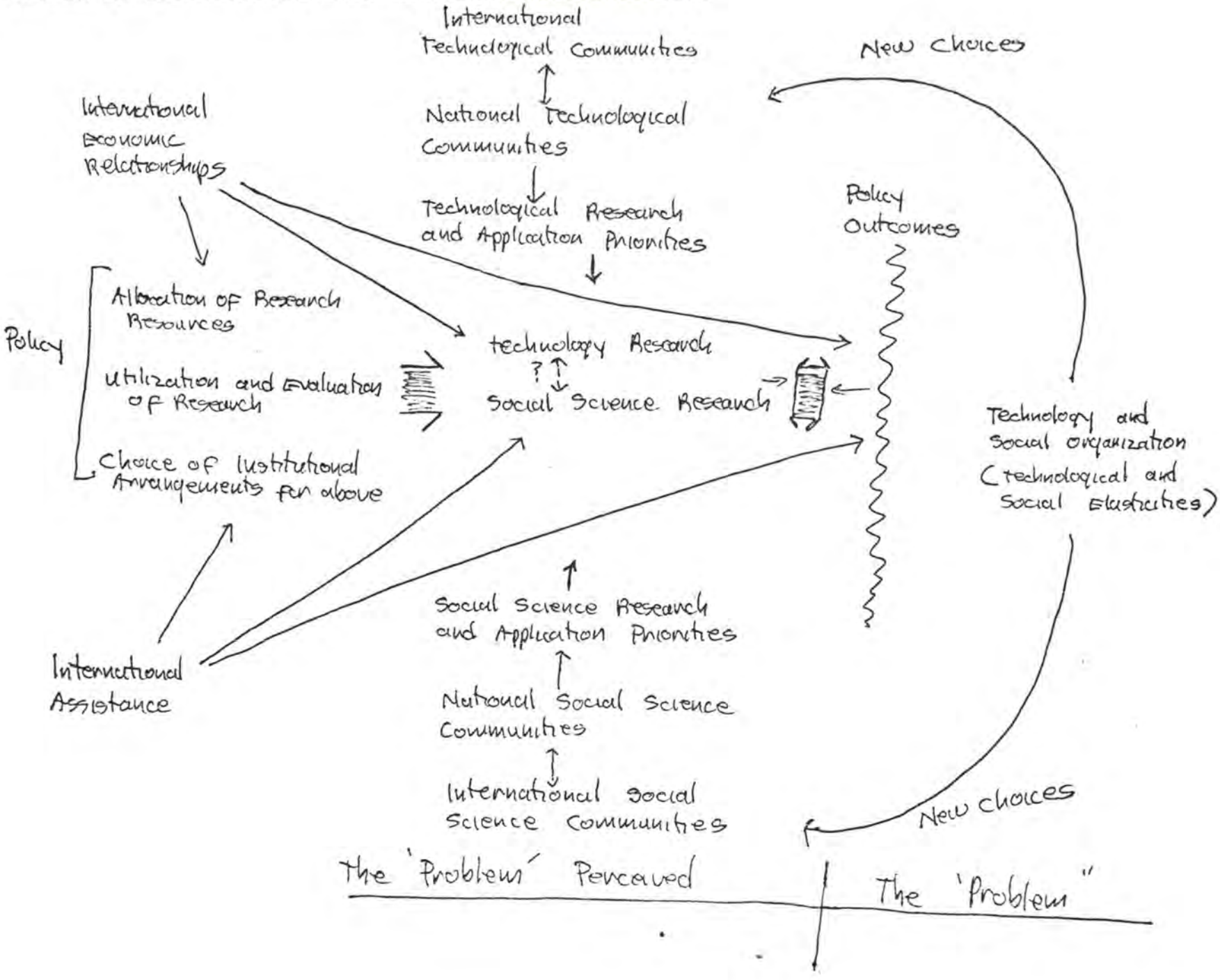
2. Identify the functions and capabilities which institutions would need to have in order to effectively implement the feedback of constant and variable sociotechnical parameters to relevant policy-audiences, particularly those concerned with the allocation of research resources and the identification of action-program options.

3. Specify the role of exogenous external factors on the structure of choice recognition and weighing among alternative technological futures. Particular emphasis would be given to the role of international scientific communities, the role of international assistance, and the role of international economic relationships on the structure of choice recognition in national scientific communities and policy circles.

4. Establish the roles of social and technical information in the process of problem prioritizing, research resource allocation, the utilization of research in the generation and weighing of policy options, and the eventual pattern of policy outcomes in terms of alternative technological futures.

5. Identify the characteristics of social and technical information required to optimally and continually translate knowledge about society-technology elasticities and inelasticities into constants and variables for the purposes of research resource allocation, research utilization, and policy option recognition and choice.

FIGURE 1. A RESEARCH SCHEM FOR TECHNOLOGY ASSESSING



The schematic representation can be broadly divided into two questions; (1) what is the 'problem'? and (2) what are perceptions of the 'problem'? The link between the two questions is the process through which new choices for policy outcomes are recognized, new evaluative criteria for choices are developed, and alternative translations of choices into outcomes are conceived. In the following paragraphs further definition of the concerns of each major schema component are provided.

Technology and social organization. Technologies can make demands on social organization which are high (requiring significant reconfigurations or new configurations of behavior patterns), moderate (requiring adjustments of existing patterns), or low (requiring only marginal modifications or perhaps no modifications at all). Social organization, that is, the patterns of behavior and institutions which characterize communities, can respond to technological change (administrative technologies, social technologies, 'hardware' technology) by ignoring, by undergoing stress and by developing new or employing existing coping strategies. Either response can be associated with varied degrees of acceptance and nonacceptance. A major dimension of that variance resides in the implications of alternative technological futures for existing levels of local control and autonomy. The outcomes of research in this component should be identification of the major constant and variable parameters surrounding broad technology-social organization configurations. Identification of constant and variable parameters is a necessary step towards the identification of critical information categories.

National Scientific Communities and International Scientific Communities. National agenda for appropriate social and technological research, understanding of the professional's role in policy processes and in a number of other questions related to the formation and maintenance of scientific communities are potentially and significantly influenced by international scientific communities both as explicit organizations and as implicit dimensions of patterns of international professional and educational exchange. Two major questions will be explored in the context of this component: (1) the relationship between the "indigenization" of professional perspectives on alternative technological futures and various forms of international professional growth and maintenance.

An alternative hypothesis will necessarily be the role of local ideologies and other cultural factors in mediating the role of external factors. (2) the role of social science information in the shaping of technological research agenda and the role of technological information in the shaping of social science research agenda. More broadly, this is the question of multidisciplinarity as a professional question and the degree to which its existence and nonexistence is a critical factor in the emergence of choices related to alternative technological futures.

Allocation of research resources. The question of why particular research resource allocation profiles predominate (and the benefits and costs of those profiles) has received considerable attention. In this component that question is approached from the following starting points: (1) while in theory there are factor price signals which suggest where allocations would make the most sense, those signals are distorted through a variety of nonmarket mechanisms, not the least of which is government itself. That suggests that major emphasis needs to be placed on the mediating institutions since it is their signals that are affecting research allocations. (2) the question of research resource allocation and its benefits needs to be approached not strictly from a gross aggregate perspective (did it pay) but also from a distributive perspective (who paid, who benefitted). (3) if factor signals are distorted then it is important to understand the dynamics of distortion and the possibility in particular that more than distortion is occuring, namely that other signals, related to the interpretation of socio-technical problems by scientific communities, international organizations, and local decision making processes, are operating with at least equivalent influence.

Research Utlization. The question of how research is translated into policy outcomes is actually a misleading question, because there is little reason to expect that there is a direct linkage from research allocation to research utilization. The question of research utilization however, by itself, is an important decision making arena because it represents a major form of research evaluation and a major indicator of likely areas for future research resource allocation. The role therefore of scientific communities, public and private agencies (national) and international organizations on research utilization and the role of research utilization in the recognition of new choices, the reevaluation of existing choices and the weighing of all available choices will be a major concern of this component.

Research Phasing

The project is divided into three research phases. The first phase, basic research, focuses on the substantive questions addressed. The second phase, research application, focuses on the translation and extension of research output into formats appropriate for alternative simulation and modeling exercises, refinement of alternative methodologies, and curriculum development (for conventional purposes and for unconventional purposes, e.g. policy auduences). The third phase, pilot action, will involve selected pilot projects involving the application of methodologies developed as a result of the first two phases.

Research Coverage

Two major technological areas will be explored: agriculture and energy. However, as implied by the whole discussion, emphasis will be placed on exploration of more general technology-society questions in an effort to refine conceptualization and operationalization and enhance the utilizeability of technology assessment. Countries involved will be the U.S. plus 4-5 Asian nations.

Research Organization

Small multinational and multidisciplinary research teams will be constructed to explore each of the major schema components. The linkage of components will be maintained through constant provision for communication of results and constant communication with policy makers and individuals working in the technology-assessment field.

SUMMARY

Assessing alternative technological futures is a continuous process of screening and recognizing new options, evaluating and re-evaluating available options, weighing alternatives and making choices, and seeking alternative routes to translating choices into resource commitments. An assessment 'methodology' therefore will be more than a cookbook for calibrating costs and benefits. Instead, it will have to be a set of minimum functions, alternative patterns of effective decision-making, varied structures for organization of planning. Why? Assessment is more than just technique; it is a measure of society's capability to cope creatively through open anticipation.

The thrust of this project is to seek the outlines of such capabilities and their alternative institutional configurations as well as refine the finer points of technique through analysis of the processes which mediate between the external and domestic sources of new technological options and the objective elasticities between technologies and social organization.

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SUSTAINING THE GREEN REVOLUTION IN THE PHILIPPINES: HOW MANY DIFFUSION CURVES

Bruce Koppel

WHATEVER MEANINGS may be associated today with the term "green revolution," an emphasis on optimal seed utilization through the application of complementary technical inputs and more sophisticated farm management has been substituted in discussions of agricultural development strategies for an earlier preoccupation with simple adoption of HYVs (high-yielding varieties).[1] In the Philippines, the development of strategies to encourage optimal use of the high-yielding rice varieties is based on an analysis and generalization of the dynamics of the original seed diffusion process. The argument will be made here that both the analysis and generalization are flawed because the factors which account for seed diffusion in the Philippines are not the same factors which indicate where the seeds will be optimally utilized.

The rapid diffusion of HYVs in the Philippines (more than 60% of harvested riceland in crop-year 1975 is planted in HYVs) is a notable accomplishment. But the extension of assumptions about the characteristics of that accomplishment to conceptualization of the sustainment problem requires careful consideration. While it is reasonable to suggest that the factors which facilitated the emergence of HYV seed utilization will also facilitate the maintenance of complementary input utilization, there are at least two plausible alternative hypotheses. The first is that the adoption and sustainment problems are not two points on the same diffusion of HYV technology curve. The implication is that the factors significant for sustainment will not be the same

[1] For example, see Randolph Barker, "The Evolutionary Nature of the New Rice Technology," *Food Research Institute Studies,* 2 (1971), pp. 117–130; Robert W. Herdt and Thomas H. Wickham, *Major Constraints to Rice Production with Emphasis on Yields in the Philippines,* International Rice Research Institute, April 22, 1974 (mimeo); W. A. Schutjer and E. W. Coward, "Planning Agricultural Development—the Matter of Priorities, "*Journal of Developing Areas,*" 6 (1971), pp. 29–38.

as those significant for adoption. A second alternative hypothesis is that attributions of success and failure to policies associated with seed diffusion may be derived more from assumptions which yielded the policies than to assessments of actual policy roles. The implication is that the initial specification of significant adoption factors may be erroneous.

In order to demonstrate the relevance of both alternative hypotheses for the Philippine situation, the principal assumptions of the discussion in Philippine policy circles on what accounted for rapid seed diffusion and what is required to ensure optimal utilization will be identified. These assumptions will then be evaluated through an analysis of agricultural change in the leading rice producing province.

Three Perspectives on Sustainment

Acknowledging the dangers of oversimplification, discussion of the adoption and sustainment problems in the Philippines can be organized around three perspectives: (1) Public Policy Implementors, (2) Technology Generators and (3) Economic Reformers.

Public Policy Implementors: The first perspective is associated with the custodians of public policies which concentrate specifically on fuller utilization of HYVs and complementary inputs. These policies share a common assumption that HYV diffusion followed the successful articulation of a national adaptive research network and the effective coordination of administrative delivery systems. The sustainment problem is viewed in very similar terms, namely developing the appropriate administrative structures for transferring inputs and information *down* to those farmers best able to utilize them. For example, the *Samahang Nayon* program of the Department of Local Government and Community Development represents an ambitious attempt to develop barrio institutions capable of mobilizing various latent collective farming resources and facilitating the efficient transfer of extralocal technological inputs. *Masagana 99* is the most recent version of the input package concept. It is a generalization of the consensus view that the successes of the Rice and Corn Production Coordinating Council (RCPCC) in getting HYVs to farmers were due primarily to the mobilization of normally noncooperative parties and a more precise identification of clientele.[2] The *Compact Farm* program is a spinoff of several pilot efforts begun in the mid-1960s on cooperative farming[3]

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[2] For example, see Victoria M. Arcega, "Mobilizing the Bureaucracy: The Case of the Rice and Corn Production Coordinating Council," *Solidarity*, 4 (1969), pp. 9–25; Raul P. DeGuzman, "Achieving Self-sufficiency in Rice: A Study of the Philippine Experience in Program Implementation," *Philippine Journal of Public Administration*, 14 (1970), pp. 136–168; Gabriel U. Iglesias, *The Implementation of the Philippines' Four-Year Rice Self-Sufficiency Programme: 1966–1970*, prepared for Conference on "Implementation: The Problem of Achieving Results," Eastern Regional Organization for Public Administration, Tokyo, October 24–31, 1973.

[3] These were conducted principally in the Mt. Arayat area of Pampanga.

and intensive team extension.[4] Where the Compact Farm program operates, it does so with small groups of agronomically homogeneous and economically comparatively well-endowed farm households. The emphases in these and similar programs is on more coherent administration of the delivery of technological inputs and more careful attention to placing inputs where they will yield the most rapid production payoffs.

Technology Generators: The second perspective is defined by the technology generators and is based on research, principally in the Laguna area, but also in numerous other sites throughout the Philippines.[5] The HYV diffusion process is arrayed along an individual farm household cost-benefit decision-making continuum defined by: demonstration of greater productivity and higher net return; presence of complementary inputs; availability of cash and labor; and understanding of the technology and limited variability in probable yields and returns. The public policy perspective can measure success in terms of production increase, area planted, or number of farmers planting (i.e., aggregate indicators of effective administrative delivery). The International Rice Research Institute, for example, is evaluating HYV diffusion and utilization in light of an additional criterion—the differences between HYV yields obtained under controlled conditions at Los Banos, Munoz and elsewhere and the HYV yields obtained by farmers in their fields.

This latter criterion, which currently shows differences of 6–8 tons/hectare at IRRI versus 1–2 tons/hectare on-farm, has led to a conception of the sustainment problem which is a replication of the adoption diffusion decision-making matrix with one important explicit addition. Physical constraints (water availability, solar radiation, soil quality, seasonal variations, etc.) are assigned significant roles in determining the likely degree of complementary investment.

Economic Reformers: The third perspective is labelled that of the economic reformers and is best exemplified by the ILO mission report, *Sharing in Development.*[6] The ILO group, which developed its analysis with significant input from a number of leading Filipino economists, was not highly impressed by the diffusion of HYVs nor the impact of that diffusion on the distribution of income and employment situation in rural areas. The ILO report argues that if farmers have not adopted the seeds or the inputs necessary to maximize seed yield, it is due principally to lack of knowledge, unavailability of seeds and/or inputs,

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[4] These were implemented under Taiwanese and Japanese supervision.

[5] For example, see Herdt and Wickham, *op. cit.*; Gelia T. Castillo, *Diversity in Unity: The Social Component of Changes in Rice Farming in Asian Villages,* University of the Philippines at Los Banos, 1974 (mimeo).

[6] International Labour Office, *Sharing in Development: A Programme of Employment, Equity and Growth for the Philippines* (Geneva: International Labour Office, 1974). For some reactions see the papers presented at the Baguio conference organized by the Center for Research and Communication in October, 1974.

and unfavorable price relationships.[7] This is a restatement of the individual cost-benefit approach to adoption which characterized the two perspectives discussed earlier.

The sustainment problem[8] consists of facilitating farmer participation in modernization processes,[9] that is, farmer participation in a pattern of resource mobilization that generates a profile of economic activities characterized by significant employment and income effects. What limits the initiation and acceleration of this transformation process? According to the ILO group, the constraints are: lack of credit, inaccessible modern inputs, inadequate farm to market roads, lack of land, ineffective management of communal resources (e.g. irrigation), etc. The solutions to overcoming these constraints are compensatory policies: credit allocation, encouragement of secondary food crop production, expansion of nonagricultural rural activities, irrigation construction, land reform, administrative reform, interest rate reform, and taxation reform.[10] In other words, sustaining technical change in agriculture requires the simultaneous operation of all those factors which would make continuing improved returns to farmer resources more likely.

Through an emphasis on individual cost-benefit decision-making, the report thus accepts both the Public Policy Implementors' and Technology Generators' conceptions of the sustainment problems. However, the report goes a step further through a critique of existing policies. Pointing to poor articulation of adaptive research with extension and the consequent ineffectiveness of most agricultural extension, the ILO group objects to the lack of "indigenization" in programs. Indigenization means that at the barrio or barrio block level, which is where self-determining local institutions belong, the role of the national government should be limited to aiding in the "how." But at the level of "maxi-infrastructure" projects, both programming and implementation should proceed under national government direction.[11]

Agricultural Change in Iloilo

When the assumptions of these three perspectives are evaluated through an analysis of agricultural change in Iloilo Province, the

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7 ILO, *op cit.*, p. 81.

8 The Report has much more to say about the sustainment problem than can be noted here. In fact, *Sharing in Development* is a lengthy elaboration of Gustav Ranis' perspective on the role of rural resource mobilization in national industrialization. However, a sustainment argument can be identified which does not require reference to all the facets of the Ranis model. The ILO Mission to the Philippines was headed by John Fei, an associate of Gustav Ranis at Yale University and also an exponent of an economic growth model with special emphasis on labor surplus economies.

9 ILO, *op. cit.*, p. 55.

10 *Ibid.*, p. 65.

11 *Ibid.*, pp. 66–70.

leading rice-producing province in the Philippines, difficulties in all three perspectives become apparent.

Rice production in Iloilo province increased more than three-fold from 1960 to 1974, with about 20% of that increase due to HYVs. An examination of the adoption process in the 338 barrios of Iloilo's rice bowl[12] suggests that seed acceptance was *not* related to individual cost-benefit factors such as market accessibility, or irrigation and input availability. What factors do account for adoption? The most important factor was barrio solidarity, the degree to which the various institutions and roles within the barrio were mobilized around some common theme. Examples of such themes and attendant mobilization ranged from barrios engaged in boundary disputes to barrios supporting dissident religious organizations.[13] Solidarity acts as an antecedent variable to public policies which provided seeds. It is, in other words, a significant barrio-level independent variable accounting for the distribution of national policies which directly supported seed diffusion.

A second crucial factor in accounting for adoption was ongoing increases in *barrio* complexity—the range of occupations and institutions present in a barrio. Village complexity can be seen as an indicator of a community's capability to deal with a variety of tasks and problems. This is broader than the more common view which concentrates on a village's economic *infrastructure*. The latter perspective provides some evidence of a community's capability to service farm households in conventional ways (for example, providing access to markets, credit and labor), but it ignores the noneconomic context within which those households function. Thus, while HYVs have acquired a substantial role in aggregate production, both the scope and pattern of adoption proceeded along grooves defined by ongoing organizational processes—not simply the vectors of individual farmers' economic decision-making.[14]

Sustainment of technical change in rice, that is, private investment in irrigation, the utilization of soil tests, fertilizers and other inputs, is *not* related to public policies which provided some ingredients presumably as a stimulant to use of others; it is *negatively* related to barrios which were engaging in sustainment practices prior to the introduction of HYVs, and it is *not* related to current utilization of HYVs. Instead, sustainment barrios are barrios with two important characteristics. First, they are less complex barrios than those villages which

12 The Municipalities covered are: Ajuy, Anilao, Banate, Barotac Viejo, Dingle, Duenas, Mina, Passi, Pototan, San Enrique, San Rafael.

13 Mangahas and Librero tapped a similar dimension in their study in Iloilo when they pointed to the predominance of a neighborhood effect in the pattern of seed distribution. HYV adoption tended to be concentrated in particular barrios of municipalities. See Mahar Mangahas and Aida Librero, *The High Yielding Varieties of Rice in the Philippines: A Perspective,* United Nations Research Institute for Social Development, 1973.

14 See Bruce Koppel, "Agricultural Change and Social Structure: A Longitudinal Analysis," *Philippine Sociological Review* (forthcoming).

adopted HYVs and second, they are barrios which are significant participants in the regional sugar economy.[15]

How Many Diffusion Curves?

There are several nuances which cannot be unravelled here, but to pursue further the discontinuities between adoption and sustainment, why is HYV sustainment responding to a different set of factors than HYV adoption? Answering that question requires analysis of the relationship between public policy in agriculture and indigenous institutional change in Iloilo's barrios.

By 1972, Agricultural Credit Administration (ACA) efforts to develop the municipal Farmers Cooperative Marketing Association (FaCoMa) as a viable intermediate institution for channeling various technical and financial inputs to rice farmers could be characterized as successful. FaCoMas in Iloilo had achieved a dominant position as input suppliers among public and private organizations servicing the rice sector alone. FaCoMas had consolidated their position as the institutional vehicle for technology transfer programs of numerous agencies including the Bureau of Soils, the Irrigation Service Unit, the Bureau of Animal Industry and the Presidential Assistant on Community Development. Although Regional ACA officials were troubled by the nonviability of some FaCoMas, the Rice and Corn Production Coordinating Council (RCPCC) was satisfied with the FaCoMa's role in increasing aggregate provincial production. However, the same policies which supported FaCoMa hegemony—often by precluding alternative institutional development[16]—had the implicit effect of facilitating the consolidation of the regional input market under the control of Sugar Producers Cooperating Marketing Agency (SPCMA) interests. In this context, an earlier (1967) RCPCC policy decision to concentrate on credit, irrigation, and roads and to suspend subsidized fertilizer and insecticide provision had the eventual result of forcing the FaCoMas to rely on the SPCMA for their own supplies.

To understand how this happened, it is necessary to emphasize the importance of a regional rather than commodity focus. In 1960, there were seven barrios out of 338 where fertilizer and agricultural chemicals could be purchased. Five of the seven were the market towns of their municipalities and in all cases the principal clientele for these private outlets were sugar growers. The major private sources of fertilizers and chemicals were in the distributors in Iloilo City, at least 15 kilometers away. In this context, fertilizer delivery by various public agencies was often the only viable alternative to city purchase by larger farmers or no purchase by smaller farmers.

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15 They have a minimum of one sugar farm of at least 20 hectares.

16 Barrio cooperatives which sought Security and Exchange Commission recognition were consistently denied necessary endorsement from ACA.

By 1967, ACA fertilizer distribution was linked to an effort to revitalize FaCoMas, but the environment in which this was taking place had changed since 1960. By 1967 also, two more barrios had input supply outlets and one was oriented to rice growers. The single rice input outlet was linked to the ESSO Fertilizer and Agricultural Chemicals Corporation (ESFAC)—an organization which provided extensive technical advice and a wide variety of materials. However, the rice market for inputs was still small compared to sugar and it was in sugar that important changes were occurring. The growth of the SPCMA into a signifficant fertilizer importer had led to the virtual disappearance of fertilizer from Iloilo City.[17] Within the region there were now three sources of fertilizer—ACA supported FaCoMas, ESFAC, and SPCMA.

In this situation, ACA's opposition to the development of intermediate institutions which might compete with FaCoMas served to protect ESFAC-SPCMA hegemony more than facilitate the growth of locally-rooted FaCoMas. By 1970, significant private sector growth that might have followed increasing demand from both rice and sugar planters did not materialize. With the purchase of ESFAC by SPCMA, the continued insistence by ACA that the FaCoMas play an exclusive role in the rice sector was distorted by the implementation of earlier policy decisions to deemphasize fertilizer subsidization. The FaCoMas had little alternative but to meet their own input needs through reliance on SPCMA.

In the sugar economy, a variety of indigenous cooperative organizations emerged and provided a modicum of alternatives to, if not direct competition for, the SPCMA. In the rice economy, the objective of maintaining FaCoMa predominance was yielding an anomaly. By the early 1970s, the principal institutional channel for policy purposes to the rice sector was the FaCoMa—ACA's objective. But the major component of FaCoMa viability was linked to dependence on SPCMA supplies.[18]

The FaCoMa strategy sought to ensure that a handful of municipal cooperatives would be available to distribute various inputs and ultimately to participate effectively in marketing. The key was the linkage of preferential access to selective cooptation—i.e., limited access to subsidized inputs was tied to membership in carefully protected Municipal Cooperatives. But that strategy was highly supportive of the

[17] From October 1965 to September 1966, the major Iloilo City fertilizer distributor had fertilizer sales totalling 247,873 pesos. During the next 12 months, that declined to 122,796 pesos. After September 1967, the fertilizer line was suspended. (Warner Barnes, Inc., Purchase Order Records, 1961–1971). During the period 1967–1970, total value of fertilizer used in the Province doubled and total value of agricultural chemicals tripled. (Bureau of Customs, Port of Iloilo City, *Shipping Manifests*).

[18] During the period 1969–1971, only the SPCMA outlet function accounted for real capital formation in the FaCoMas. Rice trading, warehousing, and expenses associated with facility loan interest payments consistently operated at a loss.

emerging dependency system in the input supply market by accelerating the direct reliance of rice farmers on the sugar sector for input supply. A potential landscape of other indigenous intermediate institutions serving the rice sector were not allowed to develop.

One implication is that the sustainment problem extends beyond the question of how to broaden farmer involvement in expanding production to the issue of how to define the terms of participation to preclude excessive loss of local autonomy and local institutional initiatives. The ILO strategy currently being debated would appear to represent a recognition of this revised view of the sustainment problem. There are throughout Gustav Ranis' report explicit calls for decentralization, for emphasis on local government self-determination. The *Samahang Nayon* program is criticized as being too much an arm of the government.[19] There is reference to self-delineated barrio blocks as the ultimate optimal unit.[20] However, an assumption of the ILO analysis is that barrios are currently unrelated in any systematic matter other than economic exchange and common municipal membership.

Research in Iloilo confirms that barrios can be meaningfully arrayed in hierarchical intervillage networks in which the ranking criteria relate to central-local recognition and not simply economic exchange;[21] that such arrays can be tracked over time, and that structural changes within particular barrios have important interrelationships with changes in a barrio's position in its intervillage system. The ILO perspective does not recognize existing interorganizational relationships, but rather, like the public policies it criticizes, reorganizes communities around a narrow economic focus, imposing high costs in terms of the bases of viable local institutions.

Conclusion

In making that argument, economic considerations are not being underestimated. Rather it is an argument for the complementary role of organizational incentives that make certain collectively facilitated individual behaviors more or less likely.[22] This suggests that choice of strategies and policy instruments need to consider policies as techniques of control and as progenitor and precluder of institutional development. The importance of policies as techniques of control in an environment characterized by vertical relationships can be reduced to the question: How can policies be articulated which do not flow down grooves defined by existing vertical relationships? The terms of

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19 ILO, *op. cit.*, p. 94.

20 *Ibid.*, pp. 68, 520–521.

21 A Guttman Scale of Centrality was constructed for the 338 Iloilo villages for 1955, 1960, 1967, 1970 with the following items (from "easiest" to "most difficult"): general inclusion (official recognition as a barrio to the municipal market center); particularistic recognition (temporary assignment of an extension agent, a Presidential visit); continuing recognition (a secondary school, a health center).

22 See H. S. Sandhu and D. F. Allen, "The Village Influence on Punjabi Farm Modernization," *American Journal of Sociology*, 79 (1974), pp. 967–980.

the current sustainment debate in the Philippines miss this question by assuming that policy is exogenous to the systems at which it is directed, that policy affects local systems rather than being affected by those systems. The importance of policy as progenitor and precluder of institutional development can be reduced to the question: Are there systematic patterns in the distribution of those two roles? The current sustainment debate misses that question by assuming local infrastructure is a response to and support for aggregated individual production decisions.

Economic policy and infrastructure may be sufficient to facilitate technology adoption. But developments in Iloilo suggest that sustainment—the indigenous elaboration of technical change—does not rely on the same conditions which favor adoption. The critical collective capability underlying sustainment is *adaption*—a capability which implies a series of coping questions. For those questions, the focus of the current debate on *kinds* of economic policy and *types* of economic infrastructure may prove to be academic.

As attention turns more to the so-called "fourth-world" of small farmers, the distinction being drawn between adoption and adaption should become more obvious and, with it, the need to identify strategies which recognize that two different problems are being addressed. The role of intermediate institutions in facilitating the transfer of technological increments to large numbers of small farmers and in appropriating numerous scale economies is also receiving renewed attention. But here too, the possibility that such institutions will have to be much more locally rooted for sustainment than for adoption has not really been entertained.

There is considerable ongoing research which does represent an attempt to adapt technologies to a broader range of socio-economic as well as biological environments. That is one approach. What remains to be initiated is an analogous search for policy instruments which are adapted to a variety of contexts and regional feedback mechanisms which are sensitive to the implications of changes in those contexts for the appropriateness of particular choices of policy instruments over time. For the adoption and sustainment problems, the first steps are the recognition that there are two problems and the specification of the parameters which influence each.

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ECONOMIC PROBLEMS OF PAKISTAN UNDER BHUTTO

W. Eric Gustafson

THE BHUTTO REGIME took power in December 1971 with a clearly articulated philosophy in many areas, but a curious, although perhaps explicable, absence of ideas in many others. The economic thinking of the Pakistan People's Party followed directly from the emphasis on growth and neglect of distributional questions during the ten years of the Ayub administration. The lightening rod for criticism has been Mahbubul Haq, one of the chief architects of economic policy under Ayub, who said in 1963, "The underdeveloped countries must consciously accept a philosophy of growth and shelve for the distant future all ideas of equitable distribution and welfare state."[1] The PPP in its *Election Manifesto*[2] took quite the opposite tack: the emphasis there is on distribution, on changing the sharing-out of the fruits of development (although really only in the most general of terms; specifics, aside from nationalization, hardly appear).

In the first wave of reforms in 1972, the regime nationalized something approximating 20% of large-scale manufacturing industry; it took a small amount of land away from 2,231 large landlords, and is in the leisurely process of redistributing it to a number of farmers which will be small in relation to the need; it nationalized life insurance and clamped stiff regulations on banks; sweetened the deal somewhat for already pampered urban labor; and finally, in its most significant reform, devalued the rupee (this particular reform was not anticipated in the Manifesto). A second wave of reforms in 1973 na-

1 Mahbubul Haq, *The Strategy of Economic Planning: A Case Study of Pakistan* (Karachi: Oxford University Press, 1963), p. 30. The passage just cited is quoted with glee by would-be radicals in Pakistan now. They were not there *then*, an important point, and they overlook the fact that Dr. Haq's ideas have changed considerably. They also overlook a sentence in the same paragraph: "The immediate problem is the creation of 'surplus value', and the best form of social security is the extension of productive employment opportunities for all."

2 *Election Manifesto of the Pakistan People's Party*, fourth edition (Karachi: Printed at Vision Publications, 1972). A recent news story reports the preparation of a new manifesto which will "give more blows to the exploiting class," says Mubashir Hasan (*Dawn*, January 6, 1976, 1:7).

PUBLIC POLICIES, INTERMEDIATE ORGANISATIONS AND SUSTAINING AGRICULTURAL CHANGE: SOME RESEARCH THEMES

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SUMMARY

Two important aspects of current discussion on agricultural development strategies for sustained rural modernisation are the concern for articulating appropriate policy and administrative instruments and an increasing interest in the potential supportive role of intermediate institutions. The principal framework for linking policies and intermediate institutions has been derived from a particular understanding of what the sustainment problem is. This paper offers a revised perspective on the sustainment problem and suggests certain implications for the linkage between policies, intermediate organisations and choice of agricultural development strategies.

INTRODUCTION

Despite the substantial technological breakthroughs in cereal seed breeding in the 1960s, several recent approaches to agricultural policy strategy manifest an increased concern for the problem of sustaining agricultural change (Barker[1]; Herdt & Wickham[13]; Johnston & Kilby[18]). Critical components in many prescriptions for sustained rural transformation are the presence and operation of congenial public policies (Hardin[9]) and supportive local institutions (Owens & Shaw[26]). The optimal roles of policies and institutions have been defined in terms derived from a broader framework in which the sustainment problem is seen as one of expanding farmer access to principal production inputs (Hayami[12]). The objective of this paper is to argue that there are difficulties with the broader view of the sustainment problem and its interactions with the roles of policies and institutions—difficulties which have been increased by the 'green revolution'. Some of these difficulties are identified and an approach that might help to conceptualise the sustainment problem and to articulate appropriate policies and institutions is outlined.

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THE PRINCIPAL ARGUMENT

Because the principal argument is well known, it can be stated briefly. New technologies are a source of disequilibrium in otherwise well-adjusted economic production functions (Schultz[29]) through two types of consequences. The first is substantially increased income to early adopters and the second is the demand for more rapid diffusion from those having difficulties in access to the new techniques. Reconciling the maintenance of increased economic returns from improved technology utilisation with expanding access to improved technology constitutes the principal view of the sustainment problem (*e.g.* Wharton[33]; Fisher[7]). Subsequent steps in the argument specify the mechanisms for achieving sustainment, that is, for increasing productivity: (a) by both re-equilibration by 'siphoning off the gains from incomes and capitalised land values for investments designed to create new income generating streams' (Sidhu, reference 32, p. 226) and (b) by facilitating broader farmer involvement in expanding production through the introduction of various instruments (*e.g.* credit, subsidised inputs) which compensate for particular weaknesses in the farmers' position. Both policy thrusts directly and indirectly amplify the demand for complementary inputs and services. The emergence and growth of input and service facilities—the economic infrastructure—completes the picture.

PROBLEMS WITH THE PRINCIPAL ARGUMENT

The application of the above model to the 'green revolution' revealed at least three difficulties in the understanding of the roles of policy and institutions tied to and derived from the sustainment problem.

First, the model has not fully considered the implications of artificial rigidities in the flow of production factors. Tenure structure and land size distribution have received considerable attention as aspects of agrarian economies which can impede the development of a uniform interface between input supply structure and farmers by injecting diseconomies of scale and reinforcing unequal access (*e.g.* Nulty[24]). Increasing attention has also been given to the resultant backwash effects accompanying adjustments in the terms of trade between agricultural and non-agricultural sectors or expansion in export agriculture, particularly the implications of their failure to cover an agricultural economy with homogeneous density (*e.g.* Beckford[2]).

However, the problem of artificial rigidities does not refer to market distortions alone. Nor is the reference to the mass of patron–client studies which have isolated constraints on factor allocation decision-making (Scott[31]). The focus instead is on the systematic organisation of all the institutions within and between regions around a structural dependency orientation (Beckford[2]; Johnston, reference 16, pp. 152–77). It is within this matrix that institutions can moderate or aggravate the presumed

microlevel disequilibrating consequences of new technologies and both elicit and distort partial equilibrium compensation policies (Ryan[27]).

Three implications of the existence of artificial rigidities in production factor flow require special attention. First, the rigidity problem makes conceptualisation in terms of aggregates insufficient since the problem has significant regional (Falcon[5]) and structural (Beckford[2]) dimensions. Second, the broader emphasis on the role of new technologies overlooks the significance of changes in existing technology utilisation. A special example of this problem in relation to artificial rigidities is the question of inflexibilities in patterns of resource use. In regions characterised by structural dependency, the distribution of inflexibility may be coincidental with the structure of dependency on a regional basis—not simply an aspect of patron–client relationships at the farm level. Third, the search for those producers insulated from the market has often been limited to marginal and subsistence farmers (*e.g.* Ishikawa[15]). However, in dependent systems it may be just such farmers who feel the fullest weight of market participation, while those linked to export markets, for example, will have the benefit of market insulation through commodity agreements. Similarly, the significance of large and small farm units derives less from relative scale economies than it does from differential political access and the consequent attributes which shield the protected from market vicissitudes.

Second, the model's conceptualisation of policy in commodity, rather than regional, terms precludes a full assessment of the growth implications of public policy. A problem emerges in distinguishing policies on a commodity basis not as a cost of analytical precision obtainable from concentration on the substance or effectiveness of particular policies, but rather as a cost of failing to incorporate the potential intermeshing of policies that occurs as an aspect of the structure of policy consumption. For example, conception of a region as an aggregate of homogeneous producers organised around a discontinuous hierarchy of market centres makes assumptions of inter-commodity and inter-sector policy independence plausible. Reconceptualisation of a region as a linked system of centres and villages makes the assumption of policy independence a research hypothesis (*e.g.* Harvey[11]).

Even on the assumption of inter-sector policy independence, the utility of inter-commodity policy assumptions is weakened by the common association of policy only with explicit policy. Implicit policies, the underside of many explicit policies and the substance of *non*-decision making, can exert substantial influence on the efficacy of explicit policies (*e.g.* Falcon & Gotsch[6]). For example, patterns of productivity and land utilisation associated with explicit policy in seed certification and distribution for basic food crops may be distorted where the market for complementary inputs is monopolistic in favour of export crops. The latter is a condition which may have been implicitly encouraged by failure to intervene in the input market in favour of basic food crop producers.

Third, the appropriate parameters for infrastructure are not economic alone, but rather the full range of specialised structures available, reflecting the variety of problems a community can comprehend. The model under discussion has maintained that economic infrastructure is a principal facilitating factor for assessing the probability of sustained agricultural change. But is the range of economic functions and the ability of a community to service farm households in conventional ways (Schultz[29]) a sufficient understanding of local infrastructure? Concentration on economic infrastructure alone assumes that the problem of access to, as well as management of, critical inputs will derive only marginal significance from political and social factors. In structural dependency contexts, that may be a serious error.

Moreover, the range of capabilities is not the only critical aspect of infrastructure. Individual farmer decisions, particularly imputing innovative behaviours, may be the underside of group-level attributes and processes (Sandhu & Allen[28]). The model being criticised has pointed to the importance of resource mobilisation behaviours. One example of an available approach is the sociological concept of solidarity—the degree to which the inventory of structures and roles available in a community is organised around some common format or focus and there is a high degree of intercommunication between institutions. There is evidence to suggest a positive association between community solidarity and the likelihood of both individual (Koppel[21]; Young[34]) and collective (Key[19]; Dawson & Robinson[4]; Lotz & Morss[22]) innovativeness.

TOWARDS REDEFINITION OF THE SUSTAINMENT PROBLEM

The existence and consolidation of structural dependency has implications not simply for the distortion of factor flow, but also for the definition of the potential arena for technology diffusion. Rather than disequilibrating a system, new technologies can support the expansion of dependency by linking preferential access to selective co-optation. In this context, the sustainment problem goes beyond broadening farmer involvement in expanding production to extending participation without incurring excessive institutional loss.

Policies may differ for reasons related to substance and administrative coherence, but another source of variation is the organisational matrix in which policies function. Assessments of the optimal role of intermediate organisations in facilitating technology transfer have been infused by a well documented concern for particular organisational functional profiles, but this needs to be supplemented by a concern for the degree of indigenisation in organisational operation. Indigenisation is often discussed in terms of member participation and the functions and qualities of leadership, but what is recognised less often is the underlying significance of an *inter*organisational attribute—autonomy—for the emergence of an *intra*-organisational attribute—viability.

The point can be further developed. Degrees of indigenisation and autonomy assume special importance when regional hierarchies and patterns of vertical relationships are changing. For example, increasing autonomy in hierarchical systems may yield increased policy distortions by encouraging disaggregated and partial problem identifications (*e.g.* Harrison[10]). One implication for the interface between policy and farmer and between farmer and market is that the pressing task of policy may not be so much to protect small farmers from the market—a form of imposed autonomy—as it is to protect dependent farmers from the deleterious effects of market insulation cloaking others.

A view of the sustainment problem as one of facilitating broadened participation without incurring excessive co-optation or institutional loss does not represent a denigration of the role of economic incentives and the reality of behavioural responses to such incentives. However, it is an argument for the complementary role of organisational incentives that make certain collectively induced individual behaviours more or less likely. From this perspective, discussions of choice of agricultural policy in terms of unimodal and bimodal (Johnston & Kilby[17,18]) strategies are only partially satisfactory. Policies also need to be discussed as techniques of control and as progenitor and precluder of patterns of institutional development.

The importance of policy as a technique of control in a matrix characterised by vertical relationships can be reduced to the question: How can policies be articulated which do not flow down grooves defined by the existing hierarchy? The principal argument misses this question by assuming that policy is exogenous to the system at which it is directed. The importance of policy as progenitor and precluder of institutional development can be reduced to the question: Are there systematic patterns in the distribution of the progenitor role? For collectivities on the plus side of dependency systems, policies will often mean enhanced market insulation through a thinning of the line between regulator and regulated. For groups on the negative side of dependency systems, policies will often favour market participation, but with a preclusion of autonomous institution growth. The principal argument misses these possibilities by assuming local infrastructure is simply a response to, and support for, aggregated individual production decisions (*e.g.* Schutjer & Coward[30]).

The principal argument ignores those collective dimensions which may be critical for the emergence and maintenance of new and complex behaviours—dimensions which are behind general coping capabilities at the community level in the light of the regional matrix in which communities are embedded and at the individual level in the light of the community matrix in which individuals are embedded. Economic policy and infrastructure may be sufficient to facilitate technology *adoption* and to support a degree of utilisation, but sustainment and elaboration, particularly for individuals and communities in dependency structures, requires the facilitation of *adaptation*. The latter is a coping question for which economic policy and economic infrastructure are incomplete answers.

RESEARCH IMPLICATIONS

Two sets of research implications can be identified.

(1) Public policies can be fruitfully analysed along two dimensions. The first, already current in the policy literature, asks: What is the degree to which policy 'consumption' is dissectible? (Froman[8]; Lowi[23]). Certain organisational incentives and disincentives would seem to be associated with the relative lumpiness and divisibility of policy delivery (Key[19]). A second dimension has received considerably less attention from policy analysts although it has some relationship to public goods theory (Olson[25]; Davis & Whinston[3]). It asks: To what extent is the symbolic recognition implicit in any policy exhaustible or indefinitely renewable? Policies which imply renewable resource consumption can be characterised by the predominance of *inclusion* processes: how to incorporate under the policy's umbrella all those qualified to be there. Policies which imply non-renewable resource consumption can be characterised by the predominance of *exclusion* processes: how to eliminate from policy coverage all those not qualified to be there.

The intersection of these two dimensions, policy dissectibility and policy symbolic exhaustibility, provides the parameters for delineating explicit and implicit organisational incentives and disincentives present in particular policies. It directs attention, for example, to an assessment of the implications of applying inclusion strategies (the principal argument's definition of compensation policies for improving input access) to exclusion processes (the operation of conventional compensation policies in structural dependency contexts) as a first step to specifying the content of institutional loss compensation strategies.

(2) The interrelationships of collective and individual methods of coping strategies need to be explored, particularly in two contexts. The first is where the collectivity has increased its relative capability to handle more complex problems without a commensurate increase in external recognition or delegation of responsibility (Young[35]). The second is where there has been a decline in a collectivity's relative capability to treat more complex problems or an increase in external demands and expectations to levels that substantially exceed current capabilities (Hirschman[14]). Sustaining and elaborating technical change is a good example of a type of problem that would fit either context. In the first context it refers to various impediments to the generation of extra-local externalities. In the second context it refers to the various types of programmatic overload that characterise villages included in crash programmes. Examples of issue areas derived from the interrelationship of organisational mobilisation and decline situations with individual coping behaviours include: examinations of choice processes and constraints and supports for expanding inventories of likely behaviours and identification of the collective factors shaping methods of operating processes as a step towards the articulation of incentives to deliberately expand the scope and incidence of innovative behaviours.

CONCLUSION

The argument outlined here has proposed that the sustainment problem has significant dimensions beyond economic incentives; dimensions related to collective and individual methods of operating strategies under circumstances impinging on autonomous decision-making and goal setting. Increasing input unavailability has substantially altered the rural development picture. Exploration and utilisation of techniques for applying various input mixes will assume new importance and at the heart of those efforts will be managerial regimes not only at the farm level, where the prevailing view of the sustainment problem has focused, but at the regional level, where the view taken here has taken a complementary focus. In this context, a challenge for framing appropriate policies and administrative instruments will be understanding the critical roles of intermediate organisational structure and change in the development of local *and* regional level managerial arrangements.

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WORLD BANK / INTERNATIONAL FINANCE CORPORATION

Research Agriculture

OFFICE MEMORANDUM

TO: Dr. C.D. Datey

DATE: September 20, 1976

FROM: W.H. Spall, Agricultural Credit Adviser, AGFDR

SUBJECT: Revision and Completion of a "Study of the Cost of Agricultural Credit Operations"
Terms of Reference

1. You will commence work in Washington on or about October 4, 1976 for a period of about three months. Your task will be to complete a study showing the cost of agricultural credit operations. A substantial amount of work has already been done and a large amount of data collected. A first draft of the study has been produced. You will:

a. thoroughly examine the draft study and decide upon the revisions required including a revision of the format;

b. collect such additional data as is required to complete the study;

c. re-write the study, completing the first draft not later than November 30, 1976;

d. revise the study as required after consultation and in accordance with advice given by designated Bank staff;

e. complete the study ready for publication by December 31, 1976.

2. You will work under the direction of Mr. Spall who will advise you on the required content, and suggested format of the study. The study should indicate the cost of agricultural credit operations on a global basis and should include all "indirect" costs such as cost of extension services, specialized agencies (e.g. State Groundwater Boards), cooperative audit and other services provided by Cooperative Departments(if appropriate) etc. The conclusion of the study will be supported by data and will, if possible, compare the costs of channelling funds through different institutions, e.g. commercial banks, cooperative banks, rural banks, etc., as appropriate.

3. The study should be concise and should be about 50 pages in length plus, if necessary, reasonable annexes containing supporting data.

cc: Messrs. Yudelman
Darnell
Stoops
Mrs. Stone

WHSpall:sj

yellow

Research Agriculture

The World Bank / 1818 H Street, N.W., Washington, D.C. 20433, U.S.A. • Telephone: (202) 393-6360 • Cables: INTBAFRAD

September 13, 1976

Dr. Chintaman D. Datey
Dhanastra B/2
122 Wodehouse Road
Colaba
Bombay 400 005
India

Dear Dr. Datey:

I was delighted to learn on my return from leave that you had been able to accept our offer as a consultant to complete the production of a report on the Cost of Agricultural Credit. I look forward to working with you.

We already have a preliminary draft which contains a great deal of data but it needs refining. It occurred to me that you must have a great deal of data on the cost of credit in India and that by using this we could, together with the information which we have, reach some conclusions on the true cost of providing agricultural credit, particularly to small farmers. We are interested in providing the true overall cost of credit and not just the direct administrative costs. I know you will agree with me that extension and supervision are vital to any credit program. The point is how much does it cost? Likewise the services provided by the Cooperative Departments.

We would also be interested to know if there is any difference in cost by channelling funds through different types of institutions. Is it cheaper, for instance, to use Land Development Banks instead of Commercial Banks or vice versa? Is it possible to assess the cost of credit from non-institutional sources, e.g. money lenders, traders, relatives, etc.

Having, hopefully, arrived at the cost of credit we can then compare it with interest rates and so determine how much hidden subsidization occurs. Or should interest rates be raised substantially? If of course we can come up with any proposals for cheaper delivery systems so much the better. This is a brief outline of what I have in mind. I should be grateful if you would bring as much information as possible with you, particularly in respect of what I call "indirect costs", extension, cooperative costs, etc.

I have suggested you start work with me on Monday, October 4. If this is not suitable to you please let me know. I would like the report finalized and issued early in January 1977. If you will let us know your date of arrival in Washington, we will reserve hotel accommodation for you. Have you any particular preference?

Please do not hesitate to write or cable me if you require any further information. In the meantime I will prepare formal terms of reference for you.

Looking forward to seeing you.

Regards,

Yours sincerely,

W. H. Spall
Agricultural Credit Adviser
Agriculture and Rural Development Department

cc: Mr. G. Darnell

WHSpall:sj

OFFICE MEMORANDUM

TO: Mr. O.T.W. Price DATE: September 13, 1976

FROM: B.S. Gray

SUBJECT: Land Settlement Draft Issues Paper

General

1. The paper appears rather a biased document, continually (and unsuccessfully) trying to justify the views of the "social-welfare" proponents in the Bank. It appears more concerned with supporting these views than in providing genuine assistance to the lower levels where project appraisal is carried out.

2. In fact, because of the lack of clear cut policy directives, the paper provides little if any real assistance to an appraisal mission. No light is shed upon the problems with which we have grappled so wastefully in both the Transmigration I and NES I projects. These are:-

- the balance between economic efficiency and social income distributional goals
- cost recovery policy
- formulation of target incomes
- the acceptable level of project risk

3. Rather than determine major Bank policy through desk studies, a more practical approach would be for a small team of experienced project staff to make field visits to a wide range of selected projects and then provide recommendations on settlement policy.

Specific Points

4. P. 23 para 9

"Successful settlement from the Bank's viewpoint may be considered ...." Bank opinion can change quite drastically over periods which are relatively short in relation to the length of settlement programs. It would be safer to also consider the elements of success considered important by those Governments with viable settlement programs.

5. P. 24 para 12

The conclusion of the Nelson study "that few spheres of economic development have a history of, or reputation for, failure to match that of government-sponsored colonisation in the humid tropics" is much too general a statement. A reasonable conclusion from such a statement, however, might be that settlement should be implemented by autonomous agencies.

6. P. 27 para 16

The comment that the Malaysian settlement program is not viewed as cost effective in terms of poverty amelioration would not be agreed by this Division.

7. P.32 para 3

Others will comment on the error in Jenka I costs.

8. P49 para 5
What are "adequate" rates of return?

9. P.54 paras 11 and 12
As usual the proponents of the low cost approach do not define what this means. Does it refer to costs of (a) management (b) infrastructure, (c) material inputs per unit area, (d) labor inputs or (e) size of farm. A useful analysis would examine in which of these cost items, there are opportunities for cost reduction.

10. P.58 para 19-21
A two phase approach could be difficult in a tree crop project or in a Bank project with a 5 year disbursement period.

11. P68 para 37
What is a "modest" element of subsidy?

12. P70 para 41
There are further difficulties of freehold tenure of small farms. These relate to problems of inheritance and population increase which may prevent efficient farming.

13. It is unclear whether full support is being given to public sector estates as a means of development with known cropping systems.

14. P83 para 4
Others will discuss the danger of the US$7000 figure.

BSGray:bf

cc: P. Melkye, M. McGarry

Research - Agric

Mr. G. Temple

September 13, 1976

Colin Bruce, Chief, AGPER

TURKEY - Discussions of Fieldwork for the Agricultural Prices and Subsidies Case Studies -- Terms of Reference

1. You will proceed to Turkey on September 13 for a stay of approximately three days. The purpose of this portion of your mission is to discuss with the Government the country case study of Agricultural Prices and Subsidies in Turkey. The proposal for the study was mentioned to the Agriculture Minister during his June visit to Washington and Government formal agreement was requested by letter on June 11, 1976, and by cable on August 9, 1976, to which there has been no reply. You should explain the purpose and nature of the study and that the load on Government officials would be minimal (in line with the position taken in the June 11 letter) and the advantages to Turkey of having systematic data and analysis bearing on this matter, and endeavor to obtain a decision. Should the decision be favorable, discuss with the Government the timing and organization of the study.

2. You should be prepared to fly to Belgrade from Ankara upon completion of your assignment in Turkey. In Belgrade you would join Mr. Graham Donaldson in discussions with the Government concerning the Yugoslavian Agricultural Prices and Subsidies Case Study. Clearance for this portion of your mission should be forthcoming during the coming week and you will receive specific instructions by Friday, September 17, 1976.

3. On return to headquarters you will submit a back-to-office report.

DBerk/GPTemple:oh

Cleared with & cc: Messrs. Dubey, Berk, ffrench-Mullen

cc: Messrs. Haynes,
Lachman,
van Wersch,
Kaji,
Yudelman/Darnell,
Donaldson (o/r)

yellow
- UN ACC Study on Rural Dev.

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Li - UNACC
/ cc Research Agriculture

PERSONAL

September 10, 1976

Mr. Obaidullah Khan
Minister of Agriculture
Ministry of Agriculture
Dacca, Bangladesh

Dear Obaidullah:

First of all I would like to thank you for all your kindness during my recent visit to Dacca. It was good to see you again. I also want to bring you up to date on what transpired during the ACC meetings in Geneva. Generally they went well. Keith Griffin served very ably as Chairman and the meetings were conducted in a positive atmosphere. On the prime recommendation most agencies were making progress or at least saying that progress would soon occur (FAO expected some action at the Governing Council Session this November/December). It was further agreed to make a special effort to set up monitoring systems in each agency. A separate workshop will soon be convened. With respect to the experimental National Task Forces on rural development, it was formally agreed to urge the UNDP Administrator, Mr. Morse, to visit personally a few countries for the purpose of initiating such a dialogue with high-level government officials.

Before leaving Dacca, I had hoped to brief Mr. Zagorin about the ACC Task Force and the plans for the selective country case studies. Unfortunately he was unable to keep our scheduled appointment, so perhaps you might wish to mention it to him again. When we arrived in Geneva, many of us were disappointed to hear that Gordon Havord's draft letter to all UNDP Resident Representatives had not yet been sent. Apparently it was being held up at the intermediate levels at UNDP headquarters. On our last day, however, we were told that Mr. Morse was about to sign the letter. It is my understanding that it has now finally been sent.

There was also some confusion regarding ESCAP's initiative to undertake similar country case studies in its region. Their representative assured us that this endeavor was fully consistent

with the recommendations of the Task Force Report of last March, but also indicated ESCAP's intention to proceed with their plans without awaiting an introductory dialogue to be initiated by UNDP Resident Representatives. In fact, they have already scheduled a mission to Dacca later this month and claim that this already had been cleared by Government. I personally do not worry about this initiative unless it confuses the Government. How do you see the relationship between these ESCAP activities and the ACC Task Force work with respect to Bangladesh?

I am writing this letter to you on a personal basis, but would like to stress that some type of government response through the UNDP Resident Representative might be highly desirable. In fact, it would be useful if the Government could extend a personal invitation to Mr. Morse. All this, of course, is based on the assumption that the Government is genuinely interested in having Bangladesh participate in such a special rural development effort.

Again, it was good to see you in Dacca. I look forward to hearing from you soon.

Sincerely,

Leif E. Christoffersen
Assistant Director for
Rural Development and
Nutrition
Agriculture and Rural
Development Department

LEC:jo'd

Research - Agriculture
EAP

WORLD BANK / INTERNATIONAL FINANCE CORPORATION

OFFICE MEMORANDUM

TO: Mr. O.T.W. Price

DATE: Sept. 9, 1976

FROM: Jose Andreu

SUBJECT: Comments on Land Settlement Draft Issues Paper

1. The report seems to me too long, repetitive and containing a number of statements with which it is very difficult to disagree but which need to be refined for practical application.

2. The basic issue in land settlement is the planting of well known tree crops with assured markets versus annual cropping based on very rudimentary technical knowledge of sustained production in the humid sub tropical and tropical areas with uncertain marketing arrangements. I believe that a combination of the two should be pursued wherever possible and that the role of permanent tree crops should be emphasised inasmuch as they provide the security of cash income which is an essential complement to the subsistence requirements of settlers.

3. Reference should be made to the need for two-way communication between project authorities and beneficiaries and to the accountability of the former to the latter.

4. Perhaps it would be useful also to mention that the introduction of new techniques should be made gradually with the full understanding and cooperation of all beneficiaries. This method will most likely increase returns above those obtained under more attractive (on paper) technology packages.

5. The political aspects of settlement should not be ignored. If only smallholders benefit from schemes, middle size and bigger landowners with much political clout may oppose the schemes and slow or block altogether their implementation.

6. We should keep in mind that many rural people are interested more in a steady income than in owning a piece of land. This is a strong argument for consideration of settlement based on estate development.

7. The statement that "The performance of Bank-assisted projects appears to be superior....." (para 7) is unwarranted if for no other reason that the Bank has benefitted much from the experience of governments and other development insttiutions (Inter-American Development Bank) which did the pioneering work in the field of land settlement.

JAndreu:bf